DIVISION 5

METALS

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DIVISION 5 – METALS

STRUCTURAL STEEL

1. GENERAL

1.1 Work Included

.1 Structural steel beams, bracing.

.2 Bearing plates, anchor bolts.

.3 Piles.

.4 Welds, bolts, washers, nuts and shims.

.5 Frames, hangers, struts.

.6 Galvanize structural steel members and appurtenances.

.7 Field touch up of galvanized surfaces including field welding.

1.2 Related Work

.1 Placement of anchor bolts, bearing plates and angles cast in concrete: Section 03300

1.3 Design Standards, Code Requirements

.1 Conform to requirements of CAN/CSA S16.1-Latest, CAN/CSA-S136-Latest, the Canadian Institute of Steel Construction (CISC) "Code of Standard Practice for Buildings" and the applicable safety regulations.

.2 Use loads, load combinations and stress levels shown on drawings and in accordance with the National Building Code of Canada

.3 Connections are to be designed by a Professional Structural Engineer.

.4 Perform all welding in accordance with requirements of CSA W59.

1.4 Qualifications

.1 All work is to be performed by a firm certified by the Canadian Welding Bureau to the requirements of CSA W47.1.

.2 All welders employed for erection are to possess valid "S" Classification Class "O" certificates issued by the Canadian Welding Bureau.

1.5 Inspection and Testing

.1 Shop and field inspection and testing may be performed by an Inspection and Testing Firm appointed and paid by the Owner.

.2 Provide free access to all portions of work in the shop and in the field and cooperate with appointed firm.

.3 Pay all additional costs for inspection and re-inspection due to defective workmanship or materials.

.4 Radiographic and magnetic particle inspection of welds may be performed by the Inspection and Testing Firm, in accordance with CSA W59 and ASTM E109, when required by the Engineer.

.5 Welds are to be considered defective if they fail to meet quality requirements of CSA W59.

.6 Additionally, all welds may be visually inspected.

1.6 Shop Drawings, Submittals

.1 Submit details of typical connections and special connections for review prior to preparation of shop drawings.

.2 Submit shop drawings for review in accordance with Section 01300.

.3 Clearly indicate profiles, sizes, spacing and locations of structural members, connections, attachments, reinforcing, anchorage, framed openings, size and type of fasteners, cambers and loads, accessories, column anchor bolt locations, setting details

.4 Include elevations and details.

.5 Indicate welded connections using welding symbols in compliance with CISC Welding Standards. Clearly indicate net weld lengths.

.6 Shop drawing review by the Engineer is solely to ascertain conformance to the general design concept.

.7 Responsibility for approval of detail design inherent in shop drawings rests with the Contractor and review by the Engineer shall not imply such approval.

.8 Review shall not relieve the Contractor of his responsibility for errors or omissions in shop drawings or for proper completion of the Work in accordance with the Contract Documents.

.9 Responsibility for verification and correlation of field dimensions, fabrication processes, techniques of construction, installation and coordination of all parts of the Work rests with the Contractor.

2. PRODUCTS

Type		
G	-	General Construction Steel
W	-	Weldable Steels
T	-	Weldable Low Temperature Steels
R	-	Atmospheric Corrosion Resistant Structural Steel
A	-	Atmospheric Corrosion Resistant Structural Steel With Improved Low Temperature Properties
Q	-	Quenched and Tempered Low Alloy Steel Plate

2.1 Materials

.1 All materials are to be new.

.2 Structural Steel: conforming to CAN/CSA G40.21-92, Type W with yield strength of 350 MPa or higher.

.3 Hollow Structural Sections: conforming to CAN/CSA G40.21-92, Type W, yield strength of 350 MPa, Class C.

.4 Cold formed sections to CAN/CSA S-136, yield strength of 350 Mpa.

.5 Bolts, Nuts and Washers: conforming to ASTM A325; finished to match members to which they attach.

.6 Anchor Bolts: fabricated from material conforming to CAN/CSA G40.21-92, Type W, yield strength 300 MPa; nuts and washers to be of equal or greater strength than bolts. Hot Dipped Galvanized

.7 Welding Materials: conforming to CSA W59.

.8 Concrete Anchors: see concrete accessories Section 03250.

.9 Galvanizing: conforming to CSA G164; minimum 600 g/m^2 coating.

2.2 Fabrication

.1 Fabricate structural steel members in accordance with CAN/CSAS16.1-Latest and CAN/CSA S136-Latest.

.2 Verify all drawing dimensions prior to commencing fabrication.

.3 Provide connections for loads shown.

.4 Provide connections as detailed.

.5 Accurately cut and mill column ends and bearing plates to assure full contact of bearing surfaces prior to welding.

.6 Design and detail connections for structural steel so that corrosion potential is minimized. Cap and seal weld all exposed ends of HSS sections.

.7 All steel fabrications shall be hot dipped galvanized after fabrication unless noted otherwise.

3. EXECUTION

3.1 Examination

.1 Before starting erection, take field measurements and examine other work may affect this work.

.2 Notify the Engineer of any conditions which would prejudice proper installation of this work.

.3 Commencement of this work implies acceptance of existing conditions.

3.2 Damaged Members

.1 Repair or replace members damaged during transit or erection, before securing in position.

3.3 Erection

.1 Erect structural steel in accordance with CAN/CSA S16.1-Latest and drawings.

.2 Field connections are to be bolted unless noted otherwise.

.3 Make adequate provision for all erection loads, and for sufficient temporary bracing to maintain structure safe, plumb and in true alignment until completion of erection and installation of necessary permanent bracing.

.4 Set column bases and other vertical members to design elevations on levelling nuts or steel wedges. Do not use wood wedges.

.5 Use only light drifting to draw parts together. Enlarge holes for bolted connections with reamers or twist drill only. Do not burn to form holes, enlarge holes or match unfair holes.

.6 Erection error is not to exceed requirements of CAN/CSA S16.1-Latest.

.7 Obtain Engineer's written permission prior to field cutting or altering structural members.

.8 Touch up all damaged galvanizing.

END OF SECTION

DIVISION 6

WOODS & PLASTICS

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DIVISION 6 – WOOD & PLASTICS

ROUGH CARPENTRY

1. GENERAL

1.1 Work Included

.1 Wood framing.

.2 Plywood sheathing.

.3 Engineered Joists.

.4 Blocking, furring and strapping.

.5 Blocking.

.6 Miscellaneous steel sections bolted to timber including tension bolts for removable panel.

.7 All associated fasteners and steel anchor hardware.

1.2 Related Work

.1 Concrete formwork — Section 03100

1.3 Quality Assurance

.1 Lumber shall bear the grading stamp of an agency certified by the Canadian Lumber Standards Administration Board.

.2 Plywood shall be identified by grade mark in accordance with the applicable CSA Standards.

2. PRODUCTS

2.1 Lumber Material

.1 Lumber: unless specified otherwise, softwood, S4S, moisture content 19% or less in accordance with following standards:

.1 CAN/CSA 0141-Latest.

.2 NLGA Standard Grading Rules for Canadian Lumber, Latest edition.

.2 Machine stress-rated lumber is acceptable for all purposes.

.3 Framing and board lumber: in accordance with NBC Latest Subsection 9.3.2.

.4 Furring, blocking, nailing strips, grounds, rough bucks, cants, curbs, fascia backing and sleepers:

.1 Board sizes: Grade No. 1 or No. 2

.2 Post and timbers sizes: "Standard" or better grade.

2.2 Panel Standards

.1 Panel standards: type, grade and thickness in accordance with following standards.

.1 Douglas fir plywood (DFP): to CSA O121-Latest standard construction.

.2 Canadian softwood plywood (CSP): to CSA O151-Latest, standard construction.

.3 Interior mat-formed wood particleboard: to CAN3-O188.1-Latest.

.4 Waferboard: to CAN3-O188.2-Latest.

.5 Hardboard: to CAN/CGSB-11.3-Latest.

.6 Insulating fiberboard sheathing: to CAN/CSA-A247-Latest.

.7 Expanded polystyrene sheathing: to CAN/CGSB-51.20-Latest.

2.3 Panel Material End Uses

.1 Roof sheathing:

.1 Plywood, DFP or CSP sheathing tongue and groove, 16 mm thick as specified on the drawings, precoated to receive specified vapour barrier.

.2 Exterior wall sheathing:

.1 Plywood, DFP or CSP sheathing tongue and groove, 12.7 mm.

.2 Concrete slab base suspended subflooring sheathing

.1 Preserved wood plywood of thickness show on drawings.

2.4 Roof Joists

.1 Joists shall be engineered type TJI by Trus Joist MacMillan Ltd. or JSI by Jager Industries Inc. (or equivalent) to depths/sizes/types shown on drawings. Webs shall consist of structural grade sheathing and flanges shall consist of proprietary sized and rated lumber. Glues shall be waterproof.

.2 Bridging, blocking (additional to blocking indicated on drawings and required for proprietary members) and any required accessories including hangers, shoes, tie-downs, etc. shall be by the same manufacturer as the joist supplier.

.3 Roof joists to have appropriate CCMC product evaluation number clearly stamped on each member.

2.5 Dampproof Membrane

.1 Polyethylene film: to CAN/CGSB-51.33-M80, 0.25 mm thick.

2.6 Adhesives

.1 Subflooring adhesive: to CGSB 71-GP-26M, cartridge loaded.

2.7 Fasteners

.1 Nails, spikes and staples: to CSA B111-1974.

.2 Bolts: 12.5 mm diameter unless indicated otherwise, complete with nuts and washers.

.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 Wall anchors: Simpson Type HSDA hold down or approved alternate.

.5 Galvanizing: to CAN/CSA G164-M92, use galvanized fasteners for exterior work, interior highly humid areas, pressure-preservative and fire-retardant treated lumber.

.6 Joist hangers: minimum 1 mm thick sheet steel, galvanized ZF001 coating designation designed for intended use, capacity to equal or exceed rated capacity of supported member in shear.

.7 Nailing discs: flat caps, minimum 25 mm diameter, minimum 0.4 mm thick, sheet metal, formed to prevent dishing. Bell or cup shapes not acceptable.

.8 Roof sheathing H-Clips: formed "H" shape, thickness to suit panel material, type approved by Engineer.

2.8 Wood Preservative

.1 Surface-applied wood preservative: clear or copper napthenate or 5% pentachlorophenol solution, water repellant 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 The use of Wood Preservative is for all wall bottom plates and all timber associated with the suspended subfloor.

3. EXECUTION

3.1 Construction

.1 Comply with requirements of NBC 1995 Part 9 supplemented by following paragraphs.

3.2 Erection of Framing Members

.1 Install members true to line, levels and elevations

.2 Construct continuous members from pieces of longest practical length.

.3 Install spanning members with "crown-edge" up.

3.3 Joists

.1 Erect joists in strict accordance with the manufacturer's recommendations complete with erection and permanent bracings. Install straight and plumb. Do not field modify members.

.2 Removal of erection bracing shall be done in stages as decking installation is in progress. Maintain erection bracing in place where decking installation is not hindered. Complete stability is not achieved until permanent bracing and complete decking are installed, and bracing of the beams and joists during erection remains the responsibility of the contractor.

.3 Temporary construction loads which cause stresses beyond the design limits are not permitted.

3.4 Wall Sheathing

.1 Install wall sheathing in accordance with manufacturer's printed instructions.

3.5 Furring and Blocking

.1 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.

.2 Install furring to support siding applied vertically where sheathing is not suitable for direct nailing.

.3 Align and plumb faces of furring and blocking to tolerance of 1:600.

3.6 Nailing Strips, Grounds and Rough Bucks

.1 Install rough bucks, nailers and linings to rough openings as required to provide backing for frames and other work.

3.7 Fascia Backing

.1 Install fascia backing, nailers, and other wood supports as required and secure using galvanized fasteners.

3.8 Steel hardware

.1 All steel is permanent contact with timber to be galvanized.

.2 Steel angles at removable panel to be lag bolted to timber with 5 mm ø galvanized screws at not more than 400 mm 0c and not more than 150 m from any free end.

.3 Tensier bolts at removable panel to be galvanized and ship loose to install per details.

3.9 PARTICLE BOARD

.1 Use caution when working with particle board. Use dust collectors and high quality respirator masks.

3.10 Fasteners

.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.

3.11 Surface Applied Wood Preservative

.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 Re-treat surfaces exposed by cutting, trimming or boring with liberal brush application of preservative before installation.

.4 Treat all material as indicated: wood cants, fascia backing, curbs, nailers, sleepers on roof deck.

.5 All treated components founded on the top of the concrete foundation walls/reservoir tank walls or otherwise exposed or adjacent to the water containing reservoirs shall be tightly wrapped over the entire length of the member in 6 mil poly sheeting prior to being fastened to the concrete support.

3.12 Electrical Equipment Backboard

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

END OF SECTION

FINISH CARPENTRY

1. GENERAL

1.1 RELATED SECTIONS

.1 Section 09900 - Interior Painting.

1.1 References

.2 Architectural Woodwork Manufacturers Association of Canada (AWMAC)

.1 AWMAC Quality Standards for Architectural Woodwork 1991.

.3 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-11.3-M87, Hardboard.

.4 Canadian Standards Association (CSA)

.1 CSA B111-1974 R1998), Wire Nails, Spikes and Staples.

.2 CAN/CSA-G164-M92 (R1998), Hot Dip Galvanizing of Irregularly Shaped Articles.

.3 CAN/CSA-O141-91 (R1999), Softwood Lumber.

.5 National Hardwood Lumber Association (NHLA)

1 Rules for the Measurement and Inspection of Hardwood and Cypress January 1986.

.6 National Lumber Grades Authority (NLGA)

.1 Standard Grading Rules for Canadian Lumber 1996.

1.2 Shop Drawings

.7 Submit shop drawings in accordance with Section 01300 - Submittals.

.8 Indicate details of construction, profiles, jointing, fastening and other related details.

.9 Indicate all materials, thicknesses, finishes and hardware.

1.3 Delivery, Storage and Handling

.10 Deliver, handle, store and protect materials in accordance with Division 1 Requirements.

.11 Protect materials against dampness during and after delivery.

.12 Store materials in ventilated areas, protected from extreme changes of temperature or humidity.

2. PRODUCTS

1.4 Lumber Material

.1 Softwood lumber: unless specified otherwise, S4S, moisture content 19% or less in accordance with following standards:

.1 CAN/CSA-O141-91 (1999).

.2 NLGA Standard Grading Rules for Canadian Lumber.

.3 AWMAC custom grade, moisture content as specified.

.2 Machine stress-rated lumber is acceptable for all purposes.

.3 Hardwood lumber: moisture content 19 % or less in accordance with following standards:

.1 National Hardwood Lumber Association (NHLA).

.2 AWMAC custom grade, moisture content as specified.

1.5 Accessories

.4 Nails and staples: to CSA B111-1974 (R1998); galvanized to CAN/CSA-G164-M92 (R1998) for exterior work, interior humid areas and for treated lumber; plain finish elsewhere.

.5 Wood screws: to CSA B35.4-72 plain, type and size to suit application

.6 Splines: wood.

.7 Adhesive: recommended by manufacturer.

.8 Use least toxic sealants, adhesives, sealers, and finishes necessary to comply with requirements of this section.

3. EXECUTION

1.6 Installation

.1 Do finish carpentry to Quality Standards of the Architectural Woodwork Manufacturers Association of Canada (AWMAC), except where specified otherwise.

.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.

1.7 Construction

.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 items of finish carpentry with damage to wood surfaces including hammer and other bruises.

.5 Standing and running trim:

.1 Butt and cope internal joints of baseboards to make snug, tight joints. Cut right angle joints of casing and base with mitred joints.

.2 Fit backs of baseboards and casing snugly to wall surfaces to eliminate cracks at junction of base and casing with walls.

.3 Make joints in baseboard, where necessary using a 45° scarfe type joint.

.4 Install door and window trim in single lengths without splicing.

.6 Interior and exterior frames:

.1 Set frames with plumb sides and level heads and sills and secure.

1.8 Schedules

.1 Standing and running trim:

.1 Interior baseboard, door and window casings:

.1 Grade: B or better.

.2 Solid stock: birch species.

.2 Construction to AWMAC Details.

.1 Profile: S4S and stop, mn 19 mm thickness.

.2 Corner: Rabbet.

.3 Casings: to match door and window casings.

END OF SECTION

CABINETS

1. GENERAL

1.1 Section Includes

.1 Cabinets and countertops, trim, attachment accessories.

.2 Finish hardware.

.3 Related Sections

.4 Section 09900 – Painting.

1.2 References

.1 AWMAC (Architectural Woodwork Manufacturers Association of Canada) – Quality Standards.

1.3 Submittals for Review

.1 Section 01300: Submission procedures.

.2 Shop drawings: Indicate materials, component profiles, fastening methods, jointing details, finishes.

1.4 Quality Assurance

.1 Perform Work in accordance with AWMAC – Custom Quality.

.2 Manufacturers Qualifications: Company specializing in manufacturing the Products specified in this section with minimum three years documented experience.

.3 Conform to applicable regulatory requirements for fire retardant requirements.

1.5 Delivery, Storage, and Protection

.1 Protect surfaces with wrapping.

2. PRODUCTS

2.1 Materials

.1 Softwood lumber: AWMAC Economy grade; maximum moisture content of 6 percent, White Birch species.

.2 Softwood Plywood: APA grade; core materials of veneer or lumber; Fir species.

.3 Plastic Laminate: NEMA LD-3, 1.3 mm General Purpose; colour, pattern, and surface finish as selected by Consultant.

.4 Plastic Laminate Backing: NEMA LD-3, high pressure paper base laminate without a decorative finish; 0.5 mm thick, smooth surface finish.

.5 Melamine Interiors: Plastic laminate, thin application, *up to 3 colours, no open and matte surface texture as selected.*

2.2 Accessories

.1 Contact Adhesives: Water base type in accordance with Ecologo Environmental Choice Program.

.2 Bolts, Nuts, Washers, Blind fasteners, Lags, and Screws: Size and type to suit application; plain finish.

.3 Primer: MPI Level 3 VOC level latex type.

.4 Plastic Edge Trim: Extruded convex shaped; smooth finish; self-locking serrated tongue; of width to match wood thickness; same colour as exposed finish.

2.3 Hardware

.1 Shelf Standards, Brackets, and Rests: Manufactured by Knape & Vogt 255 (econo-zinc).

.2 Drawer and Door Pulls: Chrome, solid steel type, 13 mm diameter rod, center to center of legs 89 mm manufactured by Richelieu 491 colour 195.

.3 Catches: Magnetic, similar to Knape & Vogt 916, bright aluminum.

.4 Drawer Slides: similar to Knape & Vogt 8400, zinc coated steel, full extension, rated for 100 pound load.

.5 Hinges: Steel, chrome finish, invisible, retracting, flush type, manufactured by Blum concealed compact 33, self-closing, full overlay, cup T42 screw-on steel nickel plated, full overlay.

.6 Cabinet door/drawer locks: similar to Corbin 0266 (finish C26D) c/w bar strike 10-051. Trim colour (36-031). Throw: 25 mm to be combined with surface bolt. Located on all cabinet doors.

.7 Cabinet door surface bolt: similar to Hager HA 1281 in chrome or bright aluminum finish, c/w flush rim keeper. Mount keeper and surface bolt at bottom of door. Installed in combination with cabinet door locks.

.8 Shelf rests: similar to Knape & Vogt 256R (zinc).

2.4 Fabrication

.1 Fabricate cabinets to AWMAC "Custom" Quality.

.2 Line inside of cabinets with Melamine.

2.5 Shop finishing

.1 Shop finish work to AWMAC plastic laminate, factory finish.

3. EXECUTION

3.1 Examination

.1 Section 01600: Verification of existing conditions before starting work.

.2 Verify openings and adjoining materials are ready to receive work of this section.

3.2 Installation

.1 Install work in accordance with AWMAC Custom Quality standard.

.2 Set and secure materials and components in place, plumb and level.

.3 Install components and trim, with screws and bolts with blind fasteners.

.4 Cover exposed edges of shelving and site made casework with plastic edging. Width of edging to match shelving.

.5 Apply plastic laminate finishes where indicated.

.1 Cap exposed edges with plastic laminate of same finish and pattern.

.2 Apply laminate backing sheet on reverse side of plastic laminate finished surfaces.

3.3 Adjusting

.1 Adjusting doors and drawers for smooth operation.

3.4 Cleaning

.1 Wash down surfaces:

.1 With a solution of mild detergent in warm water,

2 Applied with soft, clean wiping cloths,

3 Take care to remove dirt from corners, and

.4 Wipe surfaces clean.

END OF SECTION