

**Part 1            General**

**1.1                REFERENCES**

- .1 Canadian Standards Association (CSA International)
  - .1 CSA B111, Wire Nails, Spikes and Staples.
  - .2 CAN/CSA-G164, Hot Dip Galvanizing of Irregularly Shaped Articles.
  - .3 CSA O121, Douglas Fir Plywood.
  - .4 CAN/CSA-O141, Softwood Lumber.
  - .5 CSA O151, Canadian Softwood Plywood.
  - .6 CAN/CSA-O325.0, Construction Sheathing.
  - .7 CAS 080, Wood Preservation.
- .2 Canadian General Standards Board (CGSB)
  - .1 CAN/CGSB-11.3, Hardboard.
- .3 National Lumber Grades Authority (NLGA)
  - .1 Standard Grading Rules for Canadian Lumber.

**1.2                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 grademark in accordance with applicable CSA standards.

**Part 2            Products**

**2.1                MATERIALS**

- .1 Lumber: unless specified otherwise, softwood, S4S, moisture content 19% or less in accordance with following standards, Spruce, Pine or Fir NLGA No. 2 or better grade:
  - .1 CAN/CSA-O141.
  - .2 NLGA Standard Grading Rules for Canadian Lumber.
  - .3 Glued end-jointed (finger-jointed) lumber is not acceptable.
- .2 Canadian softwood plywood (CSP): to CSA 0151, standard construction, square edge. Standard sheathing grade.
- .3 Hardboard paneling: to CAN/CGSB-11.3, smooth, tempered, 1219 x 2438 x 3 mm thick panels.
- .4 Nails, spikes and staples: to CSA B111 and NBC requirements. Galvanized.

- .5 Bolts: steel, of sizes required, complete with nuts and washers. Galvanized.
- .6 Proprietary fasteners: toggle bolts, expansion shields and lag bolts, screws and lead plugs, recommended for purpose by manufacturer.
- .7 Surface-applied wood preservative: copper naphthenate or pentachlorophenol base water repellent preservative. Use clear for materials exposed in final assembly, coloured elsewhere.
- .8 Pressure Preservative Treated Wood:
  - .1 Provide lumber materials pressure preservative treated for rough bucks at openings, wood strapping, and lumber used on exterior of building, above or below grade.
  - .2 Treat material to CAN/CSA-O80 using Type-C (copper chromate arsenate) preservative to obtain a minimum net retention level of 6.4 kg/m<sup>3</sup> of wood.
  - .3 Materials shall be dried after treatment to a moisture content of 19% or less.
  - .4 Each piece of treated material shall be identified with a tag or ink mark bearing the Canadian Wood Preservers' Bureau quality mark.
  - .5 Apply surface applied wood preservative to heartwood exposed from ripping, end cutting or boring.

## **2.2 FINISHES**

- .1 Galvanizing: to CAN/CSA-G164, use galvanized fasteners for all work.

## **Part 3 Execution**

### **3.1 GENERAL**

- .1 Comply with requirements of NBC, Part 9 supplemented by following paragraphs.
  - .1 Install members true to line, levels and elevations. Space uniformly. 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 Construct continuous members from pieces of longest practical length.
  - .3 Install spanning members with "crown-edge" up.
  - .4 Frame, anchor, fasten, tie and brace members to provide necessary strength and rigidity.
  - .5 Countersink bolts where necessary to provide clearance for other work.
  - .6 Use fastenings of following types, except where specific type is indicated or specified:
    - .7 To hollow masonry, plaster and panel surfaces use toggle bolt.
    - .8 To solid masonry and concrete use expansion shield with lag screw, lead plug with wood screw.
    - .9 To structural steel use bolts through drilled hole, or welded stud-bolts or power driven self-drilling screws, or welded stud-bolts or explosive actuated stud-bolts.

- .10 Install furring and blocking as required to space-out and support surface wall and ceiling finishes, facings, fascia, soffit, siding and other work as indicated. Align and plumb faces of furring and blocking to tolerance of 1:600.
- .11 Install rough bucks, nailers and linings to rough openings as required to provide backing for frames and other work. Except where indicated otherwise, use material at least 38 mm thick.
- .12 Install fascia backing, nailers and other wood supports as required and secure using galvanized fasteners.
- .13 Install hardboard paneling with finishing nails. 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.

### **3.2 ERECTION**

- .1 Frame, anchor, fasten, tie and brace members to provide necessary strength and rigidity.
- .2 Countersink bolts where necessary to provide clearance for other work.

### **3.3 SCHEDULES**

- .1 Unless noted otherwise on the drawings, 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**

**Part 1 General**

**1.1 REFERENCES**

- .1 Canadian Standards Association (CSA International)
  - .1 CSA O80 Series, Wood Preservation.
  - .2 CAN/CSA-O86, Engineering Design in Wood.
  - .3 CAN/CSA-O141, Softwood Lumber.
  - .4 CSA S307, Load Test Procedure for Wood Roof Trusses for Houses and Small Buildings.
  - .5 CSA S347, Method of Test for Evaluation of Truss Plates Used in Lumber Joints.
- .2 National Lumber Grades Authority (NLGA)
  - .1 NLGA, Standard Grading Rules for Canadian Lumber.
- .3 National Research Council (NRC)/Institute for Research in Construction (IRC) - Canadian Construction Materials Centre (CCMC)
  - .1 CCMC, Registry of Product Evaluations.
- .4 Truss Plate Institute of Canada (TPIC)
  - .1 TPIC, Truss Design Procedures and Specifications for Light Metal Plate Connected Wood Trusses (Limit States Design).

**1.2 DESIGN REQUIREMENTS**

- .1 Design trusses, bracing and bridging in accordance with CAN3-086 for building locality as ascertained by NBC Supplement No. 1, Climatic Information for Building Design in Canada and minimum uniform and minimum concentrated loadings stipulated in NBC commentary.
- .2 All roof trusses are to be prefabricated and designed in accordance with the latest edition of CSA-086. Timber for roof trusses and rafters shall be structurally graded in accordance with NLGA standard grading rules for Canadian Lumber (latest edition). Material may be No. 2 spruce or equal in accordance with B7. Material shall be straight grained and kiln dried.
- .3 Truss manufacturer to design, fabricate and supply complete roof framing system, including lateral bracing, and uplift anchors.
- .4 Limit live load deflections to 1/240th of span.
- .5 Bottom chord mechanical and electrical (service) dead load allowance = 0.5 kPa.

**1.3 SUBMITTALS**

- .1 Shop drawings, including connection details, bearing the stamp of a registered professional engineer in the Province of Manitoba, shall be submitted to the Contract Administrator for approval before commencement of fabrication. Product Data:

- .2 Indicate special structural application and specification as according to local authorities having jurisdiction.
- .3 Indicate TPIC Truss Design Procedure and CSA O86 Engineering Design in Wood and specific CCMC Product Registry number of the truss plates
- .4 Indicate species, sizes, and stress grades of lumber used as truss members. Show pitch, span, camber, configuration and spacing of trusses. Indicate connector types, thicknesses, sizes, locations and design value. Show bearing details. Indicate design load for members.
- .5 Submit stress diagram or print-out of computer design indicating design load for truss members. Indicate allowable load and stress increase.
- .6 Indicate arrangement of webs or other members to accommodate ducts and other specialties.
- .7 Show location of lateral bracing for compression members.
- .8 Show lifting points for storage, handling and erection.
- .9 Certificates: submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.
- .10 Instructions: submit manufacturer's installation instructions.

#### **1.4 DELIVERY, STORAGE AND HANDLING**

- .1 Storage and Protection:
  - .1 Store trusses on job site in accordance with manufacturer's instructions. Provide bearing supports and bracings. Prevent bending, warping and overturning of trusses.

### **Part 2 Products**

#### **2.1 MATERIALS**

- .1 Lumber: species, grade, softwood, S4S, with maximum moisture content of 19% at time of fabrication and to following standards:
  - .1 CAN/CSA-O141.
  - .2 NLGA (National Lumber Grading Association), Standard Grading Rules for Canadian Lumber.
- .2 Fastenings: to CAN/CSA-O86.
- .3 Identify lumber by grade stamp of an agency certified by Canadian Lumber Standards Administration Board.

#### **2.2 FABRICATION**

- .1 Fabricate wood trusses in accordance with approved shop drawings.

- .2 Verify connectors and other truss connectors shown on drawings.
- .3 Cut truss members to accurate length, angle, and size to assure tight joints for finished trusses.
- .4 Assemble truss members to design configuration.
- .5 Provide for design camber when positioning truss members.
- .6 Connect members using bolts and nuts, metal gussets.
- .7 Design and supply suitable metal hangers for all truss to truss connections.
- .8 Provide all tie-down connectors and other truss connectors shown on drawings. Provide for design camber and roof slopes when positioning truss members.
- .9 Connect members using metal connector plates.

### **Part 3 Execution**

#### **3.1 MANUFACTURER'S INSTRUCTIONS**

- .1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheet.

#### **3.2 ERECTION**

- .1 Erect wood trusses in accordance with reviewed erection drawings.
- .2 Handling, installation, erection, bracing and lifting in accordance with manufacturers instructions.
- .3 Make adequate provisions for handling and erection stresses.
- .4 Exercise care to prevent out-of-plane bending of trusses.
- .5 Install temporary horizontal and cross bracing to hold trusses plumb and in safe condition until permanent bracing and decking are installed.
- .6 Install permanent bracing in accordance with approved shop drawings, prior to application of loads to trusses.
- .7 Do not cut or remove any truss material without approval of Contract Administrator.
- .8 Remove chemical and other surface deposits on treated wood, in preparation for applied finishes.

#### **3.3 CLEANING**

- .1 Remove surplus materials, excess materials, rubbish, tools and equipment on completion of installation.

**END OF SECTION**