

## **PART 1 GENERAL**

### **1.1 REFERENCES**

- .1 American Society for Testing and Materials International (ASTM)
  - .1 ASTM A307-14e1, Standard Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength.
  - .2 ASTM C954-15, 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 D2559-12ae1 Standard Specification for Adhesives for Bonded Structural Wood Products for Use Under Exterior Exposure Conditions.
  - .4 ASTM F1667-17, Standard Specification for Driven Fasteners: Nails, Spikes, and Staples.
- .2 American Wood Preservers Association (AWPA):
  - .1 AWPA Book of Standards, 2017.
- .3 Canadian Standards Association (CSA International)
  - .1 CAN/CSA O80 Series-15, Wood Preservation
  - .2 CSA O86-14, Engineering Design in Wood, Includes Update No. 1 (2016), Update No. 2 (2017).
  - .3 CSA O121-17, Douglas Fir Plywood.
  - .4 CSA O141-05 (R2014), Softwood Lumber.
  - .5 CAN/CSA O325-16, Construction Sheathing.
  - .6 CSA S16-14, Design of steel structures, Includes Update No. 1 (2016).
- .4 National Lumber Grading Association (NLGA):
  - .1 Standard Grading Rules for Canadian Lumber 2014.
- .5 Underwriters' Laboratories of Canada (ULC)
  - .1 CAN/ULC S102-10, Method of Test for Surface Burning Characteristics of Building Materials and Assemblies.

### **1.2 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Submit product data in accordance with Division 01: Procedures:
  - .1 Submit manufacturer's printed product literature, specifications and data sheets.
  - .2 Submit MSDS sheets or official manufacturer literature stating no added urea-formaldehyde was used in the manufacturing of composite wood.

### **1.3 QUALITY ASSURANCE**

- .1 Lumber identification: Grade stamp of an agency certified by the Canadian Lumber Standards Accreditation Board.
- .2 Plywood identification: Grade mark in accordance with applicable CSA standards.

## 1.4 DELIVERY, STORAGE, AND HANDLING

- .1 Deliver wood products bundled or crated to provide adequate protection during transit. Inspect wood products for damage upon delivery and remove and replace damaged materials.
- .2 Store materials a minimum of 150 mm off the ground on blocking. Keep materials under cover and dry. Provide for air circulation within and around stacks and under temporary coverings.
- .3 Protect sheet materials to prevent breaking of corners and damage to surfaces.

## PART 2 GENERAL

### 2.1 GRADES

- .1 Use CLS grade marked lumber conforming to the Standard Grading Rules for Canadian Lumber published by the National Lumber Grades Authority.

### 2.2 LUMBER

- .1 Lumber: Stud Grade to CAN/CSA O141, softwood, S-P-F, S4S, graded and stamped in accordance with National Lumber Grading Association (NLGA) Standard Grading Rules for Canadian Lumber and as follows:
  - .1 Moisture Content: maximum 8% at time of installation.
  - .2 Maximum moisture content when used for attachment of drywall: 8%.
  - .3 Stud (No.3) Grade or better, having the following minimum properties:
    - .1 Sizes: 38 mm or 89 mm wide by maximum 140 mm depth as noted on drawings.
    - .2 Bending at extreme fibre ( $F_b$ ): 7.0 MPa.
    - .3 Longitudinal shear ( $F_v$ ): 1.0 MPa.
    - .4 Compression parallel to grain ( $F_c$ ): 7.0 MPa.
    - .5 Compression perpendicular to grain ( $F_{cp}$ ): 5.3 MPa.
    - .6 Tension parallel to grain ( $F_t$ ): 3.2 MPa.
    - .7 Modulus of elasticity ( $E/E_{05}$ ): 9000/5500 MPa.
    - .8 Finger jointed material will not be acceptable without written acceptance from the Departmental Representative.
- .2 Lumber: Structural Light Framing and Structural Joists and Planks to CAN/CSA O141, softwood, S-P-F, S4S, graded and stamped in accordance with National Lumber Grading Association (NLGA) Standard Grading Rules for Canadian Lumber and as follows:
  - .1 Moisture Content: maximum 8% at time of installation.
  - .2 Maximum moisture content when used for attachment of drywall: 8%.
  - .3 Grade: No. 2 or better, and having the following minimum properties:
    - .1 Sizes: 38 mm or 89 mm wide by depth as indicated on drawings.
    - .2 Bending at extreme fibre ( $F_b$ ): 11.8 MPa.
    - .3 Longitudinal shear ( $F_v$ ): 1.0 MPa.
    - .4 Compression parallel to grain ( $F_c$ ): 11.5 MPa.
    - .5 Compression perpendicular to grain ( $F_{cp}$ ): 4.6 MPa.
    - .6 Tension parallel to grain ( $F_t$ ): 5.5 MPa.
    - .7 Modulus of elasticity ( $E/E_{05}$ ): 9500/6500.

### **2.3 PANEL MATERIALS**

- .1 Sheathing for structural shear wall and diaphragms:
  - .1 Plywood: Douglas Fir (DFP) Exterior Grade, to CSA O121, thickness as indicated on drawings.
- .2 Exterior Grade Plywood: Douglas Fir (DFP) Exterior Grade, to CSA O121, thickness as shown on drawings, or as required to suit purpose and conditions if not indicated, to National Building Code of Canada (NBC) 2015.
- .3 Fire Rated Plywood, to CSA O325, Class A fire retardant produced under Performance Standard PS-1, certified by the American Plywood Association.
  - .1 Fire-Rated Materials: ULC-labelled fire resistant, provide grade stamp or certification as noted for fire retardant pressure treated lumber.
- .4 Panels shall have no added urea formaldehyde.
- .5 Interior sheathing shall be ULC-labelled fire resistant, provide grade stamp or certification as noted for fire retardant pressure treated lumber.
- .6 All plywood used in sub-flooring assembly shall be T&G Unsanded Sheathing Grade Phenolic Bonded Douglas fir Plywood with staggered joints.
- .7 Underlayment:
  - .1 Plywood to CSA O325, 10 mm thick S1S, with no knot fillers detrimental to areas to receive finish floor products, meeting the requirements of ASTM F1482 at minimum.
- .8 Plywood Sheathing (Roof): Douglas Fir (DFP), Exterior Grade, to CSA O121, T&G Edges, 19 mm thick.

### **2.4 MISCELLANEOUS LUMBER**

- .1 Provide lumber for support or attachment of other construction, including furring, blocking, nailing strips, ground, rough bucks, cants, curbs, fascia, backing sleepers, and similar members.
- .2 Fabricate miscellaneous lumber from dimension lumber of sizes indicated, and into shapes shown on drawings.
- .3 Moisture Content: 19% maximum for lumber items not specified to receive wood preservative treatment.
- .4 Grade: for dimension lumber sizes provide No. 2 or Standard grade lumber per NLGA. For board-sized lumber, provide sheathing grade, S2S.

### **2.5 WOOD PRESSURE TREATMENTS**

- .1 Where lumber or plywood is indicated as preservative treated or is specified to be treated, treat in accordance with CAN/CSA O80.9M and AWWA.
- .2 Wood preservatives containing arsenic or chromium are not permitted.

- .3 Pressure treat above ground items with Copper Azole (CA-B) preservative to a minimum AWWA retention of 1.6 kg/m<sup>3</sup>. After treatment, kiln-dry lumber and plywood to maximum moisture content of 19% and 15% respectively. Treat indicated items and the following:
  - .1 Wood cants, nailing strips, curbs, equipment support bases, blocking, stripping, and similar members in connection with roofing, flashing, vapour barriers, and waterproofing.
  - .2 Wood sills, sleepers, blocking, furring, stripping, and similar concealed members in contact with masonry and concrete.
  - .3 Wood framing members less than 460 mm above grade.
  - .4 Wood floor plates installed over concrete slabs directly in contact with earth.
- .4 Pressure treat wood members in contact with ground or freshwater with Copper Azole (CA-B) preservative to a minimum AWWA retention of 3.4 kg/m<sup>3</sup>
- .5 Complete fabrication of treated items before treatment where possible. If cut after treatment apply field treatment to cut surfaces.
- .6 Wood Preservatives: Maximum allowable VOC limit 350 g/L in accordance with SCAQMD Rule #1113 - Architectural Coatings.
- .7 Fire-Retardant Treatment: to CAN/SCA O80.9M, CAN/CSA O80.20M and CAN/CSA O80.27M, pressure impregnated, and as follows:
  - .1 Flame Spread Classification: FSC 25 maximum.
  - .2 Smoke developed of not more than: 75.

## **2.6 METAL FRAMING CONNECTORS AND HANGERS**

- .1 Fabricated zinc coated steel products tested or designed in accordance with CSA O86 and CSA S16. Types and products as indicated on drawings.

## **2.7 ACCESSORIES**

- .1 Sealants: in accordance with Section 07 92 00 – Joint Sealants. Maximum allowable VOC limit 250 g/L in accordance with SCAQMD Rule 1168.
- .2 General purpose adhesive: structural construction adhesive, to ASTM D2559. Maximum allowable VOC limit 70 g/L in accordance with SCAQMD Rule 1168.
- .3 Nails, spikes, and staples: to ASTM F1667, double hot dipped galvanized for exterior work and pressure preservative and fire retardant treated materials; hot dipped galvanized for all other purposes.
- .4 Screws for Fastening to Cold-Formed Metal Framing: ASTM C954, except with wafer heads and reamer wings, length as recommended by screw manufacturer for material being fastened.
- .5 Rough Hardware (bolts, nuts, washers, etc.): hot dip galvanized in conformity to CSA G164 or Grade A low carbon steel, conforming to ASTM A307.
- .6 Proprietary fasteners: toggle bolts, expansion shields and lag bolts, screws and lead plugs, recommended for purpose by manufacturer.
- .7 Joist hangers: minimum 1 mm thick sheet steel, galvanized ZF001 coating designation.

- .8 Roof sheathing H-Clips: formed "H" shape, thickness to suit panel material, extruded 6063-T6 aluminum alloy type approved by Departmental Representative.

### **PART 3 EXECUTION**

#### **3.1 CONSTRUCTION REQUIREMENTS - GENERAL**

- .1 Work shall be executed to meet or exceed the requirements of National Building Code of Canada (NBC) 2015, Part 9, and the requirements of this Section. Refer to structural drawings and specifications for structural elements.

#### **3.2 INSTALLATION**

- .1 Comply with requirements of NBC Part 9 supplemented by following paragraphs.
- .2 Install members true to line, levels and elevations, square, plumb, level and true.
- .3 Construct continuous members from pieces of longest practical length.
- .4 Install spanning members with crown-edge up.
- .5 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.
- .6 Install subflooring and combined subfloor and underlay with panel end-joints located on solid bearing, staggered at least 800 mm.
- .1 Secure floor subflooring to floor joists using screws and construction adhesive. Place continuous adhesive bead in accordance with manufacturer's instructions, single-bead on each joist and double-bead on joists where panel ends butt.
- .7 Install blocking at locations indicated to support washroom accessories.
- .8 Install wall sheathing in accordance with manufacturer's printed instructions.
- .9 Install roof sheathing in accordance with requirements of NBC.
- .10 Install furring and blocking as required to space-out and support casework, cabinets, wall and ceiling finishes, facings, fascia, soffit, siding, electrical equipment mounting boards, and other work as required.
- .11 Install rough bucks, nailers and linings to rough openings as required to provide backing for frames and other work.
- .12 Use dust collectors and high-quality respirator masks when cutting or sanding wood panels.

#### **3.3 WOOD FRAME CONSTRUCTION**

- .1 Space framing members as required to meet or exceed NBC. Construct members of continuous pieces of longest possible length.
- .2 Provide 38 x 89 mm blocking at 610 mm on centre between engineered floor joists for lateral support of wall plates where walls run parallel to joists.
- .3 Make allowance for erection stresses. Securely brace members in place to maintain plumb and true until permanently fixed and held to structure.

- .4 Install fire-blocking as detailed.
- .5 Fabricate wood frame construction to the requirements of the NBC, Part 9, except where more stringent requirements are indicated on the drawings.
- .6 Minimum sizes and spacing of members, thickness of materials, allowable species and lumber grades, shall meet the requirements of the above noted standards, unless indicated or specified otherwise.
- .7 Minimize cutting of framing members for pipes, etc. by prior consultation with other trades. Cutting limitations in accordance with Part 9 of the Building Code.
- .8 Construct framing as necessary to accommodate the work of other trades.

### **3.4 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.

### **3.5 FASTENINGS AND ROUGH HARDWARE**

- .1 Unless indicated otherwise, fasten to hollow masonry units with toggle bolts; to solid masonry or concrete surfaces with expansion shields and bolts.
- .2 Where screws are required use lead or inorganic fibre plugs. Wood or organic plugs not permitted.
- .3 Powder actuated fasteners may be used in lieu of bolts if approved by the Departmental Representative in writing prior to materials arriving on site.
- .4 Provide all rough hardware such as nails, bolts, nuts, washers, screws, clips and strap metal.

### **3.6 SHEATHING INSTALLATION**

- .1 Install wall sheathing horizontally to wood framing using minimum 50 mm long coated nails at 150 mm along edges and 305 mm along vertical members in the middle of the sheets.
- .2 Leave 2 mm to 3 mm between sheets to allow for shrinkage of wood framing.
- .3 Install blocking behind all sheathing joints.

### **3.7 MISCELLANEOUS**

- .1 Install wood stud framing for temporary weather closure and cladding. Construct to resist wind pressures.

### **3.8 EXTERIOR CARPENTRY WORK**

- .1 Construct exterior work using hot dip galvanized nails, screws or bolts. Bolts, nuts and washers shall be hot dip galvanized.
- .2 Plane all sides and backs; sand exposed faces and surfaces, round all edges to prevent checking of edges.

- .3 Countersink bolts and washers, fill holes with matching wood plugs.
- .4 Apply two liberal coats of clear surface applied wood preservative, allowing the first coat to soak in completely prior to applying second coat in accordance with manufacturers instructions.

### **3.9 PRESSURE PRESERVATIVE TREATED WOOD INSTALLATION**

- .1 Re-treat surfaces exposed by cutting, trimming or boring with liberal brush application of preservative before installation. Allow first coating to fully soak into grain before applying second coating in accordance with manufacturer's instructions.
- .2 Remove with fine sandpaper chemical deposits on treated wood to receive applied finish.
- .3 Use only hot dipped galvanized, corrosion resistant nail or screw fasteners. Staples are not acceptable for installation of preservative treated materials.
- .4 Use water borne preservative treated wood for:
  - .1 Wood in contact with masonry or concrete,
  - .2 Wood within 450 mm of grade,
  - .3 Wood decking and fence boards,
  - .4 Wood in contact with flashings
  - .5 Wood in contact with waterproofing membranes, confirm compatibility with membrane manufacturer prior to application.
- .5 Use oil borne preservative treated wood for:
  - .1 Wood in contact with the ground,
  - .2 Wood in contact with freshwater,
  - .3 Landscaping timbers,
  - .4 Retaining walls,
  - .5 Piers or docks,
  - .6 Pilings,
  - .7 Bases of utility poles,
  - .8 Bases of fence posts.

### **3.10 FIRE RETARDANT TREATED WOOD INSTALLATION**

- .1 Install as indicated, as required by NBC 2015, and/or as directed by authorities having jurisdiction.
- .2 Field Cuts:
  - .1 Do not rip, mill or conduct extensive surfacing of fire retardant treated lumber, label will be voided.
  - .2 Only end cuts, drilling holes and joining cuts are permitted.
  - .3 All cuts on plywood will be considered end cuts.
  - .4 Fire-retardant lumber and plywood can be given a light sanding for cosmetic cleaning after treatment.
  - .5 Pre-cut to the greatest extent possible before treating.
- .3 Fire retardant treated plywood used in structural applications shall be graded or span-rated material.
- .4 Use only hot-dipped galvanized, corrosion resistant nail or screw fasteners. Staples are not acceptable for installation of fire resistant treated materials.

- .5 Where humidity conditions are such that moisture may condense between hardware and treated wood, hardware shall be back-primed with a corrosive inhibitive paint.

### **3.11 POWER, TELECOMMUNICATIONS AND DATA PANEL BOARDS**

- .1 Install 19 mm thick Fire Rated Plywood Panels on walls behind electrical, telephone and data rooms receiving wiring and equipment; minimum 1220 mm x 2440 mm panels on periphery walls over 300 mm wide, mounted 150 mm off of finished floor.

### **3.12 CLEANING**

- .1 Progress Cleaning: clean in accordance with Division 01: Cleaning. Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Division 01: Cleaning. Perform cleaning after installation to remove construction and accumulated environmental dirt.
- .3 Manage and dispose of demolition and construction waste materials in accordance with Division 01: Construction/Demolition Waste Management and Disposal.

### **3.13 PROTECTION**

- .1 Protect installed products and components from damage during construction.
- .2 Repair damage to adjacent materials caused by Work of this Section.

**END OF SECTION**

## **PART 1 GENERAL**

### **1.1 REFERENCE STANDARDS**

- .1 American National Standards Institute (ANSI)
  - .1 ANSI A208.2-2009, Medium Density Fibreboard (MDF) for Interior Applications.
- .2 ASTM International
  - .1 ASTM F1667-17, Standard Specification for Driven Fasteners: Nails, Spikes, and Staples.
- .3 Architectural Woodwork Manufacturers Association of Canada (AWMAC)
  - .1 AWMAC Architectural Woodwork Standards, 2<sup>nd</sup> Edition and Errata.
- .4 Canadian Plywood Association (CanPly)
  - .1 The Plywood Handbook.
- .5 CSA Group (CSA)
  - .1 CSA O115-M1982(R2001), Hardwood and Decorative Plywood.
  - .2 CSA O121-17, Douglas Fir Plywood.
  - .3 CSA O141-05 (R2014), Softwood Lumber.
  - .4 CSA O151-17, Canadian Softwood Plywood.
- .6 National Hardwood Lumber Association (NHLA)
  - .1 Standard Grading Rules for Canadian Lumber.
  - .2 Rules for the Measurement and Inspection of Hardwood and Cypress.
- .7 National Lumber Grading Association (NLGA):
  - .1 Standard Grading Rules for Canadian Lumber.

### **1.2 DEFINITIONS**

- .1 For the purpose of this Project, the following definitions shall apply to this and related Sections:
  - .1 Panel Matching:
    - .1 Blueprint Matched: Custom grade veneers are matched for continuity of grain and colour for various size panels, doors, and transoms.
    - .2 Sequence Matched: Custom grade veneers are matched for colour and all panels of the same size will have continuity of grain. Other size panels must be cut during installation that may interrupt grain continuity. Doors are made from veneer of similar colour but not continuity of grain.
    - .3 Flitch Matched: Custom grade veneers from several flitches may be used. If more than one flitch is used, grain and colour may not be similar. Doors may not be similar grain or colour.
  - .2 Veneer Matching:
    - .1 Book Matched: Every other piece of veneer from a flitch is turned over so adjacent pieces are opened like adjacent pages in a book. The veneer joints match and create a mirrored image pattern at the joint line, yielding a maximum continuity of grain.

- .2 Slip Matched: Adjoining pieces of veneer from a flitch are placed in sequence without turning over every other piece. The grain figure repeats, but joints will not show a mirrored effect.
- .3 Random Matched: A random selection of individual pieces of veneer from one or more logs. Produces a “board-like” appearance.
- .4 Running Matched: Non-symmetrical appearance in any single door face. Veneer pieces of unequal width. Each face is assembled from as many veneer pieces as necessary.
- .5 Balance Matched: Custom grade only. Symmetrical appearance. Each face is assembled from pieces of uniform width before trimming.
- .6 Centre Matched: Custom grade only. Symmetrical appearance. Each face has an even number of veneer pieces of uniform width before trimming. Thus, there is a veneer joint in the center of the panel, producing symmetry.
- .7 Pair Matched: Doors may be specified as pair matched.
- .8 Set Matched: Sets of doors may be specified as matching.
- .9 Transom Matches:
  - .1 Continuous Matched: Each single piece of veneer extends from the top of the transom to the bottom of the door.
  - .2 End Matched: A single piece of veneer extends from the bottom to the top of the door with a mirror image at the transom.
  - .3 No Match: Economy grade only.

### **1.3 AESTHETIC REQUIREMENTS**

- .1 Panels, mouldings, trim, chair rails, baseboards, and other wood components, including doors, together within a room, corridor, or lobby, shall be Blueprint Matched.
- .2 Veneer Leaves shall be Slip Matched, with no “football” patches.
- .3 Trim and moulding shall be selected for continuity and uniformity of finished appearance, AWMAC Premium grade, meeting Blueprint Matching criteria.

### **1.4 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 General:
  - .1 Submittals shall meet the requirements of Division 01: Submittal Procedures.
- .2 Samples:
  - .1 Label each sample to indicate Drawing number and room location.
  - .2 Submit natural wood samples unfinished and finished for initial colour selection, and also for quality control.
    - .1 For finished samples, apply stain and topcoat as specified, and allow cure before submission.
    - .2 Confirm staining requirements with Departmental Representative prior to ordering materials.
  - .3 Finish one side and edge of samples representing items to receive factory finishes.

- .3 Product Data:
  - .1 Submit manufacturer's printed product literature, specifications and data sheets.
  - .2 Submit manufacturer's printed installation instructions and details.
  - .3 Submit manufacturer's recommended maintenance instructions.
- .4 Certifications and Reports:
  - .1 Certifications: submit certificates signed by manufacturer certifying materials comply with specified performance characteristics and physical properties.
  - .2 Test and Evaluation Reports: submit certified test reports for composite wood from approved independent testing laboratories, indicating compliance with specifications for specified performance characteristics and physical properties.
- .5 Shop Drawings:
  - .1 Indicate materials, factory finishes, thicknesses, and hardware. Include plans, elevations, sections, and details at the following drawing scales:
    - .1 Plans and elevations – 1:20.
    - .2 Sections – 1:10.
    - .3 Details – 1:2.
  - .2 Indicate construction details, locations of built in items, connections, attachments, anchorage and location of exposed fastenings, as applicable

## **1.5 QUALITY ASSURANCE**

- .1 Comply with the requirements of Division 01: Quality Control.
- .2 Lumber by grade stamp of agency certified by Canadian Lumber Standards Accreditation Board (CLSAB).
- .3 Plywood, particleboard, OSB and wood based composite panels to CSA and ANSI standards.
- .4 Wood fire rated frames and panels: listed and labelled by an organization accredited by Standards Council of Canada to CAN/ULC S104 and CAN/ULC S105.
- .5 Materials and workmanship shall meet or exceed recommendations and requirements of AWMAC Manual. Remove and replace work that does not conform to the required AWMAC grade.
- .6 Reference to grade in this Section shall be as defined in the AWMAC Manual.
  - .1 Minimum grade acceptable for this Project: Custom Grade, and as otherwise specified in this Section. Note that some aspects of the work specified in this Section require Premium grade quality; supply materials and perform work to achieve Premium grade standards where Premium grade is specified.
- .7 Maintain a copy of the specified AWMAC Manual at the factory, readily available for duration of work.
- .8 Installer shall be responsible for supplying field dimensions that will affect the work of this Section.

- .9 Source Limitations: Engage a qualified woodworking firm to assume undivided and complete responsibility for the fabrication and installation of interior architectural woodwork and finish carpentry, having completed work similar in material, design, and extent to that indicated, and whose work has resulted in construction with a record of successful in-service performance, as well as sufficient production capacity to produce required work.
- .10 Installer Qualifications: An experienced installer who has completed architectural woodwork similar in material, design, and extent to that indicated and whose work has resulted in construction with a record of successful in-service performance.
- .11 Fabricator Qualifications: A firm experienced in producing architectural woodwork similar to that indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- .12 Site Supervision: Provide full time site supervision for work of this section; supervisor shall be directly employed by the installer and shall have the authority to receive, represent, and make decisions for work of the Project.
- .13 Fire Test Response Characteristics:
  - .1 Provide materials and products with specified fire test response characteristics where fire retardant materials or products are indicated.
  - .2 Fire Test Response Characteristics shall be as determined by testing for identical products and test methods indicated by CSA, ULC, ITS, or another testing and inspecting agency acceptable to authorities having jurisdiction.
  - .3 Identify architectural woodwork materials with appropriate markings of applicable testing and inspecting agency in the form of separable paper label or, where required by authorities having jurisdiction, imprint on surfaces of materials that will be concealed from view after installation.

## **1.6 PROJECT CONDITIONS**

- .1 Maintain a minimum 430 lx (40 f.c.) illumination on surfaces and areas where work is being installed.
- .2 Field Measurements: Verify dimensions by field measurements before fabrication and indicate measurements on Shop Drawings where architectural woodwork is indicated to fit walls and other construction; coordinate fabrication schedule with construction progress to avoid delaying the Work; locate concealed framing, blocking, and reinforcements that support woodwork by field measurements before being enclosed and indicate measurements on Shop Drawings.
- .3 Established Dimensions: Establish dimensions and proceed with fabricating architectural woodwork without confirmed field measurements where field measurements cannot be made without delaying the Work; coordinate with the construction to ensure that actual dimensions correspond to established dimensions; allow for trimming and fitting.

## **1.7 DELIVERY, STORAGE, AND HANDLING**

- .1 Deliver to site after receiving and storage areas have stable humidity and temperature conditions as recommended in AWMAC Manual.
- .2 Protect architectural woodwork items against dampness during and after delivery.
- .3 Store architectural woodwork items on level surfaces in ventilated areas, protected from direct sunlight and extreme changes in temperature or humidity.

- .4 Do not deliver materials and products until operations that could damage them have been completed in installation areas.

## **1.8 COORDINATION**

- .1 Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of Work specified in other Sections to ensure that interior architectural woodwork can be supported and installed.
- .2 For architectural woodwork items to be site finished, coordinate with work of Section 09 91 00 – Painting to ensure that back priming of surfaces concealed after installation is performed prior to installation.
- .3 Coordinate installation of the following items during fabrication:
  - .1 Electrical conduit, junction boxes, and fixtures.
  - .2 Other items to be built-in as indicated.

## **1.9 WARRANTY**

- .1 For the work of this Section, the 12-month warranty period prescribed in Subsection GC 3.13 of General Conditions "C" is extended to 24 months.

## **PART 2 PRODUCTS**

- .1 Existing Materials: coordinate with Division 02 scopes of work as required.
  - .1 Where practicable, re-use and re-install existing fabricated wood elements, such as baseboards and railings, sanding and refinishing as required to match adjacent existing, and to blend without noticeable transitions.
  - .2 Supply samples of finish work, including stain matching and finishing, to Department Representative for review prior to proceeding with production work, and only proceed using the same methods as the approved samples.
- .2 Lumber:
  - .1 Softwood: to CAN/CSA O141, kiln dried to maximum moisture content of 7%, dressed 4 sides.
  - .2 Hardwood lumber: Hard Maple species (*Acer saccharum*, *A. nigrum*), S4S, average moisture content of 6% and maximum of 9% for interior work, an average moisture content of 12% and maximum of 15% for exterior work, meeting or exceeding the following minimum requirements:
    - .1 National Hardwood Lumber Association (NHLA), FAS Grade; Colour Designation: White; Sapwood only; sorted and selected for transparent and stained finishes.
- .3 Exterior Grade Douglas fir plywood, to CSA O121, 'A/A' veneer, cross banded, sanded, G2S, thickness as indicated, or required to suit construction and withstand loads without deflection.
- .4 Adhesives, use commercial grade brush-applied structural construction adhesives only.
- .5 Sealants: to Section 07 92 00 – Joint Sealants.

- .6 Accessories:
- .1 Nails: to ASTM F1667; hot dip galvanized to CAN/CSA G164 for exterior work, interior humid areas and for treated lumber; plain finish elsewhere.
  - .2 Wood screws: zinc-plated steel, type and size to suit application.
  - .3 Hidden Connecting Systems: supply hidden connection systems, type and size to suit application; zinc-plated steel; proprietary design for hidden fastening of casework and millwork, including inserts, screws, cap nuts, and cross dowels as required.
  - .4 Splines: wood.
  - .5 Screws into concrete block: proprietary designed for use with concrete masonry units; zinc-plated steel.
  - .6 Screws and bolt caps to cover heads of fasteners used to secure cabinets to walls, complete with pop-on screw covers for 6 mm diameter screws.
  - .7 Gable connectors: proprietary zinc-plated joint connector bolts and joint connector caps, type and size to suit application.

## 2.2 MANUFACTURED UNITS

- .1 Fabricate casework to AWMAC Custom quality grade. Comply with details and materials indicated on Drawings.
- .2 Use Hidden Connecting System to extent practicable, and supplement connections by gluing all joints, and clamping under pressure until adhesive is fully cured.

## 2.3 FABRICATION

- .1 Fabricate to AWS Custom Grade, except running trim, railings and moulding, which requires Premium grade work.
- .2 Fabricate gables and edges meeting walls oversize to allow for scribing to fit on site.
- .3 Assemble Work with flush butt hairline corners and joints. Cut-outs for services to be done on site during installation. No hairline cracks will be allowed in the face area of cabinet work modules unless approved in writing by Departmental Representative.
- .4 Carefully fit, cope or mitre and well glue-up Joints. There shall be no end wood visible on finished surfaces.
- .5 Glue, dowel, mortise, lock joint and/or dado all casework and millwork. Do not use staples. Use hidden fastening systems normally except where not practicable. Glue all joints 100% and clamp under pressure until fully cured.
- .6 Set nail heads in finished surfaces. Countersink screws and bolts, except those detailed to be exposed, and fill holes with edge grain wood plugs to match colour and grain.
- .7 Blocking, framing, web frames to be solid lumber.
- .8 Cut and adapt all Work to receive hardware.
  - .1 Drill and prepare end gables for insert type shelf standards on gables.
  - .2 Install all finishing hardware and fittings in shop.
  - .3 Fittings which may be susceptible to damage during shipping and installation may be installed after millwork installed on site.
- .9 Ensure adjacent part of continuous work match in colour and pattern.

## **2.4 SITE FABRICATION**

- .1 Fabricate items rigid, plumb and square, as detailed, with tight, bevelled, hairline joints. Sand work smooth, set all nails and screws.
- .2 Countersink bolts and washers, fill holes with matching wood plugs.
- .3 Fabricate handrails to provide ship-lap joints.
- .4 Fit shelves with hardwood edging.

## **2.5 SHOP FINISHING – FINISH CARPENTRY**

- .1 General: Finish wood trim at fabrication shop as specified in this Section. Defer only final touch-up, cleaning, and polishing until after installation.
- .2 Preparation for Finishing: Comply with referenced quality standard for sanding, filling countersunk fasteners, sealing concealed surfaces, and similar preparations for finishing wood trim, as applicable to each unit of work.
  - .1 Back-priming: Apply one coat of sealer or primer, compatible with finish coats, to concealed surfaces of wood trim. Apply two coats to end-grain surfaces.
- .3 Stained Finish for hardwood materials:
  - .1 Grade: AWMAC premium.
  - .2 Finishes: in accordance with approved samples, to match adjacent existing and without noticeable transitions from new to old.
  - .3 Staining: some shall be stained to match adjacent existing in accordance with approved samples, and as directed by Departmental Representative; Departmental Representative will advise which stain colour shall be used in each instance.
  - .4 Sheen: match adjacent existing.

## **PART 3 EXECUTION**

### **3.1 COMPLIANCE**

- .1 Comply with product manufacturer's printed installation instructions, data sheets and details.

### **3.2 JOB CONDITIONS**

- .1 Job Conditions for installation of architectural woodwork shall be in accordance with applicable AWS requirements (Custom grade).

### **3.3 INSPECTION**

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

### **3.4 SAFETY**

- .1 CAUTION: WOOD DUST. Sawing, sanding and machining wood products can produce dust. Airborne wood dust can cause respiratory, eye and skin irritation. The International Agency for Research on Cancer (IARC) has classified wood dust as a nasal carcinogen in humans. Use Personal Protective Equipment (PPE) as recommended by manufacturer.

### **3.5 PREPARATION**

- .1 Obtain measurements from site.
- .2 Check access to ensure large pieces of work can be safely handled to their place of final installation.
- .3 Protect finished surfaces and materials of other trades from damage.
- .4 Ensure services and roughing-in that affect, or are connected to or through this work, are complete and acceptable.
- .5 Back prime cabinetwork immediately after delivery to site.

### **3.6 HANDRAILS, BASEBOARDS, TRIM AND MOULDING**

- .1 Grade: AWMAC premium grade.
- .2 Reuse existing materials removed during demotion/deconstruction phase to the extent practicable. Sand and finish to match adjacent existing so transitions are not noticeable.
- .3 Assemble wood handrails, baseboards, trim and moulding, and complete fabrication at project site to the extent not completed in the shop.
- .4 Install level, plumb, true, square and straight. Shim as required with concealed shims. Install level and plumb to a tolerance of 1/8 inch in 96 inches (3 mm in 2400 mm).
- .5 Scribe and cut to fit adjoining work, refinish cut surfaces, and repair damaged finish at cuts.
- .6 Anchor to blocking built in or directly attached to substrate. Secure with countersunk, concealed fasteners and blind nailing. Use fine finishing nails or finishing screws for exposed fastening, countersunk and filled flush with woodwork.
- .7 For shop-finished items, use filler matching finish of items being installed.
- .8 Handrails, Baseboards, and Standing and Running Trim: Install with minimum number of joints possible, using full-length pieces (from maximum length of lumber available) to greatest extent possible. Do not use pieces less than 96 inches (2400 mm) long except where shorter single-length pieces are necessary. Scarf running joints and stagger in adjacent and related members.
  - .1 Fill gaps, if any, between top of base and wall with latex sealant, painted to match wall.
  - .2 Install standing and running trim with no more variation from a straight line than 1/8 inch in 96 inches (3 mm in 2400 mm).
- .9 Touch-up finishing work specified in this Section after installation of wood trim. Fill nail holes with matching filler where exposed.
  - .1 Apply specified finish coats, including stains and paste fillers if any to exposed surfaces where only sealer/prime coats are applied in shop.

**3.7 CLEANING**

- .1 Progress Cleaning: clean in accordance with Division 01: Cleaning. Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Division 01: Cleaning.
- .3 Waste Management: separate waste materials for reuse and recycling in accordance with Division 01: Construction/Demolition Waste Management and Disposal. Remove recycling containers and bins from site and dispose of materials at appropriate facility.

**3.8 PROTECTION**

- .1 Protect installed products and components from damage during construction.
- .2 Repair damage to adjacent materials caused by Work of this Section.

**END OF SECTION**