#### 1. GENERAL

# 1.1 Work Included

- .1 All plain and reinforced cast-in-place concrete shown on drawings.
- .2 Setting anchors, inserts, frames, sleeves and other items supplied by other Sections.
- .3 Repairing concrete imperfections.
- .4 Finishing formed concrete surfaces.
- .5 Waterproofing reservoir walls and floor slab. This includes both existing concrete surfaces and new concrete surfaces as indicated on the drawings.

## 1.2 Related Work

.1 Concrete formwork: Section 03100

.2 Concrete reinforcement: Section 03200

.3 Concrete accessories: Section 03250

# 1.3 Quality Assurance

- .1 Cast-in-place concrete to conform to CAN/CSA-A23.1-LATEST.
- .2 Testing shall conform to CAN/CSA-A23.2-M90.

# 1.4 Inspection and Testing

- .1 Notify Engineer at least 24 hours before complete formwork and concrete reinforcement will be ready for inspection.
- .2 Allow ample time for inspection and corrective work, if required, before scheduling concrete placement.
- .3 Concrete sampling, inspection and testing is to be performed by an Inspection and Testing Firm appointed and paid by the Owner.
- .4 Provide free access to all portions of work and cooperate with appointed firm.
- .5 Submit proposed mix design to Engineer for review prior to commencement of work.
- .6 Tests of cement and aggregates may be performed to ensure conformance with requirements stated herein.

- .7 Notify Inspection and Testing Firm before placing concrete, in ample time to permit scheduling.
- .8 Three concrete test cylinders will be taken for every 50 m3 or less of concrete placed at any one time.
- .9 At least three test cylinders will be taken daily for each class of concrete placed. Record atmospheric and concrete temperatures.
- .10 One additional test cylinder will be taken during cold weather concreting, and be cured on job site under same conditions as concrete it represents.
- .11 One slump test and one air content test will be taken for each set of test cylinders taken.
- .12 Additional slump tests may be taken as necessary to verify quality of concrete.
- .13 Testing of concrete will be performed in accordance with CAN/CSA-A23.2-M-90. Test results will be issued to Contractor and Engineer.
- .14 Pay costs for retesting required due to defective materials or workmanship.
- .15 Contractor may arrange and pay for additional tests for use as evidence to expedite construction.

#### 2. PRODUCTS

#### 2.1 Concrete Materials

- .1 Cement: Type 10 Portland type, conforming to CAN/CSA-A5-LATEST.
- .2 Fine Aggregate: conforming to Normal Density Fine Aggregate, CAN/CSA-A23.1-LATEST.
- .3 Coarse Aggregate: conforming to Normal Density Coarse Aggregate, CAN/CSA-A23.1-LATEST, Group I.
- .4 Coarse Aggregate for Toppings: conforming to Normal Density Coarse Aggregate, CAN/CSA-A23.1-LATEST, Group I.
- .5 Ensure that no aggregates are used which may undergo volume change due to alkali reactivity, moisture retention or other causes. Confirm suitability of aggregate with a petrographic analysis if deemed necessary by the Engineer.
- .6 Water: clean and free from injurious amounts of oil, alkali, organic matter or other deleterious material.

## 2.2 Admixtures

- .1 Air Entrainment: conforming to CAN 3-A266.1-LATEST.
- .2 Chemical: conforming to CAN 3-A266.2-LATEST.
- .3 Pozzolanic Mineral: conforming to CAN/CSA-A23.5(LATEST).

#### 2.3 Accessories

- .1 Epoxy Bonding Agent: two component epoxy resin.
- .2 Acrylic Bonding Agent: CPD Acrylic Concrete Adhesive, Thorosystems Acryl 60, Sternson Duraweld C, Elsro Flex-Con 710, mixed with cement as recommended by manufacturer.
- .3 Non-Ferrous Grout: pre-mixed, non-shrink, Master Builders 713, Sternson M-Bed, CPD Non Shrink Grout, Steel CI Grout, minimum 35 MPa compressive strength. Or: Epoxy Grout: Sternson Talygrout.

#### 2.4 Concrete Mixes

- .1 Pay all costs for mix design. Submit design of a proven mix to Engineer for review.
- .2 Provide concrete mixed in accordance with requirements of CAN/CSA-A23.1-LATEST.
- .3 All concrete unless noted otherwise on the Drawings: 30 MPa 28 day compressive strength, slump  $70 \pm 20$  mm.
- .4 Use accelerating admixtures in cold weather only when approved by Engineer. If approved, the use of admixtures will not relax cold weather placement requirements. Do not use calcium chloride.
- .5 Use set-retarding admixtures during hot weather only when approved by Engineer.
- .6 All admixtures are subject to the approval of the Engineer. List all proposed admixtures in mix design submission. Do not change or add admixtures to approved design mixes without Engineer's approval.

#### 3. EXECUTION

#### 3.1 Examination

- .1 Before starting this work, examine work done by others which affects this work.
- .2 Notify the Engineer of any conditions which would prejudice proper completion of this work.

.3 Commencement of work implies acceptance of existing conditions.

# 3.2 Placing Concrete

- .1 Place concrete in accordance with requirements of CAN/CSA-A23.1-LATEST, and as indicated on drawings.
- .2 Handling equipment shall be kept free from hardened concrete or foreign material, and cleaned at frequent intervals.
- .3 Notify Engineer and Inspection and Testing Firm minimum 24 hours prior to commencement of concrete operations.
- .4 Ensure all anchors, seats, plates and other items to be cast into concrete are securely placed, and will not interfere with concrete placement.
- .5 Maintain accurate records of cast-in-place concrete items. Record date, location of pour, quantity, air temperature and test samples taken.
- .6 Ensure reinforcement, inserts, embedded parts, formed expansion and control joints are not disturbed during concrete placement.
- .7 Prepare set concrete by removing all laitance and loose materials and applying bonding agent. Apply bonding agent in accordance with manufacturer's recommendations.
- .8 Place concrete continuously between present construction and control joints.
- .9 Vibrate concrete using the appropriate size equipment as placing proceeds in strict accordance with CAN/CSA-A23.1-LATEST. Check frequency and amplitude of vibrations prior to use. Provide additional standby vibrators in the event of equipment failure.
- .10 Do not place concrete if carbon dioxide producing equipment has been in operation in the building during the 12 hours preceding the pour. This equipment shall not be used during placing or for 24 hours after placing. During placing and curing concrete, surfaces shall be protected by formwork or an impermeable membrane from direct exposure to carbon dioxide, combustion gases or drying from heaters.
- .11 Honeycomb or embedded debris in concrete is not acceptable.
- .12 Remove and replace defective concrete.

# 3.3 Cold and Hot Weather Concreting

- .1 Conform to requirements of CAN/CSA-A23.1-LATEST.
- .2 Refer to Section 01500 for temporary enclosure and heating requirements.

#### 3.4 Concrete Protection for Reinforcement

- .1 Ensure reinforcement is placed to provide minimum concrete cover in accordance with CAN/CSA-A23.1-LATEST.
- .2 Conduits and Pipes
- .3 Conduit and pipe embedded in concrete shall be of a material not harmful to the concrete and shall:
- .4 Not displace more than 4% of the area of the cross section of a column on which stress is calculated, including the area of concrete displaced by the bending of the conduit or exit path of the conduit out of the column.
- .5 Not be spaced closer than three diametres on centre.
- .6 Have a concrete covering of not less than 25 mm.
- .7 Be so installed that it will not require cutting, bending or displacement of the reinforcement or impair the structural strength of the system.

# 3.5 Install Items Specified Under Other Sections

- .1 Install hangers, sleeves, anchors, etc. specified under other Sections.
- .2 Pour concrete after other trades have satisfactorily installed their materials.
- .3 Do not eliminate or displace reinforcement to accommodate hardware. If hangers, inserts, anchors, etc. cannot be located as specified obtain approval of all modifications from Engineer before placing concrete.

# 3.6 Equipment Pads

- .1 Provide concrete pads for equipment where and as indicated on drawings. Adjust dimensions of pads to suit final equipment sizes as per reviewed shop drawings.
- .2 Steel trowel top surface smooth.

## 3.7 Curing and Protection

.1 Cure and protect freshly placed concrete in accordance with CAN/CSA-A23.1-LATEST using moist curing methods only.

- .2 All concrete shall receive moist curing for a period of at least seventy two hours. One of the following methods shall be used as soon as the concrete has hardened sufficiently to prevent marring:
  - .1 Surface covered with canvas or other satisfactory material and kept thoroughly wet.
  - .2 Surface sealed with polyethylene sheeting at least 6 mils thick and the concrete kept thoroughly wet.
  - .3 LIQUID MEMBRANE, CURING COMPOUNDS MAY NOT BE USED.
- 3 The Contractor shall protect and heat, where necessary, all concrete which has been placed when the air temperature is 5°C. or below. In the opinion of the Engineer, when the air temperature is likely to fall below 5°C. at any time during the twenty four hours after the concrete is placed, the concrete shall then also be protected and heated, when necessary, from the time the concrete is placed. When the air temperature falls below 5°C. during the seven days after the concrete is placed, the Engineer may instruct the Contractor to institute protection and heating where necessary to prevent damage to the concrete by freezing or to allow the concrete to develop sufficient strength to carry the dead and live loads which will be imposed on it by further construction work or general traffic in the near future.
- .4 The system of protection, surface or enclosed with heating, where necessary, (or fully insulated forms), must be adequate and designed in relation to ambient conditions and the type of construction to satisfactorily achieve these curing conditions in the concrete.
- .5 For proper curing of concrete the temperature of all surfaces of the concrete shall be maintained at not less than 20°C. for five days or at not less than 10°C. for seven days after placing. Further, the concrete shall be kept above freezing temperature for a period of at least nine days and shall be kept from alternate freezing and thawing for at least fourteen days after placement.
- .6 No salt or other chemicals shall be used to lower the freezing point of the concrete as a substitute for the specified curing and protection.
- .7 At the end of the specified protection period, the temperature of the concrete shall be reduced gradually at a rate not exceeding 10°C. per day until the outside air temperature has been reached.
- .8 The Contractor shall keep a full record of the temperature of concrete upon placing and a daily record of the curing temperature of the concrete for the full protection period.
- .9 Concrete which is allowed to freeze or which obtains insufficient curing conditions shall be subject to all necessary investigations and testing as deemed necessary by the Engineer. If found unsatisfactory, all such concrete shall be removed and the portion reconstructed as directed by the Engineer.
- .10 The cost incurred by the Engineer for such investigation, testing or inspection of reconstruction and the cost of reconstruction shall be borne by the Contractor.

# 3.8 Formed Concrete

- .1 Inspect concrete surfaces immediately upon removal of forms.
- .2 Treat imperfections in formed surfaces in accordance with CAN/CSA-A23.1-LATEST and to Engineer's approval – all required patches shall be completed using the specified patching mortar.
- .3 Modify or replace concrete not conforming to qualities, lines, details and elevations specified herein or indicated on drawings.

# 3.9 Surfacing and Finishing

- .1 Class 1 Ordinary Surface Finish:
  - Immediately following the removal of forms, all fins and irregular projections shall be removed from all surfaces except those which are not to be exposed or not to be waterproofed. On all surfaces the cavities produced by form ties, if specified to be filled, and all other holes, honeycomb spots, broken corners or edges and other defects shall be thoroughly cleaned and after having been kept saturated with water for a period of not less than three hours, shall be carefully pointed and trued with the specified mortar. The mortar patches shall be cured as specified under "Curing". All construction and expansion joints in the completed work shall be left carefully tooled and free from all mortar and concrete. The joint filler shall be left exposed for its full length and with clean and true edges. Pointing and patching of concrete surfaces which are to receive a Class 3 finish must be of uniform texture and match the texture of the surrounding formed finishes. An approved acrylic polymer bonding agent shall be used in all repair mortar.
  - .2 The resulting surfaces shall be true and uniform; all surfaces which cannot be repaired to the satisfaction of the Engineer shall be "rubbed" as specified for Class 2 Rubbed Finish.

#### .2 Floated Surface Finish:

After the concrete has been compacted, the surface shall be carefully rodded and struck off with a stroke board to conform to the cross-section and grade shown on the Drawings. Proper allowance shall be made for camber, if required. The strike board may be operated longitudinally or transversely and shall be moved forward with a combined longitudinal and transverse motion, the manipulation being such that neither end is raised from the site forms. A slight excess of concrete shall be kept in front of the cutting edge at all times.

#### 3.10 Defective Concrete

- .1 Concrete not meeting the requirements of the Specifications and Drawings shall be considered defective concrete.
- .2 Concrete not conforming to the lines, detail and grade specified herein or as shown on the Drawings shall be modified or replaced at the Contractor's expense and to the satisfaction of the Engineer. Finished lines, dimensions and surfaces shall be correct and true within tolerances specified herein and in the Formwork Section of these Specifications.
- .3 Concrete not properly placed resulting in excessive honeycombing, and all honey-combing and other defects in critical areas of stress shall be repaired or replaced at the Contractor's expense and to the satisfaction of the Engineer.
- .4 To conform to the strength requirements, the average of all tests shall exceed thespecified strength. When five or more tests of the same class of concrete are available, the average of any five consecutive tests shall be equal to, or greater than the specified strength, and no strength test shall fall more than 3.5 MPa below the specified strength. If any of the criteria of the above clause are not met, the Engineer shall have the right to require one or more of the following:
  - .1 Changes in mix proportions for the remainder of the work.
  - .2 Cores drilled and tested from the areas in question as directed by the Engineer and in accordance with CAN/CSA-A23.2-M90. The test results shall be indicative of the strength of the in-place concrete.
  - .3 Load testing of the structural elements. The changes in the mix proportions and the testing shall be at the Contractor's expense.
  - .4 Concrete failing to meet the strength requirements of this specification shall be strengthened or replaced at the Contractor's expense and the satisfaction of the Engineer.

#### 3.11 Patching

- .1 Allow Engineer to inspect concrete surfaces immediately upon removal of all formwork.
- .2 Patch imperfections when concrete is green.
- .3 Remove all exposed metal form ties, nails and wires, break off fins and remove all loose concrete.
- .4 Thoroughly wet all form tie pockets and patch with patching mortar followed by proper curing.

.5 Chip away honeycombed and other defective surfaces to depth of not less than 25mm with the edges perpendicular to the surface. Thoroughly wet and patch with patching mortar followed by proper curing.

# 3.12 Clean-Up

- .1 As work progresses, remove from site all debris and excess materials.
- .2 At completion of work, remove from site all debris, excess materials and equipment.

# END OF SECTION



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# **DIVISION 5 - METALS**

Section No.	Description	
05120	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
- .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	<ul> <li>Atmospheric Corrosion Resistant Structural Steel With Improved Low Temperature Properties</li> </ul>
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<sup>2</sup> coating.

#### 2.2 Fabrication

- .1 Fabricate structural steel members in accordance with CAN/CSAS16.1-Latest and CAN/CSAS136-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 S WOODS & PLASTICS

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# DIVISION 6 - ??

Section No.	Description	
06100	Rough Carpentry	
06200	Finish Carpentry	
06405	Cabinets	

#### 1. GENERAL

#### 1.1 Work Included

- 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
    - 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

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

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