

1.0 GENERAL

1.1 RELATED SECTIONS

- .1 Section 06 10 11 – Rough Carpentry

1.2 DESCRIPTION

- .1 The work in this section includes but is not limited to:
  - .1 Factory treatment of new lumber and plywood.
  - .2 Field treatment of all field cuts in new lumber and plywood.
  - .3 Field treatment of existing lumber and plywood as directed by the Departmental Representative. Field treatment of existing lumber will be completed on a time and materials basis as directed by the Departmental Representative.

1.3 REFERENCE STANDARDS

- .1 CSA-O80 Series-08 "Wood Preservation".
- .2 American Wood Preserver's Association Standards.
- .3 Canadian Wood Preservers Bureau.

1.4 QUALITY ASSURANCE

- .1 Inspection of products treated with preservative by vacuum-pressure impregnation will be carried out by an accredited inspection agency of the Canadian Wood Preservers Bureau (CWPB).
- .2 All treated lumber and plywood shall bear an identifying stamp in accordance with the CWPB requirements.

1.5 CERTIFICATES

- .1 For products treated with preservative by vacuum-pressure impregnation, when required, submit following information certified by authorized signing officer of treatment plant:
  - .1 Wood treatment information as specified in the CAN/CSA-O80 Series "Wood Treatment" and AWPA standards.
  - .2 Moisture content after drying following treatment with water-borne preservative.
  - .3 Acceptable types of adhesive, paint, stain, and clear finishes that may be used over the treated materials.

2.0 PRODUCTS

2.1 PRESERVATIVES

- .1 Preservative for new lumber and plywood which are exposed to weather shall be Copper Azole (CA).
- .2 Preservative for new lumber and plywood not directly exposed to weather shall be disodium octaborate tetrahydrate (DOT).
- .3 Preservative for existing lumber and plywood sheathing that are not removed and replaced but made accessible during the course of retrofit shall be borate based insecticide / fungicide / moldicide. Acceptable products:
  - .1 Boracol 20-2
  - .2 Boracol 10-2BD
  - .3 Boracol 20-2BDOr approved equal.

- .4 Preservative field treatment to be dyed to allow easy identification of field treated wood areas. Dye colour to be either red, green or blue. Acceptable dye additives for field treatment preservatives:
  - .1 Sansin P-320
  - .2 Dye Tablets
  - .3 Food ColouringOr approved equal.
- .5 Preservative for lumber susceptible to moisture damage shall be borate insecticide / fungicide rod. Acceptable product:
  - .1 Impel (Boron) RodsOr approved equal.

### 3.0 EXECUTION

#### 3.1 FACTORY APPLICATION

- .1 All CA treated lumber shall be factory treated to CSA-O80.2 "Preservative Treatment of Lumber, Timber, Bridge Ties and Mine Ties by Pressure Processes" to obtain an average net retention of 1.7 kg/m<sup>3</sup> CA for above ground or 3.3 kg/m<sup>3</sup> CA for ground contact.
- .2 All DOT treated lumber shall be factory treated to CSA-O80.34 "Pressure Preservative Treatment of Lumber and Timber with Borate for Use Out of Ground Contact and Continuously Protected from Liquid Water" to obtain an average net retention of 4.0 kg/m<sup>3</sup> DOT.
- .3 All treated plywood sheathing shall be vacuum-pressure impregnated with preservative (CA or DOT) in accordance with the requirements of AWPA Standard C9-96 "Plywood - Preservative Treatment by Pressure Processes".
- .4 Following water-borne preservative treatment, dry all dimension lumber and plywood sheathing to maximum moisture content of 19%.

#### 3.2 FIELD APPLICATION

- .1 Touch up all field cuts in new lumber and plywood in accordance with the preservative manufacturer's instructions.
- .2 Treat lumber and plywood sheathing that is not removed and replaced but is made accessible during the course of retrofit with preservative as directed by Departmental Representative. The preservative is to be applied by qualified personnel in accordance with the Manufacturer's instructions. This work is to be done on a time-and-material basis.
- .3 Install borate insecticide / fungicide rods at locations directed by the Departmental Representative. This work is to be done on a time-and-material basis.

END OF SECTION 06 07 10

## PART 1 GENERAL

### 1.1 Related Sections

- .1 Section 01 01 50 – General Instructions for Construction/Demolition Waste Management And Disposal.
- .2 Section 03 30 05 – Anchor bolts
- .3 Sections 05 50 00, 06 18 20, 06 17 53 - Steel Shoes and brackets
- .4 Structural Drawings S101/S102 – Wood Products General Notes and Typical Details

### 1.2 Reference Standards

- .1 Canadian Standards Association (CSA International)
  - .1 CSA B111-1974 (R2003), Wire Nails, Spikes and Staples.
  - .2 CAN/CSA-G164-M92 (R2003), Hot Dip Galvanizing of Irregularly Shaped Articles.
  - .3 CSA O121-08 (R2013), Douglas Fir Plywood.
  - .4 CAN/CSA-O141-05 (R2014), Softwood Lumber.
  - .5 CSA O151-09 (R2014), Canadian Softwood Plywood.
  - .6 CAN/CSA-O325-07 (R2012), Construction Sheathing.
  - .7 Comply with AWPAM4 and revisions specified in CAN/CSA-080 Series, Supplementary Requirements to AWPAM2.
- .2 National Lumber Grades Authority (NLGA)
  - .1 Standard Grading Rules for Canadian Lumber 2014.

### 1.3 Quality Assurance

- .1 Lumber identification: by grade stamp of an agency certified by Canadian Lumber Standards Accreditation Board.
- .2 Plywood identification: by grade mark in accordance with applicable CSA standards.
- .3 Plywood, OSB and wood based composite panel construction sheathing identification: by grade mark in accordance with applicable CSA standards.

### 1.4 Waste Management and Disposal

- .1 Separate and recycle waste materials in accordance with Section 01 01 50 – General Instructions for Construction/Demolition Waste Management And Disposal.
- .2 Remove from site and dispose of packaging materials at appropriate recycling facilities.

- .3 Collect and separate for disposal paper, plastic, polystyrene, corrugated cardboard and packaging material in appropriate on-site bins for recycling in accordance with Waste Management Plan.
- .4 Divert unused wood materials from landfill to recycling, reuse and composting facility approved by Departmental Representative.
- .5 Do not dispose of preservative treated wood through incineration.
- .6 Do not dispose of preservative treated wood with materials destined for recycling or reuse.
- .7 Dispose of treated wood, end pieces, wood scraps and sawdust at sanitary landfill approved by Departmental Representative.
- .8 Dispose of unused wood preservative material at official hazardous material collections site approved by Departmental Representative.
- .9 Do not dispose of unused preservative material into sewer system, into streams, lakes, onto ground or in other locations where they will pose health or environmental hazard.

## PART 2 PRODUCTS

### 1.1 Lumber Material

- .1 Lumber: unless specified otherwise, softwood, S4S, moisture content 19% or less in accordance with following standards:
  - .1 CAN/CSA-O141.
  - .2 NLGA Standard Grading Rules for Canadian Lumber.
- .2 Furring, blocking, nailing strips, grounds, rough bucks, cants, curbs, fascia backing and sleepers:
  - .1 Board sizes: "Standard" or better grade.
  - .2 Dimension sizes: "Standard" light framing or better grade.
  - .3 Post and timbers sizes: "Standard" or better grade species except as indicated.
  - .4 Framing and board lumber: in accordance with NBCC 2010 Subsection 9.3.2, except as follows:
    - .1 Deck joists, studs, chords in built-up beams: D-Fir NLGA No.2 or better U.N.O.
    - .2 Post and Beams: D-Fir species, NLGA No.1 grade.
    - .3 Wall studs: D-Fir species, NLGA No.2 grade or better.
    - .4 Boardwalk plank: Yellow Cedar species, NLGA No.2 grade or better.
- .3 Glued end-jointed (finger-jointed) lumber products are acceptable for framing of interior non-load bearing studs.

- 2.2 Panel Materials
  - .1 Douglas fir plywood (DFP): to CSA O121, standard construction.
  - .2 Canadian softwood plywood (CSP): to CSA O151, standard construction.
  - .3 Plywood, OSB and wood based composite panels: to CAN/CSA-O325.
- 2.3 Panel Materials End Uses
  - .1 Roof sheathing: DFP sheathing grade T&G edge, 12.5 mm thick.
  - .2 Wall sheathing: DFP sheathing grade square edge, 12.5 mm thick.
  - .3 Miscellaneous plywood panels: DFP or CSP sheathing grade square edge, 19 mm thick, for wall backing, panel mounting boards and as indicated.
  - .4 Wall sheathing under wall waterproofing membrane: DFP sheathing grade T&G edge, 16 mm thick pressure preservative treated to para. 2.7.1.
- 2.4 Sheathing Paper
  - .1 Exterior wall sheathing paper:
    - .1 Single ply asphalt-kraft sheet conforming to CAN/CGSB 51.32M77, US st'd UUB-790a as a 30 minute water resistant paper applied in two layers.
- 2.5 Dampproof Membrane
  - .1 Wood plates in contact with concrete: use pressure preservative treated wood D-Fir Grade No. 1 or better with compressible gasket filler of either 25 mm fibreglass insulation, closed cell polyethylene sponge 3 mm thick or roll roofing.
    - .1 Fibre glass insulation to: Section 07 21 30.
    - .2 Roll roofing: to CSA A123.2, Type S.
    - .3 Poly closed cell sponge gasket: as approved by Departmental Representative.
    - .4 Or approved equal.
  - .2 Waterproofing membrane: Self-adhering or adhesive-applied SBS modified bituminous membrane minimum 1.5 mm thickness reinforced with material for application over primed substrate; of steel, aluminium, galvanized steel, gypsum board and plywood, conforming to the following:
    - .1 Tensile strength: 150 N/5 cm.
    - .2 Air permeance: less than 0.01 l/m sq. at 75 Pa pressure difference.
    - .3 Sheet membrane: conforming to CGSB 37-GP-56M-1980.
    - .4 Acceptable products:
      - .1 Perm-a-Barrier System 4000, Grace Membrane Group
      - .2 BlueSkin SA Air Barrier Membrane, Monsey-Bakor.
      - .3 Sopraseal Stick 1100, Soprema.
      - .4 QSC-705 Carlisle Coatings and Waterproofing
      - .5 Or approved equal.

2.6 Accessories

- .1 Nails, spikes and staples: to CSA B111. All nailing shall be common nails. If P-nails (Power driven nails) are intended as substitution, submit P-nails information for Departmental representative's review prior to use. Adjustment of nails spacing or requirements may be required.
- .2 Bolts: 12.5 mm diameter unless indicated otherwise, complete with nuts and cut steel washers. All bolts and anchor bolts shall conform to ASTM A307. Bolt holes shall be 1 mm larger than the bolt diameter. Bolts in wood shall not be less than 7 diameter from the end and 4 diameters from the edge unless otherwise detailed.
- .3 Proprietary fasteners: toggle bolts, expansion shields and lag bolts, screws and lead or inorganic fibre plugs, explosive actuated fastening devices, recommended for purpose by manufacturer.
- .4 Steel plates: All steel plates used in connection details shall be grade 300W.
- .5 Lag screws: Lag screws shall be predrilled with a bit size of 65% of the shank diameter for the threaded portion. Lead holes shall be the same length as the unthreaded portion and the same diameter as the shank. Screw all lags into place. Cut washers shall be provided under heads which bear on wood.
- .6 No checks or splits allowed at areas to be bolted or lagged.
- .7 All bolts, steel plates/connections and nails for use with red cedar wood to be hot dipped galvanized to ASTM A653 class G90 as produced by Simpson Strong Tie or approved equal by the Departmental representative.
- .8 Galvanizing: to CSA G164 unless noted otherwise. Use galvanized fasteners for exterior work, interior highly humid areas.
- .9 Joist/beam hangers, post bases: unless noted otherwise shall be hot dipped galvanized as per manufacture and approved by the Departmental representative.

2.7 Finishes

- .1 Galvanizing: to CAN/CSA-G164, use galvanized fasteners for exterior work, interior highly humid areas, pressure- preservative, and fire-retardant treated lumber.
- .2 Stainless steel: use stainless steel or alloy for fastener for work mentioned in .1 above or alternative are acceptable and at contractors cost.

2.8 Wood Preservative

- .1 Surface-applied wood preservative: clear, coloured, or copper naphthenate or 5% pentachlorophenol solution, water repellent preservative.

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

### PART 3 EXECUTION

#### 3.1 Preparation

- .1 Comply with AWPAC M4, use copper naphthenate to manufacturer's instructions.
- .2 Treat surfaces of material with wood preservative, before installation.
- .3 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.
- .4 Re-treat surfaces of PT Lumber and plywood exposed by cutting, trimming or boring with liberal brush application of preservative before installation.
- .5 Treat material as indicated and as follows:
  - .1 Wood cants, fascia backing, curbs, nailers, sleepers on roof deck.
  - .2 Wood furring for member on outside surface of exterior masonry and concrete walls.
  - .3 Wood sleepers supporting wood subflooring over concrete slabs in contact with ground or fill.
  - .4 Plywood wall sheathing under water proofing membrane.

#### 3.2 Installation

- .1 Comply with requirement of NBCC 2010, Part 9 and General Notes on Structural Drawings. Where conflict exists, the more stringent requirements will apply.
- .2 Install members true to line, levels and elevations.
- .3 Construct continuous members from pieces of longest practical length.
- .4 Install spanning members with "crown-edge" up.
- .5 Install all exterior pressure treated timber sill plates using 16 DIA. Anchor bolts @ 1000 o.c. into ground U.N.O.; refer to structural drawing S102 for shearwall anchorage. Anchor interior non-structural wall sill plates with minimum 12 Dia. Anchor bolts @ 2400 o.c.
- .6 Stud walls abutting a concrete or masonry wall shall be bolted to the wall with 12 Dia. Anchor bolts @ 600 o.c. through a double stud.

- .7 Install lumber and panel materials so that grade-marks and other defacing marks are not visible or are removed by sanding at location (s) where exposed in final assembly.
- .8 All built-up beams to be D-fir Grade No. 2 or better nailed through each lamination using 82 min. nails on a 150 mm grid.
- .9 Install plywood roof sheathing with surface grain at right angles to roof framing. Provide solid blocking necessary to ensure maximum span on roof sheathing edge does not exceed 610 mm in either direction.
- .10 Install sheathing over framing members as indicated using nails to NBCC part 9 requirements and in accordance with structural drawing.
- .11 Install wall sheathing with panel side joints on solid bearing staggered at least 800 mm. Nail at perimeter edge 150 mm o.c. minimum and at interior of panels 300 mm o.c. minimum. Use minimum 65 mm long nails. Refer to general Notes on structural drawing for nailing pattern.
- .12 Apply peel and stick waterproof membrane at all window and door openings at jambs, head and sill. Apply waterproofing membrane over wood framing where wood framed wall is adjacent to backfill and concrete.
- .13 Apply building paper in two layer application over sheathing using staples or auto-nailer.
- .14 Install furring, strapping and solid backing in walls and structures as required to space-out and support casework, cabinets, applied finishes, facings, pipe chases, wall mounted door stops, access hatches, electrical and mechanical fixtures, washroom accessories, benches, prefab showers, overhead door hardware and other work as required. Use solid blocking or 19 mm plywood securely nailed to framing members.
- .15 Frame and strap for suspended gypsum board ceiling finishes.
- .16 Align and plumb faces of furring and blocking to tolerance of 1:600.
- .17 Install furring and blocking as required to space-out and support casework, cabinets, wall and ceiling finishes, facings, fascia, soffit, siding and other work as required.
- .18 Install rough bucks, nailers and linings to rough openings as required to provide backing for frames and other work.
- .19 Install wood cants, fascia backing, nailers, curbs and other wood supports as required and secure using galvanized, or steel fasteners.
- .20 Install wood backing, dressed, tapered and recessed slightly below top surface of roof insulation for roof hopper.
- .21 Install sleepers as indicated.
- .22 Use caution when working with particle board. Use dust collectors and high quality respirator masks.



3.3 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.

3.4 Schedules

- .1 Provide electrical equipment backboards for mounting electrical equipment as indicated.  
Use 19 mm thick plywood on 19 x 38 mm furring around spacing, perimeter and at maximum 300 mm intermediate

END OF SECTION 06 10 11



**1.0 GENERAL**

**1.1 RELATED SECTIONS**

- .1 General Instruction Section 01 11 55

**1.2 WORK INCLUDED**

- .1 Fabrication of boardwalk guard consisting of guard posts and rails, etc. shall be as shown on the contract drawings.

**1.3 QUALITY ASSURANCE**

- .1 Grading:
- .1 NBC Part 4 - Design, as applicable to Timber Construction
  - .2 Timber components and construction to CSA Standard O86.1 and according to N.L.G.A. Standard rules 2014 as applicable.
  - .3 Standards: CSA Standards S16.1 and O86.1 for Steel Connections.

**1.4 REFERENCES:**

- .1 Canadian Standards Association (CSA International)
  - .1 CSA B111-1974 (R2003), Wire Nails, Spikes and Staples.
  - .2 CAN/CSA O86.1-01, Engineering Design in Wood.
  - .3 CAN/CSA-S16.1-01, Limit States Design of Steel Structures.
- .2 National Lumber Grades Authority (NLGA)
  - .1 Standard Grading Rules for Canadian Lumber 2014.
- .3 American Society for Testing and Materials International, (ASTM)
  - .1 ASTM A 307-03, Specification for Carbon Steel Bolts and Studs, 60,000psi Tensile.
  - .2 A653/A653M-07, Standard Specification for Steel Sheet, Zinc-coated (Galvanized), or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
  - .3 ASTM D1413-07, Standard Test Method for Wood Preservatives by Laboratory Soil-block Cultures.

## 1.5 SUBMITTALS

- .1 Shop Drawings: submit drawings for all fabricated timber elements and connections of accordance with Section 01 11 55 – General Instructions.
- .2 Indicate grades of timber, shop applied finishes and prestaining requirements, shop and erection details including cuts, holes, fastenings and connection hardware.
- .3 Review of shop drawings to be for size and arrangement of original and auxiliary members only. Such review will not relieve Contractor of responsibility for general and detail dimensions and fit or any errors or omissions.
- .4 Drawings showing erection procedures and erection bracing to be prepared by fabricator. Erection procedures and details and size of temporary bracing is the responsibility of the Fabricator.

## 1.6 PRODUCT DELIVERY, STORAGE AND HANDLING

- .1 Storage of pre-fabricated components in Contractor's storage yard, piled off the ground and stacked to provide maximum air circulation and ventilation until required at Construction Site.
- .2 Protect with tarps from water staining, soiling, dust and other construction activity until pick-up.

## 1.6 CONDITIONS

- .1 Examine all conditions on which the successful work of this section depends.
- .2 Refer to Drawings and Details for specific framing and connecting requirements.

## 2.0 PRODUCTS

### 2.1 MATERIALS

- .1 General: all materials shall be new and of the quality and grade specified. No seconds, off grades or materials not meeting tolerance specifications will be accepted in the finished construction.
- .2 All heavy timber elements shall be properly air dried to a maximum of 19% moisture content prior to installation.
- .3 All round timber components shall be timber logs with sizes indicated on drawings.
- .4 All sizes are rough.

- .5 Connections:
  - .1 All bolts and pins shall conform to ASTM A307
  - .2 All bolts and nuts must be fitted with cut steel washers
  - .3 All steel plate used in connection details shall be grade 300W
  - .4 All nails and spikes shall conformed to CSA-B111
  - .5 Bolt holes shall be 1mm larger than the bolt diameter
  - .6 Bolts in wood shall not be less than 7 diameter from the end and 4 diameter from the edge unless otherwise detailed.
  - .7 No checks or splits allowed at areas to be bolted, pinned or lagged.
- .6 Galvanizing: to ASTM A653/A653M Class G185 for all connection fasteners and related hardware.

### 3.0 **EXECUTION**

- .1 Comply with the requirements of NBC 2015 Part 4 and CSA Standards O86.1.
- .2 Install members true to line, levels and elevation, brace and anchor until permanently secured by structure.
- .3 Install lumber materials so that grade marks or other defacing marks in exposed areas are not visible or are removed by sanding.
- .4 Splice and joint only at locations indicated on reviewed shop drawings.
- .5 Fit all members closely and accurately to all other members and other assemblies.
- .6 Maintain protection of all Heavy timber members until installation is complete.
- .7 Install all metal fasteners in strict accordance with manufacturer's instructions.

END OF SECTION 06 13 00



1.0 GENERAL

1.1 RELATED REQUIREMENTS

- .1 Rough Carpentry for Minor Works                      Section 06 08 99
- .2 Door Hardware    Section 08 71 00

1.2 REFERENCES

- .1 Architectural Woodwork Manufacturers Association of Canada (AWMAC) and Architectural Woodwork Institute (AWI)
  - .1 Architectural Woodwork Quality Standards, 1st edition, 2009 (AWS).
- .2 Canadian General Standards Board (CGSB)
  - .1 CAN/CGSB-11.3-M87, Hardboard.
- .3 CSA International
  - .1 CSA B111-74 (R2003), Wire Nails, Spikes and Staples.
  - .2 CAN/CSA G164-M92 (R2003), Hot Dip Galvanizing of Irregularly Shaped Articles.
  - .3 CSA O121-08, Douglas Fir Plywood.
  - .4 CSA O141-05, Softwood Lumber.
  - .5 CSA O151-09, Canadian Softwood Plywood.
  - .6 CSA O153-13 Poplar Plywood.
- .4 Forest Stewardship Council (FSC)
  - .1 FSC-STD-01-001-2004, FSC Principle and Criteria for Forest Stewardship.
  - .2 FSC-STD-20-002-2004, Structure and Content of Forest Stewardship Standards V2-1.
  - .3 FSC Accredited Certified Bodies.
- .5 National Lumber Grades Authority (NLGA)
  - .1 NLGA Standard Grading Rules for Canadian Lumber 2008.
- .6 South Coast Air Quality Management District (SCAQMD), California State, Regulation XI. Source Specific Standards
  - .1 SCAQMD Rule 1168 2005, Adhesives and Sealants Applications.
- .7 Underwriters Laboratories of Canada (ULC)
  - .1 CAN4-S104-10 Standard Method for Fire Tests of Door Assemblies.
  - .2 CAN/ULC-S105-09, Standard Specification for Fire Door Frames.

1.3 SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
  - .1 Submit manufacturer's instructions, printed product literature and data sheets for plywood MDF and include product characteristics, performance criteria, physical size, finish and limitations.
  - .2 Submit two copies of WHMIS MSDS in accordance with Section 01 35 33 - Health and Safety Requirements.
- .3 Shop Drawings:
  - .1 Submit drawings in accordance with Section 01 33 00 Submittal Procedures.
  - .2 Indicate details of construction, profiles, jointing, fastening and other related details.

- .3 Indicate materials, thicknesses, finishes and hardware.
- .4 Samples:
  - .1 Submit for review and acceptance of each unit.
  - .2 Samples will be returned for inclusion into work.
- .5 Certifications: submit certificates signed by manufacturer certifying materials comply with specified performance characteristics and physical properties.
- .6 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.

#### 1.4 QUALITY ASSURANCE

- .1 Lumber by grade stamp of agency certified by Canadian Lumber Standards Accreditation Board (CLSAB).
- .2 Plywood, particleboard, OSB and wood based composite panels to CSA and ANSI standards.
- .3 Wood fire rated frames and panels: listed and labelled by an organization accredited by Standards Council of Canada to CAN4-S104 and CAN/ULC-S105.

#### 1.5 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Product Requirements and with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labeled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
  - .1 Store materials off ground and in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
  - .2 Store and protect wood products from nicks, scratches, and blemishes.
  - .3 Replace defective or damaged materials with new.
- .4 Develop Construction Waste Management Plan Waste Reduction Workplan related to Work of this Section
- .5 Packaging Waste Management: remove for reuse of pallets, crates, padding, and packaging materials as specified in Construction Waste Management Plan in accordance with Section 01 74 19 - Waste Management and Disposal

### 2.0 PRODUCTS

#### 2.1 MATERIALS

- .1 Softwood lumber: S4S, moisture content 19% or less in accordance with following standards:
  - .1 CSA O141.
  - .2 NLGA Standard Grading Rules for Canadian Lumber
  - .3 AWMAC custom or premium grade, where noted, moisture content as specified.
  - .4 Machine stress-rated lumber is acceptable.
- .2 Hardwood lumber: moisture content 10% or less in accordance:



- .1 AWMAC custom grade, moisture content as specified.
- .3 Panel Material: Urea-formaldehyde free
  - .1 Recycled content: provide information indicating recycled content on a % (Post-Consumer + ½ Post-Industrial)
  - .2 FSC certified.
  - .3 Douglas fir plywood (DFP): to CSA O121, standard construction. 6.1.5 and 6.2.5 where both sides exposed to view.
  - .4 Hardwood plywood: to ANSI/HPVA HP-1.
  - .5 Medium density fibreboard (MDF): to ANSI A208.2, density 640-800 kg/m³.
  - .6 Decorative overlaid composite panels.
    - .1 Decorative overlay, heat and pressure laminated with suitable resin to thickness indicated MDF urea-formaldehyde free core.
    - .2 Overlay bonded to both faces where exposed two sides, and when panel material require surface on one side only, reverse side to be overlaid with a plain (buff) balancing sheet.
    - .3 Furniture finish: stain wood grain pattern selected by Departmental Representative.
    - .4 Edge finishing: edges dadoed or saw kerfed to take plastic "T" moulding in width and colour to match melamine finish.

## 2.2 ACCESSORIES

- .1 Nails and staples: to CSA B111; galvanized to CAN/CSA-G164 for exterior work, interior humid areas and for treated lumber; plain finish elsewhere.
- .2 Wood screws: plain, type and size to suit application.
- .3 Splines: wood
- .4 Adhesive and Sealants: in accordance with Section 07 92 00 - Joint Sealants.

## 3.0 EXECUTION

### 3.1 EXAMINATION

- .1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for wood products installation in accordance with manufacturer's written instructions.
  - .1 Visually inspect substrate in presence of Departmental Representative.
  - .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
  - .3 Proceed with installation only after unacceptable conditions have been remedied [and after receipt of written approval to proceed from Departmental Representative.

### 3.2 INSTALLATION

- .1 Do finish carpentry to AWS Custom Grade.
- .2 Scribe and cut as required, fit to abutting walls, and surfaces, fit properly into recesses and to accommodate piping, columns, fixtures, outlets, or other projecting, intersecting or penetrating objects.
- .3 Form joints to conceal shrinkage.

**3.3 CONSTRUCTION**

- .1 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 smooth cut hole and plug with wood plug to match material being secured.
  - .4 Replace items of finish carpentry with damage to wood surfaces including hammer and other bruises.

**3.4 CLEANING**

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
  - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.
- .3 Waste Management: separate waste materials for recycling in accordance with Section 01 74 19 - Waste Management and Disposal

**3.5 PROTECTION**

- .1 Protect installed products and components from damage during construction.
- .2 Repair damage to adjacent materials caused by finish carpentry installation.

END OF SECTION 06 20 00

1.0 GENERAL

1.1 RELATED REQUIREMENTS

- |    |                   |                  |
|----|-------------------|------------------|
| .1 | Rough Carpentry   | Section 06 10 11 |
| .2 | Joint Sealants    | Section 07 92 00 |
| .3 | Interior Painting | Section 09 91 23 |

1.2 REFERENCES

- |    |   |
|----|---|
| .1 | Architectural Woodwork Manufacturers Association of Canada (AWMAC) and Architectural Woodwork Institute (AWI)   |
| .1 | Architectural Woodwork Quality Standards Illustrated, 8th edition, Version 1.0 2009.  |
| .2 | Canadian General Standards Board (CGSB)   |
| .1 | CAN/CGSB-71.20-M88, Adhesive, Contact, Brushable.   |
| .3 | CSA International   |
| .1 | CSA B111-74 (R2003), Wire Nails, Spikes and Staples.  |
| .2 | CSA O112.4 SERIES-M1977 (R2006), Standards for Wood Adhesives.  |
| .3 | CSA O121-08, Douglas Fir Plywood.   |
| .4 | CSA O141-05, Softwood Lumber.   |
| .5 | CSA O151-09, Canadian Softwood Plywood.   |
| .6 | CSA O153-M1980 (R2008), Poplar Plywood.   |
| .4 | American National Standards Institute (ANSI)  |
| .1 | ANSI/NPA A208.1-09, Particleboard.  |
| .2 | ANSI/NPA A208.2-09, Medium Density Fiberboard (MDF) for Interior Applications.  |
| .3 | ANSI/HPVA HP-1 04, Standard for Hardwood and Decorative Plywood.  |
| .5 | ASTM International  |
| .1 | ASTM E 1333-96 (2002), Standard Test Method for Determining Formaldehyde Concentrations in Air and Emission Rates From Wood Products Using A Large Chamber. |
| .2 | ASTM D 2832-92 (R2005), Standard Guide for Determining Volatile and Nonvolatile Content of Paint and Related Coatings.                                      |
| .6 | ASTM D 5116-06, Standard Guide For Small-Scale Environmental Chamber Determinations of Organic Emissions From Indoor Materials/Products.                    |
| .7 | Forest Stewardship Council (FSC)  |
| .1 | FSC-STD-01-001-2004, FSC Principle and Criteria for Forest Stewardship.   |
| .2 | FSC-STD-20-002-2004, Structure and Content of Forest Stewardship Standards V2-1.  |

- .8 Green Seal Environmental Standards (GS)
  - .1 GS-11-2008, 2nd Edition, Paints and Coatings.
  - .2 GS-36-00, Commercial Adhesives.
- .9 Health Canada / Workplace Hazardous Materials Information System (WHMIS)
  - .1 Material Safety Data Sheets (MSDS)
- .10 National Electrical Manufacturers Association (NEMA)
  - .1 ANSI/NEMA LD-3-05, High-Pressure Decorative Laminates (HPDL).
- .11 National Hardwood Lumber Association (NHLA)
  - .1 Rules for the Measurement and Inspection of Hardwood and Cypress 1998.
- .12 National Lumber Grades Authority (NLGA)
  - .1 Standard Grading Rules for Canadian Lumber 2003(R2007).
- .13 South Coast Air Quality Management District (SCAQMD), California State, Regulation XI. Source Specific Standards
  - .1 SCAQMD Rule 1113-A2007, Architectural Coatings.
  - .2 SCAQMD Rule 1168-A2005, Adhesives and Sealants Applications.

### 1.3 SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
  - .1 Submit manufacturer's instructions, printed product literature and data sheets for architectural woodwork and include product characteristics, performance criteria, physical size, finish and limitations.
  - .2 Submit two copies of WHMIS MSDS in accordance with Section 01 35 33 - Health and Safety Requirements.
- .3 Shop Drawings:
  - .1 Indicate details of construction, profiles, jointing, fastening and other related details.
    - .1 Scales: profiles half-full sized, details quarter-full sized.
    - .2 Indicate materials, thicknesses, finishes and hardware.
    - .3 Indicate locations of service outlets in casework, typical and special installation conditions, and connections, attachments, anchorage and location of exposed fastenings.
- .4 Samples:
  - .1 Submit for review and acceptance of each unit.
  - .2 Samples will be returned for inclusion into work.
  - .3 Submit duplicate samples of solid surface.
- .5 Certifications: submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.

- .6 Sustainable Design Submittals:
  - .1 Construction Waste Management:
    - .1 Submit project Waste Management Plan highlighting recycling and salvage requirements.
    - .2 Submit calculations on end-of-project recycling rates, salvage rates, and landfill rates demonstrating amount of construction wastes that are recycled or salvaged.
  - .2 Recycled Content:
    - .1 Submit listing of recycled content products used, including details of required percentages or recycled content materials and products, showing their costs and percentages of post-consumer and post-industrial content, and total cost of materials for project.
  - .3 Regional Materials: submit evidence that project incorporates required percentage 20% of regional materials and products, showing their cost, distance from project to furthest site of extraction or manufacture, and total cost of materials for project.
  - .4 Certified Wood:
    - .1 Submit listing of wood products and materials used, produced from wood obtained from forests certified by FSC Accredited Certification Body in accordance with FSC-STD-01-001.
    - .2 Submit manufacturer's FSC Chain-of-Custody Certificate number.
  - .5 Low-Emitting Materials:
    - .1 Submit listing of adhesives and sealants and paints and coatings used in building, comply with VOC and chemical component limits or restrictions requirements.
    - .2 Submit listing of composite wood products used in building, stating that they contain no added urea-formaldehyde resins, and laminate adhesives used in building, stating that they contain no urea-formaldehyde.

#### 1.4 QUALITY ASSURANCE

- .1 Lumber by grade stamp of an agency certified by Canadian Lumber Standards Accreditation Board.
- .2 Plywood, particleboard, OSB and wood based composite panels to CSA and ANSI standards.
- .3 Mock-ups:
  - .1 Construct mock-ups in accordance with Section 01 45 00 - Quality Control.
    - .1 Shop prepare one base cabinet unit, wall cabinet, counter top and shelving unit complete with hardware and shop applied finishes, and install where directed by Departmental Representative.
    - .2 Allow 72 hours for inspection of mock-up by Departmental Representative before proceeding with Work.
    - .3 When accepted, mock-up will demonstrate minimum standard for Work.
    - .4 Do not proceed with work prior to receipt of written acceptance of mock-up by Departmental Representative.
    - .5 Mock-up may remain as part of finished work.

#### 1.5 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and with manufacturer's written instructions.

- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
  - .1 Protect millwork against dampness and damage during and after delivery.
  - .2 Store millwork in ventilated areas, protected from extreme changes of temperature or humidity.
- .3 Storage and Handling Requirements:
  - .1 Store materials off ground in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
  - .2 Store and protect architectural woodwork from nicks, scratches, and blemishes.
  - .3 Replace defective or damaged materials with new.
- .4 Develop Construction Waste Management Plan related to Work
- .5 Packaging Waste Management: remove for reuse by manufacturer of pallets, crates, padding, and packaging materials as specified in Construction Waste Management Plan in accordance with Section 01 74 19 - Waste Management and Disposal.

#### 1.6 COORDINATION & VERIFICATION

- .1 Verify all dimensions & existing conditions on job site prior to all shop fabrication and work on site. Where major discrepancies occur, alert Departmental Representative.
- .2 Coordinate work of this section with that of wall, electrical and mechanical sections where millwork interfaces with drywall partitions, plumbing, electrical outlets, etc.
- .3 It shall be the responsibility of this section to verify the dimensions and installation details for all Departmental Representative supplied equipment and furnishings requiring cut-outs, adaptations and interfacing with millwork items.

#### 1.7 INSPECTION

- .1 Architectural woodwork shall be manufactured and/or installed to AWMAC Quality Standards (Custom Grade) and shall be subject to an inspection at the plant and/or site, by an appointed inspector approved by the M.M.A.B.C. (the BC Chapter of AWMAC). Such inspection costs shall be included in the tender price for this project. Shop drawings shall be submitted for review or approval before any work is commenced. Where it is deemed necessary by the Departmental Representative, a sample cabinet (consisting of a minimum of 1 drawer, 1 door, showing precisely the materials, hardware and the type of construction the manufacturer intends to use), shall be submitted for inspection.
- .2 Any work which does not meet AWMAC Quality Standards as specified, shall be replaced by this Section at no additional cost to the Department Representative and to the satisfaction of the Departmental Representative and the inspector.

#### 1.8 GUARANTEE

- .1 This section shall furnish the Departmental Representative with a two (2) year M.M.A.B.C. (The BC Chapter of AWMAC) Guarantee Certificate or an equivalent maintenance bond, to the full value of the architectural woodwork sub-contract, certifying that the architectural woodwork supplied will be in accordance with the Standards incorporated in the AWMAC Quality Standards manual, latest edition.

- .2 The Guarantee shall cover replacing and refinishing to make good any defects in architectural woodwork due to faulty workmanship or defective materials supplied by this Section, which appear during a two (2) year period following the substantial completion of the Project.

## 2.0 PRODUCTS

### 2.1 INTERIOR FINISH MATERIAL AND COLOUR SCHEDULE

- 1 This schedule is attached in the appendix and may list specific manufacturers related to patterns and colours upon which the colour scheme for the project is based.
- .2 The following material specifications, which are prescriptive in nature, are presented in order to establish a quality of product upon which a price can be tendered.
- .3 The Departmental Representative will consider substitute Products which meet or exceed the properties of the specified Product and are similar in material, construction, thickness, colour, texture, and overall quality, provided that proposals are submitted to the Departmental Representative complete with samples and whatever other data the Departmental Representative may require in order to evaluate the proposed substitute Product. If the Departmental Representative approves the proposed substitute Product, the Contractor will have the option of providing Product listed in the Finish schedule or an approved alternative.

### 2.2 MATERIALS

- .1 Softwood lumber: unless specified otherwise, S4S, moisture content 15% or less in accordance with following standards:
  - .1 CSA O141.
  - .2 NLGA Standard Grading Rules for Canadian Lumber.
  - .3 AWMAC custom grade, moisture content as specified.
  - .4 Forestry Stewardship Council (FSC) certified.
- .2 Machine stress-rated lumber is acceptable for all purposes.
- .3 Hardwood lumber: moisture content 15% or less in accordance with following standards:
  - .1 National Hardwood Lumber Association (NHLA).
  - .2 AWMAC custom grade, moisture content as specified.
- .4 Douglas fir plywood (DFP): to CSA O121, standard construction, FSC certified.
  - .1 Plywood resin to contain no added urea-formaldehyde.
- .5 Canadian softwood plywood (CSP): to CSA O151, standard construction, FSC certified.
  - .1 Plywood resin to contain no added urea-formaldehyde.
- .6 Hardwood plywood: to ANSI/HPVA HP-1, FSC certified.
  - .1 Plywood resin to contain no added urea-formaldehyde.
- .7 Poplar plywood (PP): to CSA 0153, standard construction, FSC certified.
  - .1 Plywood resin to contain no added urea-formaldehyde.
- .8 Hardboard:
  - .1 To CAN/CGSB-11.3, FSC certified.
  - .2 Hardboard resin to contain no added urea-formaldehyde.

- .9 MDF (medium density fibreboard) core: to ANSI/NPA A208.2, Grade Custom, density 769 kg/m<sup>3</sup>, FSC certified.
  - .1 Medium density fibreboard performance requirements to: ANSI/NPA A208.2.
  - .2 MDF resin to contain no added urea-formaldehyde.
- .10 Nails and staples: to CSA B111.
- .11 Wood screws: stainless steel, type and size to suit application.
- .12 Splines: metal.
- .13 Sealant: in accordance with Section 07 92 00 - Joint Sealants.
  - .1 Sealants: VOC limit 250 g/L maximum to SCAQMD Rule 1168.

### 2.3 SOLID SURFACE VANITY (SS)

- .1 Material: Solid polymer components:
  - .1 Cast, nonporous, filled polymer, not coated, laminated or of composite construction with through body colors meeting ANSI Z124.3 or ANSI Z124.6, having minimum physical and performance properties specified.
  - .2 Superficial damage to a depth of 0.010 inch (.25 mm) shall be repairable by sanding and/or polishing
    - .1 Thickness: 13mm UNO.
    - .2 Colour: to be selected by Departmental Representative from full colour range.
    - .3 Sheet Size & Edge Treatment: As shown on drawings.
    - .4 Recycled Content: Minimum of 13% pre-consumer recycled content as verified by SCS.
    - .5 Performance Characteristics:

Property	Typical Result	Test
Tensile Strength	6,000 psi	ASTM D 638
Tensile Modulus	$1.5 \times 10^{-6}$ psi	ASTM D 638
Tensile Elongation	0.4% min.	ASTM D 638
Flexural Strength	10,000 psi	ASTM D 790
Flexural Modulus	$1.2 \times 10^{-6}$ psi	ASTM D 790
Hardness	>85	Rockwell "M" Scale
	56	ASTM D 785
		Barcol Impressor
		ASTM D 2583
Thermal Expansion	$3.02 \times 10^{-5}$ in./in./°C ( $1.80 \times 10^{-5}$ in./in./°F)	ASTM D 696
Gloss (60° Gardner)	5–75 (matte—highly polished)	ANSI Z124
Light Resistance	(Xenon Arc) No effect	NEMA LD 3-2000 Method 3.3
Wear and Cleanability	Passes	ANSI Z124.3 & Z124.6
Stain Resistance: Sheets	Passes	ANSI Z124.3 & Z124.6
Fungus and Bacteria Resistance	Does not support microbial growth	ASTM G21&G22
Boiling Water Resistance	No visible change	NEMA LD 3-2000 Method 3.5
High Temperature Resistance	No change	NEMA LD 3-2000



Izod Impact (Notched Specimen)	0.28 ft.-lbs./in. of notch	Method 3.6 ASTM D 256 (Method A)
Ball Impact	No fracture—1/2 lb. ball:	NEMA LD 3-2000
Resistance: Sheets	1/4" slab—36" drop 1/2" slab—144" drop	Method 3.8
Weatherability	$\Delta E^*_{94} < 5$ in 1,000 hrs.	ASTM G 155
Specific Gravity †	1.7	
Water Absorption	Long-term 0.4% (3/4") 0.6% (1/2") 0.8% (1/4")	ASTM D 570
Toxicity	99 (solid colors) 66 (patterned colors)	Pittsburgh Protocol Test ("LC50" Test)
Flammability	All colors (Class I and Class A)	ASTM E 84, NFPA 255 & UL 723
Flame Spread Index	<25	
Smoke Developed Index	<25	

† Approximate weight per square foot: 1/4" (6 mm) 2.2 lbs., 1/2" (12.3 mm) 4.4 lbs.

Shapes meet or exceed the ANSI Z124.3 and ANSI Z124.6 standards for plastic sinks and lavatories.  
NEMA results based on the NEMA LD 3-2000

.6 Acceptable Product: Refer to Interior Finish Material and Colour Schedule.

.2 Accessories:

- .1 Silicone Sealant: Mildew-resistant, FDA-compliant sealant recommended by manufacturer, in colour to match solid surface.
- .2 All other accessories as recommended by solid surface manufacturer.
- .3 Ultra-Bond G Adhesive: Pre-measured and pre-tinted two part adhesive colored to match surfacing.
- .4 Sink: Integral sink(s) as selected from manufacturer's standard sink designs, and colors, and formed integrally with countertops. Sink size to be approximately 416 mm x 330 mm x 140 mm deep back overflow, shape to comply with accessibility requirement for clear space below sink.
- .5 Backsplash & Sidesplash: Integral Coved (2-piece with silicone joint is not acceptable).

## 2.4 FABRICATION

- .1 Fabricate material in accordance with manufacturer's Fabrication Guide.
- .2 Fabricate countertops, sinks, and splash of 13 mm thick material unless otherwise indicated.
- .3 Cut and finish component edges with clean, sharp returns. Finished edges shall have a 1.6 mm radius, U.N.O.
- .4 Integral Cove: Provide shop fabricated integrally molded coves at backsplash and ends where against walls or other vertical surfaces, with 9.5 mm radius between top and splash.

- .5 Integral Sinks shall be formed integrally with countertops.
- .6 Cutouts for sinks shall be smooth and uniform without saw marks. The top and bottom of openings shall be finished smooth. Maintain minimum 6 mm radius for sink cutouts.
- .7 Cutouts for accessories shall be smooth and uniform without saw marks. The top and bottom of openings shall be finished smooth.
- .8 Set nails and countersink screws apply stained wood filler to indentations, sand smooth and leave ready to receive finish.
- .9 Provide cutouts for plumbing fixtures, inserts, appliances, outlet boxes and other fixtures where applicable.
- .10 Shop assemble work for delivery to site in size easily handled and to ensure passage through building openings.

### 3.0 EXECUTION

#### 3.1 EXAMINATION

- .1 Visually inspect substrate in presence of Departmental Representative.
- .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
- .3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Departmental Representative.

#### 3.2 INSTALLATION

- .1 Do architectural woodwork to Quality Standards of AWMAC.
- .2 Install vanity in accordance with manufacturer's instructions installation guidelines and recommendations.
- .3 Install prefinished millwork at locations shown on drawings.
  - .1 Position accurately, level, plumb straight.
- .4 Form joints using manufacturer's approved adhesive, with joints inconspicuous in finished work.
- .5 Cure countertops for 24 hours, minimum, before exposure to moisture or pressure.
- .6 Corner joints: Form 3 mm-wide joints, sealed with manufacturer's color-matching silicone sealant.
- .7 Scribe and cut as required to fit abutting walls and to fit properly into recesses and to accommodate piping, columns, fixtures, outlets or other projecting, intersecting or penetrating objects.
- .8 Provide integral backsplashes and end splashes as shown on the Drawings.
- .9 Field joints shall be hard seamed unless otherwise specified.

- .10 Attach solid surfaces material to leveled supports on frame with dabs of silicone every 450 to 610 mm.
- .11 Fasten solid surface material to frame by anchoring screws to supports at all corner blocks.
- .12 Screws should not come in contact with solid surface material, as this may cause cracking of countertop.
- .13 Apply water resistant building paper over wood framing members in contact with masonry or cementitious construction.

### 3.3 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
  - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.
  - .1 Clean millwork and cabinet work inside cupboards and drawers and outside surfaces.
  - .2 Remove excess glue from surfaces.
  - .3 Solid surface to be cleaned as per manufacturer's instructions.
- .3 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 74 19 - Waste Management and Disposal.
  - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

### 3.4 PROTECTION

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

END OF SECTION 06 40 00