

2016-Jan-29

1 General

1.1 RELATED REQUIREMENTS

- .1 Section 04 05 00 - Common Work Results for Masonry.
- .2 Section 05 50 00 - Metal Fabrications.
- .3 Section 06 40 00 - Architectural Woodwork.
- .4 Section 10 95 00 - Miscellaneous Specialties.
- .5 Section 26 05 00 - Common Work Results for Electrical: Supply, installation and painting of plywood backboards.

1.2 REFERENCES

- .1 ASTM International (ASTM).
 - .1 ASTM A123/A123M-13, Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
 - .2 ASTM A653/A653M-13, Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
 - .3 ASTM C919-12, Standard Practice for Use of Sealants in Acoustical Applications.
 - .4 ASTM F1667-11, Standard Specification for Driven Fasteners: Nails, Spikes and Staples.
- .2 Canadian Standards Association (CSA)
 - .1 CSA O121-08(R2013), Douglas Fir Plywood.
 - .2 CSA O141-05(R2009), Softwood Lumber.
 - .3 CSA O151-09, Canadian Softwood Plywood.

1.3 SUSTAINABLE DESIGN SUBMITTALS

- .1 Construction waste management plan.
 - .1 A Construction Waste Management Plan is in place to divert waste material from landfill. Wherever practical, send waste material for reuse or recycling, and generally document this for the contractor's waste management final report.
- .2 Recycled Content.
 - .1 Refer to Section 01 47 15 - Sustainable Requirements for "List of Products Requiring Recycled Content".
 - .2 If products within this section are indicated on the "List of Products Requiring Recycled Content", only products with recycled content will be acceptable.
 - .3 For products not identified on list, source products with highest recycled content available when practical.
 - .4 Include following information with product data submission.
 - .1 Percentage of pre-consumer and post-consumer recycled content for each product.
- .3 Regional Materials.
 - .1 Refer to Section 01 47 15 - Sustainable Requirements for "List of Products Required to be Locally Sourced".

2016-Jan-29

- .2 If products within this section are indicated on the “List of Products Required to be Locally Sourced”, include following information with Product Data submission:
 - .1 Extraction/Manufacturing location(s): Indicate location of extraction site or manufacturing plant, and indicate distance between extraction site or manufacturing plant and Project site.
 - .4 Adhesives and Sealants.
 - .1 Include following information with Product Data submission for materials specified under this section:
 - .1 Submit manufacturer’s certification indicating VOC limits of Products used onsite and within the building envelope. Product shall comply with California’s SCAQMD #1168.
 - .5 Composite Wood and Agrifibre Products.
 - .1 Provide composite wood and laminate adhesives specified herein manufactured with no added urea formaldehyde.
 - .2 Submit manufacturer’s certification indicating no added urea formaldehyde.
 - .6 If requesting substitute product, ensure proposed substitution achieves above stated goals.
- 1.4 QUALITY CONTROL
- .1 Lumber identification: by grade stamp in accordance with the regulation of the Maritime Lumber Bureau grading rules.
 - .2 Plywood identification: by grade stamp in accordance with applicable CSA standard.
- 1.5 MAX. VOC CONTENT FOR SOLVENT CLEANING ACTIVITIES
- .1 Following are some of the Maximum allowed VOC Content for following activities, as per SCAQMD Rule 1171-9 (refer to SCAQMD manual for complete list and updates):
 - .1 Product cleaning during onsite surface preparation for coatings or adhesives application, and repair and maintenance cleaning:
 - .1 General maximum VOC 25g/L.
 - .2 Electrical apparatus components and electronic components.
 - .3 Cleaning of coatings or adhesives application equipment max. VOC 25g/L.
 - .2 Refer to SCAQMD for additional information and clarification and complete list of applications.
 - .3 Any discrepancies are to be approved by Departmental Representative. Obtain written approval prior to use on site.
- 1.6 DELIVERY, STORAGE, AND HANDLING
- .1 Deliver, store, and handle materials in accordance with Section 01 10 01 - General Requirements and 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 Store materials on site in such a way as to prevent damage, deterioration, or the loss or impairment of their structural and other essential properties. Replace defective or damaged materials with new.

2016-Jan-29

1.7 JOB CONDITIONS

- .1 Check job dimensions governing required openings, curb heights, blocking, roughing-in, and fabrication of shop-made components.
- .2 Examine site conditions and surfaces for defects of work which may adversely affect the quality of workmanship of this section.
- .3 Commencement of work shall imply acceptance of surfaces.
- .4 Be responsible for obtaining all required field dimensions.

1.8 PROTECTION

- .1 Protect all finished work and glass from damage during construction, and upon completion of the work, replace all damaged or broken glass, marred or imperfect trim, or other work.
- .2 Protect installed work from damage and contamination due to construction activities.

2 Products

2.1 LUMBER AND PLYWOOD

- .1 Lumber: SPF, grade No. 2 or better, softwood, S4S, S-dry, 38 mm x 89 mm minimum size. Maximum moisture content cannot exceed 19% at time of fabrication and to the following standards:
 - .1 CSA O141.
 - .2 NLGA "Standard Grading Rules for Canadian Lumber".
 - .3 Fastenings to CSA 086.
- .2 Furring, blocking, nailing strips, grounds, rough bucks, curbs, fascia backing and sleepers:
 - .1 Board sizes: "Standard" or better grade.
 - .2 Dimension sizes: "Standard" light framing or better grade.
- .3 Douglas Fir plywood: to CSA O121; square edge unless noted otherwise.
 - .1 G1S where exposed to view.
 - .2 Sheathing grade as noted.
- .4 Softwood plywood: to CSA O151; square edge unless noted otherwise.
 - .1 Select grade for roof curbs/parapets.
 - .2 Sheathing grade as noted.
- .5 Ensure all lumber materials are seasoned to a maximum moisture content of 19%.

2.2 ACCESSORIES

- .1 Surface-applied wood preservative: copper naphthenate, green coloured, water repellent preservative.
- .2 Nails, spikes, and staples: to ASTM F1667 and as noted.
 - .1 Where power driven nails are used increase number of fasteners by 50% (decrease spacing by 1/3). Use same nail diameter.
- .3 Bolts: 12.5 mm diameter unless indicated otherwise, complete with nuts and washers.
- .4 Proprietary fasteners: toggle bolts, expansion shields and lag bolts, screws and lead or inorganic fibre plugs, powder actuated fastening devices, recommended for purpose by manufacturer.

- .5 Vapour retarder: polyethylene film to CGSB-51.34-M.
 - .1 Tape as recommended by manufacturer.
 - .2 Provide pre-manufactured boots for use around electrical boxes.
 - .3 Sealant: acoustical type, to ASTM C919.

2.3 FINISHES

- .1 Galvanizing: to ASTM A123/A123M, G90 for exterior work and interior highly humid areas.

3 Execution

3.1 INSTALLATION

- .1 Install members true to line, levels and elevations, square and plumb.
- .2 Construct continuous members from pieces of longest practical length.
- .3 Install spanning members with "crown-edge" up.
- .4 Select exposed framing for appearance. Install lumber and panel materials so that grade-marks and other defacing marks are concealed or are removed by sanding where materials are left exposed.
- .5 Supply fastening and anchoring devices for installation into concrete or masonry, for fastening materials specified in this section. Installation of fastening devices into concrete or masonry shall be by trade concerned.
- .6 Install furring, strapping and blocking to space-out and support casework, cabinets, wall and ceiling finishes, facings, fascia, soffit, siding, electrical equipment mounting boards, and other work. In addition to the above, install furring, strapping, and blocking required by product manufacturer's installation instructions or warranty requirements, so as to maintain warranty eligibility.
- .7 Install rough bucks, blocking, nailers, and linings for attachment of all items such as finished carpentry work, handrails, windows, specialties, washroom accessories, and miscellaneous accessories. In addition to the above, install rough bucks, blocking, nailers, and linings required by product manufacturer's installation instructions or warranty requirements, so as to maintain warranty eligibility.

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 Use nailing disks for soft sheathing as recommended by sheathing manufacturer.
- .4 Where power driven nails are used increase number of fasteners by 50% (decrease spacing by 1/3). Use same nail diameter.

3.3 SURFACE-APPLIED PRESERVATIVE TREATMENT

- .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 one minute soak on plywood.
- .3 Retreat surfaces exposed by cutting, trimming, boring, etc., with a liberal application of brush-applied preservative, before installation.

- .4 Treat wood members in contact with masonry or concrete and use sill gasket.
- 3.4 VAPOUR RETARDER INSTALLATION
- .1 Install vapour retarder on warm side of insulation and tie into other air/vapour retarder systems. Install boot around electrical boxes. Seal with sealant.
 - .2 Tape seal lap joints and areas where nails or staples penetrate vapour retarder.
- 3.5 MISCELLANEOUS CARPENTRY
- .1 Assemble, erect, and make complete, installation of all miscellaneous items of rough carpentry indicated on drawings.
 - .2 Install miscellaneous specialties normally installed by the carpenters.

END OF SECTION

2016-Jan-29

1 General

1.1 RELATED REQUIREMENTS

- .1 Section 06 10 00 - Rough Carpentry.
- .2 Section 09 29 00 - Gypsum Board.

1.2 REFERENCES

- .1 ASTM International (ASTM).
 - .1 ASTM C473-12, Standard Test Methods for Physical Testing of Gypsum Panel Products.
 - .2 ASTM C954-11, Standard Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs from 0.033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness.
 - .3 ASTM C1177/C1177M-13, Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing.
 - .4 ASTM C1280-13a, Standard Specification for Application of Exterior Gypsum Panel Products for Use as Sheathing.
 - .5 ASTM D3273-12, Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber.
 - .6 ASTM D3274-09(2013), Standard Test Method for Evaluating Degree of Surface Disfigurement of Paint Films by Fungal or Algal Growth, or Soil and Dirt Accumulation.
 - .7 ASTM E72-13a, Standard Test Methods of Conducting Strength Tests of Panels for Building Construction.
 - .8 ASTM E96/E96M-13, Standard Test Methods for Water Vapor Transmission of Materials.
- .2 Underwriters' Laboratories of Canada (ULC).
 - .1 CAN/ULC-S102-03, Method of Test for Surface Burning Characteristics of Building Materials and Assemblies.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's literature and data sheets for each type of material provided under this Section. Ensure data sheets provide required information including detailed instructions for installing as well as maintaining, preserving and keeping materials in clean and safe conditions.
- .3 Installation Instructions: Indicate special procedures, perimeter conditions requiring special attention.

1.4 SUSTAINABLE DESIGN SUBMITTALS

- .1 Construction waste management plan.
 - .1 A Construction Waste Management Plan is in place to divert waste material from landfill. Wherever practical, send waste material for reuse or recycling, and generally document this for the contractor's waste management final report.
- .2 Recycled Content.

2016-Jan-29

- .1 Refer to Section 01 47 15 - Sustainable Requirements for “List of Products Requiring Recycled Content”.
- .2 If products within this section are indicated on the “List of Products Requiring Recycled Content”, only products with recycled content will be acceptable.
- .3 For products not identified on list, source products with highest recycled content available when practical.
- .4 Include following information with product data submission.
 - .1 Percentage of pre-consumer and post-consumer recycled content for each product.
- .3 Regional Materials.
 - .1 Refer to Section 01 47 15 - Sustainable Requirements for “List of Products Required to be Locally Sourced”.
 - .2 If products within this section are indicated on the “List of Products Required to be Locally Sourced”, include following information with Product Data submission:
 - .1 Extraction/Manufacturing location(s): Indicate location of extraction site or manufacturing plant, and indicate distance between extraction site or manufacturing plant and Project site.
- .4 Adhesives and Sealants.
 - .1 Include following information with Product Data submission for materials specified under this section:
 - .1 Submit manufacturer’s certification indicating VOC limits of Products used onsite and within the building envelope. Product shall comply with California’s SCAQMD #1168.
 - .5 If requesting substitute product, ensure proposed substitution achieves above stated goals.

1.5 MAX. VOC CONTENT FOR SOLVENT CLEANING ACTIVITIES

- .1 Following are some of the Maximum allowed VOC Content for following activities, as per SCAQMD Rule 1171-9 (refer to SCAQMD manual for complete list and updates):
 - .1 Product cleaning during onsite surface preparation for coatings or adhesives application, and repair and maintenance cleaning:
 - .1 General maximum VOC 25g/L.
 - .2 Electrical apparatus components and electronic components.
 - .3 Cleaning of coatings or adhesives application equipment max. VOC 25g/L.
 - .2 Refer to SCAQMD for additional information and clarification and complete list of applications.
 - .3 Any discrepancies are to be approved by Departmental Representative. Obtain written approval prior to use on site.

1.6 DELIVERY, STORAGE AND HANDLING

- .1 Delivery and Acceptance Requirements:
 - .1 Comply with material manufacturer’s ordering instructions and lead time requirements to avoid delays.
- .2 Store materials in a manner to protect against damage from weather, direct sunlight, surface contamination, construction traffic, and other causes.
- .3 Stack sheathing flat on levelled supports off the ground and under cover. Provide sufficient supports to prevent sagging.

2016-Jan-29

- .4 Protect gypsum board panels to prevent damage to edges, ends, and surfaces.

2 Products

2.1 MATERIALS

- .1 Gypsum sheathing: to ASTM C1177/C1177M, gypsum-fibre panels with paperless faces, 1220 mm wide x maximum practical lengths, square edges, water-resistant.
 - .1 Racking Strength (Design value) (ASTM E72): minimum 7.88 kN/m (540 lb/lin. ft.).
 - .2 Flexural Strength, Parallel (ASTM C1177/C1177M): 356 N (80 lbf), parallel.
 - .3 Humidified Deflection (ASTM C473): maximum 6 mm (1/4").
 - .4 Permeance (ASTM E96/E96M): minimum 1300 ng/Pa.m² (23 perms).
 - .5 Mould resistance (ASTM D3273 and ASTM D3274): rating of 10.
 - .6 Flame spread (CAN/ULC-S102): 0.
 - .7 Smoke developed (CAN/ULC-S102): 0.
 - .8 Acceptable Materials: DensGlass Sheathing by Georgia Pacific, GlasRoc Sheathing by Certainteed (BPB), Securock Glass-Mat Sheathing by CGC.
- .2 Drywall screws: to ASTM C954, corrosion-resistant, 32 mm long, self-drilling, self-threading.

3 Execution

3.1 APPLICATION

- .1 Apply sheathing in accordance with ASTM C1280 and manufacturer's written instructions.
- .2 Cut boards at penetrations, edges, and other obstructions of work; fit tightly against abutting construction, unless otherwise indicated.
 - .1 Install boards with a 10 mm setback where non-load-bearing construction abuts structural elements.
 - .2 Install boards with a 6 mm setback where they abut masonry or similar materials that might retain moisture, to prevent wicking.
 - .3 Allow no joints greater than 3 mm.
- .3 Start securing in central portion of board and work towards ends and edges. Hold board firmly against framing member while installing. Install perimeter screws a minimum of 10 mm and maximum 13 mm from edges and ends of boards and opposite the screws on adjacent boards. Screw spacing 200 mm, or tighter if recommended by manufacturer, at field and edges.
- .4 Drive screws with a power screw gun, and set with countersunk head slightly below surface of board; but, do not cut into facing.

END OF SECTION

1 General

1.1 RELATED SECTIONS

- .1 Section 05 50 00 - Metal Fabrications: metal frame and bolts for bench.
- .2 Section 06 10 00 - Rough Carpentry: Blocking.
- .3 Section 06 40 00 - Architectural Woodwork.
- .4 Section 09 91 23 - Painting.

1.2 REFERENCES

- .1 Architectural Woodwork Manufacturers Association of Canada (AWMAC)
 - .1 Architectural Woodwork Standards - 2nd Edition, 2013.

1.3 SAMPLES

- .1 Submit samples in accordance with 01 10 01 - General Requirements.
- .2 Submit duplicate 300 mm long samples of the following materials:
 - .1 Each type of trim and moulding.
 - .2 Handrail complete with return.

1.4 SUSTAINABLE DESIGN SUBMITTALS

- .1 Construction waste management plan.
 - .1 A Construction Waste Management Plan is in place to divert waste material from landfill. Wherever practical, send waste material for reuse or recycling, and generally document this for the contractor's waste management final report.
- .2 Recycled Content.
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 - .1 Extraction/Manufacturing location(s): Indicate location of extraction site or manufacturing plant, and indicate distance between extraction site or manufacturing plant and Project site.
- .4 Adhesives and Sealants.
 - .1 Include following information with Product Data submission for materials specified under this section:

- .1 Submit manufacturer's certification indicating VOC limits of Products used onsite and within the building envelope. Product shall comply with California's SCAQMD #1168.
- .5 Paints and Coatings.
 - .1 Provide low VOC Products as specified herein and complying with local regulations regarding toxic and hazardous materials.
 - .2 Ensure primers, paints and coatings used onsite and within building envelope meet or exceed requirements of following standards:
 - .1 Interior and Exterior Paints: GS-11
 - .2 Anti-Corrosive Paint: GS-11
 - .3 Clear Wood Finishes and other coating not covered in GS-11: SCAQMD #1113.
 - .3 Submit manufacturer's certification indicating VOC limits of Products.
- .6 Composite Wood and Agrifibre Products.
 - .1 Provide composite wood and laminate adhesives specified herein manufactured with no added urea formaldehyde.
 - .2 Submit manufacturer's certification indicating no added urea formaldehyde.
- .7 If requesting substitute product, ensure proposed substitution achieves above stated goals.

1.5 MAX. VOC CONTENT FOR SOLVENT CLEANING ACTIVITIES

- .1 Following are some of the Maximum allowed VOC Content for following activities, as per SCAQMD Rule 1171-9 (refer to SCAQMD manual for complete list and updates):
 - .1 Product cleaning during onsite surface preparation for coatings or adhesives application, and repair and maintenance cleaning:
 - .1 General maximum VOC 25g/L.
 - .2 Electrical apparatus components and electronic components.
 - .3 Cleaning of coatings or adhesives application equipment max. VOC 25g/L.
 - .2 Refer to SCAQMD for additional information and clarification and complete list of applications.
 - .3 Any discrepancies are to be approved by Departmental Representative. Obtain written approval prior to use on site.

1.6 DELIVERY AND STORAGE

- .1 Store materials on site in such a way as to prevent damage, deterioration or the loss or impairment of their structural and other essential properties.
- .2 Keep in a well-ventilated place at uniform temperature of 20°C with relative humidity not more than 50%.

1.7 JOB CONDITIONS

- .1 Check job dimensions governing required openings, and fabrication of shop-made components.
- .2 Examine site conditions and surfaces for defects of work which may adversely affect the quality of workmanship of this section. Be responsible for obtaining all required field dimensions.
- .3 Commencement of work shall imply acceptance of surfaces.

2 Products

2.1 MATERIALS

.1 Lumber:

- .1 Hardwood - interior use: maple species.
- .2 Hardwood - exterior use: teak.
- .3 Ensure wood materials are kiln-dried to a moisture content ranging from 8%-12% in accordance with AWMAC.

2.2 FASTENERS

- .1 Provide all rough or builders hardware such as nails, spikes, grounds, bolts, iron works, washers, anchors, etc., herein specified or as may be required for proper completion of the work. Type to suit construction of substrate.

2.3 FABRICATION

- .1 Do finish carpentry in accordance with Architectural Woodwork Quality Standards Illustrated, except where specified otherwise.
- .2 Carefully select materials scheduled to receive stain or varnish for colour and grain to ensure they are well matched.
- .3 Make joints square, neat and tight-fitting.
- .4 Workmanship, fabrication, preparation and installation shall conform throughout to acceptable good practice.
- .5 Countersink exposed nails and screws, and putty flush or cap flush with matching wood plug.
- .6 Use nails, screws, bolts and fasteners of the best grade commercially available; of sufficient size and length to adequately support and securely anchor materials permanently in place under conditions of exposure and use intended.
- .7 Make allowance in fabrication of work for proper fitting to areas in which they are to be installed.

2.4 FINISH CARPENTRY ITEMS

- .1 Contractor is responsible for all finish carpentry items shown and specified. Refer to drawings for location, layout and details of all miscellaneous items. Finish carpentry items consist of but are not limited to:
 - .1 Standing and running trim: hardwood.
 - .1 Profiles: as indicated on drawings.
 - .2 Interior bench planks: hardwood.
 - .1 Benches located in Rooms 101, 128B, 130B, 161, 162, 164.
 - .3 Exterior bench planks: Teak; sanded, unfinished.

3 Execution

3.1 INSTALLATION

- .1 Do finish carpentry in accordance with AWMAC, except where specified otherwise.

- .2 Scribe and cut as required to fit abutting walls and surfaces; to fit properly into recesses and to accommodate piping, columns, fixtures, outlets, other projecting, intersecting or penetrating objects. Provide cutouts through this work as required by other trades.
 - .3 Form joints to conceal shrinkage.
 - .4 Fastening.
 - .1 Position items of finished carpentry work accurately, level, plumb, true and fasten or anchor securely.
 - .2 Design and select fasteners to suit size and nature of components being joined. Use proprietary devices as recommended by manufacturer.
 - .3 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.
 - .4 Replace damaged items of finish carpentry, including wood surfaces with hammer marks and other bruises.
 - .5 Standing and running trim.
 - .1 Butt and cope interior corners to make snug, tight, joint; mitre exterior corners.
 - .2 Fit backs of baseboards and casing snugly to wall surfaces to eliminate cracks at junction of base and casing with walls.
 - .3 Joints in baseboard, chair rails and dado cap, where necessary, using 45° scarf type joint.
 - .6 Assemble, erect and make complete, installation of all items of miscellaneous wood finish and trim as indicated or specified.
- 3.2 ADJUST AND CLEAN
- .1 Inspect work, and make good, repair and replace unsatisfactory or damaged work and materials as directed by the Departmental Representative at no increase in contract price.

END OF SECTION

1 General

1.1 RELATED SECTIONS

- .1 Section 05 50 00 - Metal Fabrications: steel framing supports.
- .2 Section 06 10 00 - Rough Carpentry: Blocking.
- .3 Section 06 20 00 - Finish Carpentry.
- .4 Section 08 11 16 - Aluminum Doors and Frames: aluminum framing at counter.
- .5 Section 08 80 00 - Glazing: security glazing and speaker port.

1.2 REFERENCES

- .1 American National Standards Institute (ANSI).
 - .1 ANSI/BHMA A156.9-2010, Cabinet Hardware.
- .2 ASTM International (ASTM).
 - .1 ASTM F1667-11, Standard Specification for Driven Fasteners: Nails, Spikes, and Staples.
- .3 Architectural Woodwork Manufacturers Association of Canada (AWMAC)
 - .1 Architectural Woodwork Quality Standards Illustrated, Eighth Edition, 2005.
- .4 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-19.22-M89, Mildew-Resistant Sealing Compound for Tubs and Tiles.
- .5 Canadian Standards Association (CSA)
 - .1 CSA O115-M1982 (R2001), Hardwood and Decorative Plywood.
 - .2 CSA O141-05(R2009), Softwood Lumber.
- .6 National Electrical Manufacturers Association (NEMA)
 - .1 LD 3-2005, High-Pressure Decorative Laminates.
- .7 National Hardwood Lumber Association (NHLA)
 - .1 Rules for the Measurement and Inspection of Hardwood and Cyprus, January 2015.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with 01 10 01 - General Requirements.
- .2 Shop drawings:
 - .1 Indicate plans and elevations; cross-reference to applicable room number.
 - .2 Indicate details of construction, profiles, jointing, fastening and other related details.
 - .1 Scales: profiles full size, details 1/2 full size.
 - .3 Indicate materials, thicknesses, finishes and hardware.
 - .4 Indicate locations of service outlets in casework, typical and special installation conditions, and connections, attachments, anchorage and location of exposed fastenings.
 - .5 Indicate required field dimension.
- .3 Samples:
 - .1 Provide duplicate samples of the following.
 - .1 Shop finish materials, showing each type of finish and colour.

- .2 Panel products: 300 mm x 300 mm size.
- .3 Solid wood products: 300 mm long.
- .4 Materials not included on mock-up: 200 mm x 200 mm.
- .5 Submit one of each type of hardware not included on mock-up.
- .2 Submit duplicate samples of complete colour range for each type of plastic laminate.
- .4 Closeout submittals:
 - .1 Provide maintenance data for plastic laminate work for incorporation into manual.

1.4 SUSTAINABLE DESIGN SUBMITTALS

- .1 Construction waste management plan.
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- .2 Recycled Content.
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 - .1 Include following information with Product Data submission for materials specified under this section:
 - .1 Submit manufacturer's certification indicating VOC limits of Products used onsite and within the building envelope. Product shall comply with California's SCAQMD #1168.
- .5 Paints and Coatings.
 - .1 Provide low VOC Products as specified herein and complying with local regulations regarding toxic and hazardous materials.
 - .2 Ensure primers, paints and coatings used onsite and within building envelope meet or exceed requirements of following standards:
 - .1 Interior and Exterior Paints: GS-11
 - .2 Anti-Corrosive Paint: GS-11
 - .3 Clear Wood Finishes and other coating not covered in GS-11: SCAQMD #1113.
 - .3 Submit manufacturer's certification indicating VOC limits of Products.

- .6 Composite Wood and Agrifibre Products.
 - .1 Provide composite wood and laminate adhesives specified herein manufactured with no added urea formaldehyde.
 - .2 Submit manufacturer's certification indicating no added urea formaldehyde.
- .7 If requesting substitute product, ensure proposed substitution achieves above stated goals.

1.5 QUALITY STANDARDS

- .1 The Architectural Woodwork Quality Standards Illustrated manual by the Architectural Woodwork Manufacturers Association of Canada, hereafter referred to as the Manual, together with authorized additions and amendments, shall be used as a reference standard and shall form part of this specification.
- .2 Construct wood casework to requirements for Custom Grade work as specified in the Manual.
- .3 Any reference to Custom Grade in this section shall be as defined in the Manual.
- .4 A copy of the AWMAC Architectural Woodwork Quality Standards Illustrated manual shall be made readily available for reference purposes.

1.6 MOCK-UPS

- .1 Submit full size mock-up of wall and base cabinet complete with door, drawer and hardware. Materials shall be of those specified for this project. Include work top.
- .2 Allow 48 hours for review of mock-up by Departmental Representative.
- .3 Any work which does not comply with the mock-up will be rejected. Make revisions to mock-ups as directed by Departmental Representative.
- .4 Departmental Representative's decision as to compliance with the mock-up will be final.
- .5 After acceptance, mock-ups will demonstrate minimum standard for this work. Cabinet mock-ups may be incorporated into work.

1.7 MAX. VOC CONTENT FOR SOLVENT CLEANING ACTIVITIES

- .1 Following are some of the Maximum allowed VOC Content for following activities, as per SCAQMD Rule 1171-9 (refer to SCAQMD manual for complete list and updates):
 - .1 Product cleaning during onsite surface preparation for coatings or adhesives application, and repair and maintenance cleaning:
 - .1 General maximum VOC 25g/L.
 - .2 Electrical apparatus components and electronic components.
 - .3 Cleaning of coatings or adhesives application equipment max. VOC 25g/L.
 - .2 Refer to SCAQMD for additional information and clarification and complete list of applications.
 - .3 Any discrepancies are to be approved by Departmental Representative. Obtain written approval prior to use on site.

1.8 DELIVERY, STORAGE, AND HANDLING

- .1 Deliver, handle, store and protect materials of this section in accordance with Division 1.
- .2 Deliver and store in ventilated areas, protected from extreme changes of temperature or humidity.
- .3 Ship in largest practical sections.

- .4 Protect during shipment to prevent damage. Cover finished plastic laminate surfaces with heavy kraft paper or put in cartons during shipment.
- .5 Deliver into building; uncrate and place in proper location.
- .6 Protect installed units by covering with an opaque covering that does not allow light penetration. Covering shall allow air circulation. Do not remove until immediately before final inspection.

1.9 ENVIRONMENTAL CONDITIONS

- .1 Store and install materials in areas where relative humidity is not less than 25% or greater than 55% at 21°C.

2 Products

2.1 LUMBER MATERIALS

- .1 Softwood lumber: to CSA O141, sound, dry and stable; of species selected by architectural woodwork manufacturer.
- .2 Hardwood lumber: to National Hardwood Lumber Association (NHLA) requirements, to AWMAC custom grade; maple.

2.2 SHEET MATERIALS

- .1 Adhesive used in panel products shall be formaldehyde free.
- .2 Hardwood plywood: to CSA O115-M; birch veneer, grade and core as indicated. Use Type II bond.
- .3 Poplar plywood (PP): to CSA O153, veneer core construction.

2.3 PLASTIC LAMINATE

- .1 Plastic laminate: to NEMA LD 3, grades as specified. Only use laminate from one manufacturer unless approved by Departmental Representative.
- .2 General purpose grade: Standard grade (HGS); 1.2 mm thick; satin finish unless noted otherwise.
 - .1 Colours: as selected by Departmental Representative; to a maximum of seven (7).
- .3 Post forming grade : horizontal use (HGP), 1.0 mm thick; satin finish unless noted otherwise.
 - .1 Colours: as selected by Departmental Representative; to a maximum of three (3).
- .4 Backing grade: of same thickness and colour as face laminate. Sanded one side.
- .5 Liner sheet: 0.75 mm thick, white colour.
- .6 Plastic laminate adhesive: Low VOC type.

2.4 SOLID SURFACING MATERIALS

- .1 Solid surfacing: manufactured from acrylic/polyester resins.
- .2 Thickness: 13 mm thick.
- .3 Edge: laminate multiple layers and route to provide edge as detailed.
- .4 Pattern: stone pattern, matte finish.

- .5 Colours: as selected by Departmental Representative; to a maximum of two (2).

2.5 HARDWARE

- .1 Drawer slides:
 - .1 Bottom mounted: "European" style, capacity as indicated, epoxy coated steel runners, nylon rollers, positive stop, lift-out disconnect, full extension, 34 kg capacity.
 - .2 Side mounted: heavy duty side mounted; ball-bearing action, full extension, 90 kg capacity, zinc finish.
- .2 Hinge: to ANSI/BHMA A156.9.
 - .1 Concealed type: Type B01601, 120° opening, (170° where indicated) self-closing, removable arm, mounting plate to suit conditions, nickel finish.
 - .1 Acceptable Materials: Clip System by Blum, Series 4000 by Hettich.
- .3 Lock:
 - .1 Utility: die cast cylinder, with key removable in locked or unlocked position, cam of style to suit, satin nickel/chrome finish.
 - .2 Elbow catch: to ANSI/BHMA A156.9, Type B03023, cast brass or bronze.
- .4 Pull:
 - .1 Recessed door/drawer pull: extruded aluminum with end caps, satin chrome finish, 96 mm c/c with 109 mm overall length x 44 mm high x 11 mm recess.
- .5 Shelf hardware:
 - .1 Shelf standards and rests: to ANSI/BHMA A156.9, steel, nickel finish
 - .1 Standard: Type B04071, mortise application, adjustable on 13 mm centres.
 - .2 Shelf rest: Type B04091.
 - .2 Shelf support pin: plastic; design to lock shelf in place to prevent tipping; colour as selected by Departmental Representative.

2.6 MISCELLANEOUS ITEMS

- .1 Fasteners:
 - .1 Nails and staples: to ASTM F1667.
 - .2 Wood screws: type and size to suit application.
- .2 Bumpers: clear silicone; self-adhesive application.
- .3 Grommets: 75 mm diameter, plastic, black colour.
- .4 Sealant: Mildew resistant silicone; CAN/CGSB-19.22-M; colour as selected by Departmental Representative.
- .5 Stainless steel sheet: to ASTM A240, 18-8, Type 304, No. 4 - brushed finish on exposed surfaces.
- .6 Vented security cover: fabricated from 1.6 mm thick stainless steel, with 10 mm diameter holes on 6 mm staggered centers. Secure with thru-bolts at 200 mm o.c. maximum.

2.7 CASEWORK

- .1 AWMAC Quality Grade: custom.
- .2 Casework shall conform to AWMAC Design Details for flush overlay construction.

- .3 Case bodies: plywood construction.
 - .1 Ends/dividers/bottom: 19 mm; exposed surfaces to match door finish.
 - .2 Back: 11 mm where against the wall; 19 mm where exposed.
- .4 Drawer:
 - .1 Front: Flush design; 19 mm thick plywood with plastic laminate finish. Edge band all four edges.
 - .2 Box: 11 mm thick plywood sides; 6 mm bottom.
- .5 Door: Flush design; 19 mm plywood with plastic laminate finish. Edge band all four edges.
- .6 Shelf:
 - .1 Plastic laminate finish: 19 mm thick plywood; 25 mm thick where span is greater than 900 mm and where indicated. Laminate on top and bottom. All edges of adjustable shelves to have edge banding.
- .7 Edge banding: plastic laminate of grade to match face laminate. Do not mitre edges of laminate.
- .8 Provide mouldings and trim.

2.8 WORK TOPS

- .1 Plastic laminate tops:
 - .1 Tops: of maximum practical length; with 100 mm high backsplash; backing grade laminate on underside; edge style and face laminate as follows:
 - .1 Edge style:
 - .1 Square, self-edged with HGS laminate.
 - .2 Radius, with HGP laminate.
 - .2 Backsplash: square with scribe.
 - .2 Radius inside corners of cut-outs a minimum 3 mm to prevent radial cracking. File edges of radius smooth and free of cracks and crazes.
 - .3 Paint surfaces of core, that have been exposed due to cut-outs for items such as hardware, fittings or grilles, to match face laminate.
- .2 Polished concrete counter tops: refer to Article 2.9.
- .3 Stainless steel clad products:
 - .1 Substrate: plywood.
 - .2 Finish: 1.6 mm thick stainless steel sheet.
 - .1 Welding: electric seamless using low carbon filler rod containing sufficient chromium and nickel to give approximately the same composition in welds as adjoining parts; use Heli-arc welding method wherever practical. Grind welds smooth and make invisible.
 - .2 Workmanship: free from pits, cracks, discolouration and other mechanical imperfections.

2.9 POLISHED CONCRETE

- .1 Concrete mix: low shrinkage; high early strength design; specific for counter tops.
- .2 Aggregate size and colour: natural stone as selected by Departmental Representative.
- .3 Dye: translucent, colour as selected by Departmental Representative.
- .4 Polish to high gloss finish using 3500 grit diamond grinds. After polishing, apply impregnating sealer.

- .5 Polished concrete items: design and provide following concrete items.
 - .1 Counter top:
 - .1 Reinforcement: provide either type of reinforcing.
 - .1 Integral fibres: alkali-resistant glass fibres, manufactured for use on architectural precast concrete.
 - .2 Grid: steel or carbon grid located near bottom of countertop
 - .2 Integral sink:
 - .1 Bowl dimensions (inside dimensions): 735 mm x 394 mm x 174 mm deep, manufacturer's standard wall thickness.
 - .2 Coordinate holes for fixtures and drains with plumbing.
 - .2 Bench ends.

2.10 FACTORY FINISH

- .1 Laminate finish: grade and type of laminate as indicated for the following surfaces:
 - .1 Vertical surfaces: HGS on exposed surfaces; liner sheet on semi-exposed surfaces; backing grade for concealed surfaces.
 - .2 Horizontal surfaces: HGP for surfaces with radiused edges; HGS elsewhere.

2.11 FABRICATION - GENERAL

- .1 Start fabrication only after shop drawings have been reviewed and when related submittals and samples have been accepted by Departmental Representative.
- .2 Factory-assemble casework in accordance with AWMAC Custom Grade.
- .3 Obtain governing dimensions before fabricating items which are to accommodate or abut appliances, equipment and other materials.
- .4 Verify field dimensions prior to construction.
- .5 Make allowance in fabrication of casework for proper fitting to areas in which they are to be installed.
- .6 Securely glue and mechanically fasten joints. Set nails and countersink screws in exposed surfaces. Install filler/plug to indentations, sand smooth and leave ready to receive finish. Keep fasteners in exposed surfaces to a minimum.
- .7 Fabricate fillers to size as required. Provide fillers at cabinet faces, tops, bottoms and corners.
- .8 Provide cutouts for plumbing fixtures, inserts, appliances, outlet boxes and other fixtures.
- .9 Shop assemble work for delivery to site in size easily handled and to ensure passage through building openings.
- .10 Ensure adjacent parts of continuous laminate work match in colour and pattern.
- .11 Solid surface fabrication:
 - .1 Using one piece where possible. If seams are necessary, accurately machine for hairline fit and bond using adhesive.
 - .2 Sand and buff to create seamless appearance.

2.12 CASE FABRICATION

- .1 Fabricate cases with backs and ends. Open ends or skeleton frames against walls are not permitted.
- .2 Attach tops with concealed screws, metal clips or other fastening system approved by Departmental Representative.

- .3 Provide 13 mm concealed wood nailing strips at case backs; not required for backs 13 mm and thicker.
- .4 Fabricate base of casework using lumber or plywood.

2.13 HARDWARE INSTALLATION

- .1 Factory install hardware wherever possible.
- .2 Mortise cabinet shelf standards so face is flush with panel.
- .3 Hardware schedule:
 - .1 Drawers:
 - .1 File drawers: equip with side-mounted drawer slides, pull and lock.
 - .2 Remainder: equip with bottom-mounted drawer slides, pull and lock.
 - .2 Swinging doors:
 - .1 Up to 900 mm high: equip with two (2) concealed hinges, pull and lock
 - .2 901 mm to 1600 mm high: equip with three (3) concealed hinges, pull and lock.
 - .3 1601 mm to 2000 mm high: equip with four (4) concealed hinges, pull and lock.
 - .3 Provide two (2) bumpers per drawer and door leaf.
 - .4 Other hardware as required or indicated.

3 Execution

3.1 JOB CONDITIONS

- .1 Job conditions for installation of wood casework shall be as specified under Part 6, Item 3 of AWMAC Quality Standards.

3.2 INSTALLATION

- .1 Install architectural woodwork in close cooperation with other trades. Provide cutouts through this work as required by other trades.
- .2 Install work using qualified workmen under the supervision of a full-time trained supervisor.
- .3 Securely anchor casework to walls and other finished work using concealed anchors or fasteners. Fasten into stud backup. Anchor shelving units to walls as indicated.
- .4 Install square, level and plumb.
- .5 Carefully fit work, and scribe to walls and other finished work so as not to damage surface. Make good walls and other work that has become needlessly damaged or disturbed, to approval of Departmental Representative.
- .6 Install filler panels, back panels, trim and scribe moulding to make a complete and finished installation.
- .7 Installation shall include handling and placing of units in proper locations and disassembling and reassembling, where required, to move them through doorways, etc., without damage to finish work of other trades.
- .8 At junction of plastic laminate counter back splash and adjacent wall finish, apply small bead of sealant.

3.3 ADJUST AND CLEAN

- .1 Upon completion, clean surfaces of dirt, dust and contamination, and leave casework ready for finishing.
 - .1 Clean insides of cabinets and drawers as well as exterior surfaces.
 - .2 Clean and polish glass surfaces.
- .2 Inspect work, and make good, repair and replace unsatisfactory or damaged work and materials as directed by Departmental Representative at no additional cost.
- .3 Adjust drawers, doors and hardware at completion of work, and leave in full working condition.

3.4 PROTECTION

- .1 Protect items from damage until final inspection.

END OF SECTION