

CHAPTER 2

RESPONSIBILITIES IN THE DESIGN PROCESS INVOLVING METAL PLATE CONNECTED WOOD TRUSSES

2.1 PURPOSE

The purpose of this chapter is as follows:

2.1.1 To define and draw attention to the typical duties and responsibilities of the Truss Manufacturer, Truss Designer, Owner, Building Designer and Contractor so that all parties have an understanding of the typical division of professional responsibilities with respect to wood Trusses. This will result in safer, more effective and efficient use of Trusses, and more economical Buildings overall.

2.1.2 To provide requirements to the Owner, Building Designer and Contractor on matters related to the use of Trusses.

2.2 CONTRACTUAL AGREEMENTS

The provisions of Chapter 2 are intended to apply where no specific contractual relationship exists between the parties addressed herein, pertaining to Design Responsibilities. This section is not intended to take precedence over contractual relationships developed between any of the parties involved in a particular construction project.

2.3 DEFINITIONS

2.3.1 *Architect*: Any Licensed Design Professional practicing architecture who designs all or a part of the Building Structural System and/or who produces all or part of the Construction Documents and which may include all or part of the Structural Design Documents.

2.3.2 *Building*: Any structure used or intended for supporting or sheltering any use or occupancy.

2.3.3 *Building Designer*: The Owner of the Building or the individual or organization (including either an Architect or Engineer or the Contractor) that contracts with the Owner for the design of the Building Structural System and/or who produces the Structural Design Documents.

2.3.4 *Building Structural System*: The completed combination of Structural Elements, Trusses, connections and systems, which serve to support the Building's self weight, the applicable live load(s), and environmental loads.

2.3.5 *Construction Documents*: Written, graphic and pictorial documents, including the Structural Design Documents, prepared or assembled for describing the design, location and physical characteristics of the elements of a project necessary for obtaining a permit and constructing a building.

2.3.6 *Contract*: A legally recognized document between two or more parties that includes the agreement between the Truss Manufacturer and its customer which sets forth the terms and conditions and scope of responsibilities applicable to the Truss Manufacturer.

2.3.7 *Contractor*: The Owner of the Building or the individual or organization who contracts with the Owner and is responsible for the construction of the Building Structural System in accordance with all Legal Requirements. The term "Contractor" shall include those subcontractors who have a direct contract with the Contractor to perform all or a portion of the storage, handling, installation, and bracing (temporary and permanent) of the Trusses.

2.3.8 *Conventional Light-frame Wood Construction*: A type of construction whose primary structural elements are formed by a system of repetitive wood-framing members. This includes wood Truss construction.

2.3.9 *Engineer*: Any Licensed Design Professional practicing engineering who designs all or a part of the Building Structural System and/or who produces all or a part of the Structural Design Documents.

2.3.10 *Jurisdiction*: The governmental unit that has adopted this standard under due legislative authority.

2.3.11 *Legal Requirements*: Applicable provisions of all statutes, laws, rules, regulations, ordinances, codes, or orders of any governmental authority or Jurisdiction of the United States of America, any state, and any political subdivision or quasi-governmental authority or Jurisdiction of any of the same, including, but not limited to, departments, commissions, boards, bureaus, agencies, counties, municipalities, provinces, and other instrumentalities.

2.3.12 *Local Building Official*: The officer or other designated authority charged with the administration and enforcement of the applicable building code, or a duly authorized representative, who in accordance with the Legal Requirements may impose requirements on Truss Manufacturers and Truss Designers relating to the Trusses and the Truss Submittals.

2.3.13 *Owner*: The individual or organization who owns the Building, and: (a) either designs and prepares, or retains the Building Designer to design and prepare, the Building's Structural System and the Structural Design Documents; and (b) either constructs, or retains the Contractor to construct, the Building's Structural System.

2.3.14 *Registered Design Professional*: An individual who is registered or licensed to practice their respective design profession as defined by the statutory requirements of the professional registration laws of the state or Jurisdiction in which the project is to be constructed.

2.3.15 *Structural Design Documents*: Written, graphic and pictorial architectural or structural documents, specifications and addenda prepared or assembled for the overall construction of the Building Structural System, which are part of the Construction Documents.

2.3.16 *Structural Element*: A single joist, rafter, beam, or other structural member (not including the Trusses) designed by others and

supplied for the Building Structural System by either the Truss Manufacturer or others.

2.3.17 *Structural Element Submittals*: Documentation relating to the Structural Elements that are supplied by the Truss Manufacturer, if required by the Contract, to the Local Building Official, Owner, Building Designer and/or Contractor for their review and/or approval.

2.3.18 *Truss*: An individual metal plate connected wood component supplied for the Building Structural System.

2.3.19 *Truss Design Drawing*: The written, graphic and pictorial depiction of an individual Truss.

2.3.20 *Truss Designer*: The individual or organization responsible for the design of Trusses.

2.3.21 *Truss Manufacturer*: An individual or organization engaged in the manufacturing of Trusses.

2.3.22 *Truss Placement Diagram*: The illustration supplied by the Truss Manufacturer identifying the location assumed for each Truss, which references each individually designated Truss Design Drawing.

2.3.23 *Truss Submittals*: The Truss Design Drawings, and the Truss Placement Diagram if required by the Contract, submitted by the Truss Manufacturer to the Local Building Official, Owner, Building Designer and/or Contractor for their review and/or approval.

2.4 REQUIREMENTS OF BUILDING OWNER, AND QUALIFICATIONS OF BUILDING DESIGNER AND CONTRACTOR

The Owner shall be responsible to comply with any requirements from a Jurisdiction that the design and/or construction of a building be performed by a specially qualified person, such as a Registered Design Professional or a Contractor with a specific type of license. The Owner shall be responsible for all matters of the design and construction of the Building Structural System except as defined in this

chapter and any applicable contractual agreement.

2.5 BUILDING STRUCTURAL SYSTEM DESIGN DOCUMENTS

2.5.1 The Building Designer, through the Structural Design Documents, shall provide that the Structural Elements and Trusses shall not be subjected to adverse influences including, but not limited to moisture, temperature, and corrosive chemicals and gases. This provision shall specifically include notice for the Truss Designer of environments expected to result in wood moisture content exceeding 19 percent, and temperatures and/or corrosion potential that are unusually high relative to typical wood buildings.

2.5.2 The Building Designer, through the Structural Design Documents shall provide information sufficiently accurate and reliable to be used for facilitating the supply of the Structural Elements and for developing the design of the Trusses for the Building, and shall provide the following:

2.5.2.1 All Structural Element and Truss orientations and locations;

2.5.2.2 Information to fully determine all Truss profiles;

2.5.2.3 All Structural Element and Truss bearing conditions;

2.5.2.4 The location, direction, and magnitude of all dead and live loads applicable to each Structural Element and Truss including, but not limited to, loads attributable to: roof, floor, partition including any directions other than given in section 6.2.2.1, mechanical, fire sprinkler, attic, storage, rain loads and ponding, design wind speed and exposure category, snow, snow drift, unbalanced snow load, and seismic forces;

2.5.2.5 All Structural Element and Truss anchorage designs required to resist uplift, gravity, and lateral loads;

2.5.2.6 Allowable vertical and horizontal deflection criteria and any specific criteria per section 6.1.3;

2.5.2.7 Proper transfer of design loads affecting the Structural Elements and Trusses;

2.5.2.8 Adequate connections between Trusses and between Structural Elements, including Truss to Structural Element connections, but not Truss to Truss girder connections except such connections that are excluded from the scope of the Truss Designer's responsibilities.

2.5.2.9 Permanent bracing design for the Building, including bracing to resist wind, seismic, or other lateral forces, and permanent bracing for all Structural Elements and Trusses. The permanent bracing design shall incorporate the continuous lateral chord and web member bracing that is designated on the individual Truss Design Drawings into the overall bracing for the entire Building Structural System.

2.5.3 The Building Designer shall be responsible for the adequacy of the design of the Building Structural System or the adequacy of the Structural Design Documents. The Building Designer shall evaluate the effect of the Trusses and the Structural Elements supplied, on the Building Structural System.

2.6 CONSTRUCTION RELATED ITEMS

2.6.1 Truss Submittals and Structural Element Submittals, and any supplemental information provided by the Truss Manufacturer, shall be provided to the Contractor or the individual or organization responsible for the installation of the Trusses and Structural Elements.

2.6.2 The Building Designer shall be responsible for determining appropriate field storage, handling, and installation measures for the Trusses and Structural Elements. The Contractor, unless otherwise specifically assigned by Contract, shall determine the requirements of, and provide all materials for construction in accordance with the

Structural Design Documents. These requirements and materials for construction shall include all necessary items for safe construction, including design and installation of, adequate temporary bracing during construction for the Building Structural System.

2.6.3 The Contractor shall be responsible, unless otherwise assigned by Contract, to review or inspect Trusses delivered or to review and inspect Trusses after erection for any problems, including dislodged/missing connectors, cracked, dislodged or broken members, or any other damage that may impair the structural integrity of the Truss. In the event that damage to the Truss is discovered that would likely impair the structural integrity of the Truss, the Contractor shall be responsible to ensure that the Truss not be erected and that any area within the Building supported by any such Truss already erected shall be appropriately shored or supported to prevent further damage from occurring and shall remain clear and free of any load imposed by people, plumbing, electrical, mechanical, bridging, bracing, etc. until such field repairs have been properly completed. In the event of such damage and unless otherwise specified by Contract, the Contractor shall contact the appropriate design professional to determine an adequate field repair and the Contractor shall be responsible to construct any such field repair.

2.6.4 All Truss repairs shall be approved in writing by a Building Designer or a Truss Designer or other qualified person prior to the performance of the repair.

2.6.5 The Truss Manufacturer and Truss Designer are not responsible for, nor do the Truss Manufacturer and Truss Designer have control of, construction means, methods, techniques, sequences, procedures, programs and safety in connection with the handling, storing, installation and bracing of the Trusses. These topics are covered in the BCSI 1-03: *Guide to Good Practice for Handling, Installing & Bracing of Metal Plate Connected Wood Trusses*. The Truss Manufacturer and Truss Designer are also not responsible for the failure to carry out the construction work related to the Trusses and the

Structural Elements in accordance with the handling and installation information and/or the Structural Design Documents.

2.6.6 The Truss Manufacturer and Truss Designer shall not be responsible for the design, materials, or installation of permanent bracing for the Building, including bracing for all or any of the Trusses and Structural Elements. The approximate location for, or the maximum spacing between, permanent lateral bracing of Truss members will be indicated on the Truss Design and it shall be the responsibility of the Owner to engage the Building Designer or others to specify how the permanent lateral bracing is to be anchored or restrained to prevent lateral movement of all Truss members together. Consideration shall be given to one of the following methods for providing this restraint or anchorage: (a) permanent diagonal bracing in the plane of the Truss members; or (b) other means when demonstrated by the Building Designer or other qualified person to provide equivalent lateral resistance.

2.7 TRUSS MANUFACTURER RESPONSIBILITIES

2.7.1 The Truss Manufacturer shall communicate the Truss design criteria and requirements from the Structural Design Documents and those requirements set forth in writing by the Owner, Building Designer or Contractor, to the Truss Designer.

2.7.2 A Truss Design Drawing is a substitute for the building code based prescriptive span tables used to select and apply structural elements in Conventional Light-frame Wood Construction.

2.7.3 The Truss Manufacturer shall supply a Truss design drawing, a Truss placement diagram or special detail drawings to the Contractor to document the location of special bearing conditions, permanent bracing, and orientation of Trusses, unless the provisions of Section 2.7.3.1 are followed.

2.7.3.1 In lieu of a Truss Design Drawing, Truss Placement Diagram or special detail drawings

being provided as specified in Section 2.7.2, the Truss Manufacturer shall ensure the following:

- a) required bottom chord bearing parallel chord Trusses shall be clearly marked or configured in a manner which will avoid inverted installation, and shall permit visual verification or proper orientation after installation;
- b) Trusses having bearing locations other than at the end or heel locations shall have bearing points clearly marked; and
- c) Truss chord and web members that require lateral bracing to prevent lateral buckling (such as, but not limited to, top chords of piggyback Trusses, long compression webs, and bottom chords at cantilevers) shall be clearly marked to call attention to the need for such field bracing during and after installation.

2.7.3.2 Where required by Contract, Legal Requirements or the Local Building Official, the Truss Manufacturer shall provide Truss Design Drawing(s) sealed by a Truss Design Engineer (as defined in 2.8).

2.7.4 Where required by Contract, Legal Requirements or the Local Building Official, the Truss Manufacturer shall submit the Truss Submittals and Structural Element Submittals to the Local Building Official, Owner, Building Designer and/or Contractor for review and/or approval.

2.7.5 In preparing the Truss Submittals and the Structural Element Submittals, the Truss Manufacturer shall be permitted to rely on the accuracy and completeness of information furnished, in writing, by the Owner, Building Designer or Contractor, and by the Structural Design Documents.

2.7.6 The Truss Manufacturer shall manufacture the Trusses in accordance with the final Truss Design Drawings, using the quality criteria required by this standard.

2.7.7 Where required by the Contract, the Truss Manufacturer shall prepare the Truss Placement Diagram. The Truss Placement Diagram shall be permitted to include identifying marks for other products, including Structural Elements supplied by someone other than the Truss Manufacturer, so that they may be more easily identified by the Contractor during field erection. As the Truss Placement Diagram serves only as a guide for Truss installation and requires no engineering input, it does not require the seal of a Truss Design Engineer (as defined in 2.8).

2.7.8 The Truss Manufacturer shall determine the value for the quality control factor (C_q) to be used in the design of the metal plate connected wood Trusses (See Section 6.4.11). This value for C_q shall be provided to the Truss Designer, with evidence of conformance with Chapter 3 from an inspection agency or other means when required by 6.4.11.

2.8 TRUSS DESIGNER RESPONSIBILITIES

2.8.1 The Truss Designer shall prepare the Truss Design Drawings based on the truss design criteria and requirements set forth in writing by the Owner, Building Designer or Contractor, by the Structural Design Documents, and in conformance with the requirements set forth in this standard.

2.8.2 The Truss Designer shall be responsible for the single Truss design depicted on the Truss Design Drawing.

2.8.3 Repair designs shall be based on: Applicable wood engineering standards such as this standard, the *National Design Specification® for Wood Construction*, NDS® and other code recognized reports and standards; design loads specified in the Structural Design Documents, or otherwise specified in writing, and used in the preparation of the original Truss Design Drawing(s); the determination of forces and moments present at the repair location based on structural analysis; re-evaluation of all member stresses and deflections and joint designs (plating) for the repaired condition using this standard's design criteria; and the judgment of the engineer undertaking the repair.