



WTCA 4 - 2002

## NATIONAL STANDARD AND RECOMMENDED GUIDELINES ON RESPONSIBILITIES FOR CONSTRUCTION USING METAL PLATE CONNECTED WOOD TRUSSES — ANSI/TPI/WTCA 4 - 2002

Approved August 1, 2002

### 1.0 INTRODUCTION: NATIONAL STANDARD AND RECOMMENDED GUIDELINES

In 1995, the Wood Truss Council of America (WTCA) published WTCA 1-1995, *Standard Responsibilities in the Design Process Involving Metal Plate Connected Wood Trusses*. WTCA 1-1995 was published through an open consensus based committee approach and provided a guideline involving responsibilities associated with the use of metal plate connected wood trusses (“Trusses”) in construction.

The purpose of this document is to: (a) define as a Standard the usual duties and responsibilities of the Truss Manufacturer and Truss Designer for the benefit of the Owner, Building Designer and Contractor (referred to as the “Standard”); and (b) to provide recommended guidelines to the Owner, Building Designer and Contractor on matters related to the use of Trusses (referred to as the “Guidelines”). A proper recognition of the Standard and Guidelines involving Trusses will result in better understanding of the expectations of all involved in construction using trusses, more effective and efficient use of trusses, and safer and more economic structures.

As parties may expand or limit their individual responsibilities by contract or agreement, the Standard should not be used to establish legal responsibilities where such responsibilities are otherwise established in a contract or agreement. The Standard however will likely be used as the framework establishing a Truss Manufacturer’s and Truss Designer’s scope of work in their contracts for the design, manufacturing, sale and/or delivery of Trusses.

### 2.0 DEFINITIONS

**2.1** *Architect:* Any registered architect who designs all or a part of the Building Structural System and/or who

produces all or part of the Building Structural System Design Documents.

**2.2** *Building:* A structure intended for supporting or sheltering a specific use or occupancy.

**2.3** *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, and environmental loads.

**2.4** *Building Designer:* The Owner of the Building or the individual or organization who contracts with the Owner for the design of the Building Structural System and/or who produces the Building Structural System Design Documents. The Building Designer may be an Architect (see Section 2.1) or Engineer (see Section 2.8).

**2.5** *Building Structural System Design Documents:* The architectural drawings, structural drawings, and any other drawings, specifications and addenda, which set forth the overall structural design of the Building Structural System.

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

**2.7** *Contractor:* The Owner of the Building or the individual or organization who contracts with the Owner for the construction of the Building Structural System.

**2.8** *Engineer:* Any registered engineer who designs all or a part of the Building Structural System and/or who produces all or a part of the Building Structural System Design Documents.

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

**2.10** *Local Building Official:* The individual or organization who in accordance with the Legal Requirements may impose requirements on Truss Manufacturers and Truss Designers relating to the Trusses and the Truss Submittals.

**2.11** *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 Building Structural System Design Documents; and (b) either constructs, or retains the Contractor to construct, the Building's Structural System.

**2.12** *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.

**2.13** *Structural Element Submittals:* Documentation relating to the Structural Elements that are supplied by the Truss Manufacturer, 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.

**2.14** *Truss:* An individual metal plate connected wood element manufactured by the Truss Manufacturer, and supplied for the Building Structural System.

**2.15** *Truss Designer:* The individual or organization responsible for the design of Trusses in accordance with this Standard, the Truss Design Standard and all Legal Requirements. The Truss Designer is also referred to as a *Truss Design Engineer* when the Truss design calculations and/or Truss Design Drawings resulting from the design of the Trusses shall be sealed by an Engineer.

**2.16** *Truss Design Drawing:* The graphic depiction of an individual Truss.

**2.17** *Truss Design Standard:* The latest approved edition of ANSI/TPI 1 *National Design Standard for Metal Plate Connected Wood Truss Construction*.

**2.18** *Truss Manufacturer:* An individual or organization regularly engaged in the manufacturing of Trusses and who manufactures Trusses and who may supply Structural Elements for the Building Structural System.

**2.19** *Truss Placement Plan:* The drawing supplied by the Truss Manufacturer identifying the location assumed for each Truss.

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

### **3.0 REQUIREMENTS OF BUILDING OWNER AND QUALIFICATIONS OF BUILDING DESIGNER AND CONTRACTOR**

**3.1** To the extent the Legal Requirements require the involvement of an Architect or Engineer as Building Designer, the Owner and not the Truss Manufacturer or Truss Designer, shall be responsible to comply with such requirements.

**3.2** To the extent the Legal Requirements require the involvement of a licensed Contractor, the Owner and not the Truss Manufacturer or Truss Designer, shall be responsible to comply with such requirements.

**3.3** The Owner, either directly or by Contract with the Building Designer and/or the Contractor (and not the Truss Manufacturer or Truss Designer except as otherwise set forth in this Standard), shall be responsible for all matters of the design and construction of the Building Structural System in accordance with all Legal Requirements.

### **4.0 BUILDING STRUCTURAL SYSTEM DESIGN DOCUMENTS**

**4.1** The Building Structural System Design Documents shall provide that the intended function of each Structural Element and Truss shall not be affected by adverse influences including, but not limited to: moisture, temperature, and corrosive chemicals and gases.

**4.2** The Building Structural System Design Documents shall be 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:

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**4.2.1** All Structural Element and Truss orientations and locations;

**4.2.2** Information to fully determine all Truss profiles;

**4.2.3** All Structural Element and Truss bearing conditions;

**4.2.4** 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, mechanical, fire sprinkler, attic, storage, rain, wind, snow, snow drift, and seismic forces;

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

**4.2.6** Allowable vertical and horizontal deflection criteria;

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

**4.2.8** Adequate connections between Trusses and between Structural Elements, including Truss to Structural Element connections, except as noted in the Truss Design Standard.

**4.3** The Truss Manufacturer and Truss Designer shall not be responsible for the adequacy of the design of the Building Structural System or the adequacy of the Building Structural System Design Documents. The Truss Manufacturer and Truss Designer are not responsible to evaluate the effect of the Trusses designed on the Building's Structural System. The Truss Manufacturer is furthermore not responsible to evaluate the effect of the Structural Elements supplied on the Building Structural System.

## **5.0 CONSTRUCTION RELATED ITEMS**

**5.1** 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.

**5.2** The Truss Manufacturer and Truss Designer shall not be responsible for determining appropriate field storage, handling, and installation measures for the Trusses and Structural Elements. Either the Owner, Building Designer or Contractor, as determined by

Contract or as set forth in the Building Structural System Design Documents, shall determine the requirements of, provide all materials for, and install adequate temporary bracing for the Building Structural System.

**5.3** The Truss Manufacturer and Truss Designer shall not be responsible 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 area within the Building shall remain clear and free of plumbing, electrical, mechanical, bridging, bracing, etc., until such field repairs have been properly completed.

**5.4** Where required by Contract, the Truss Manufacturer shall be notified in writing as to the need and extent of any Truss repair or replacement required. In such event, all Truss repairs shall be approved in writing by a Truss Designer or other qualified person prior to the performance of the repair.

**5.5** 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. The Truss Manufacturer and Truss Designer are furthermore 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 Building Structural System Design Documents.

**5.6** The Truss Manufacturer and Truss Designer are not responsible for the permanent bracing for the Building, including all the Trusses and Structural Elements. Although the approximate location for permanent bracing of Truss members subject to buckling due to compression forces will be indicated on the Truss Design Drawings to prevent truss member buckling due to design loads, it is the responsibility of others to specify how the permanent lateral bracing is to be anchored or restrained to prevent lateral movement if all Truss members buckle together. Consideration shall be given to one of the following methods for providing this restraint or anchorage: (a) anchorage to end walls designed to resist the lateral loading; (b) permanent diagonal bracing in the plane of the Truss members; or (c) other means when demonstrated by the Building Designer or other qualified person to provide equivalent lateral resistance.

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## 6.0 TRUSS MANUFACTURER RESPONSIBILITIES

- 6.1 The Truss Manufacturer shall communicate the truss design criteria and requirements from the Building Structural System Design Documents and those requirements set forth in writing by the Owner, Building Designer or Contractor, to the Truss Designer.
- 6.2 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.
- 6.3 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.
- 6.4 In preparing the Truss Submittals and the Structural Element Submittals, the Truss Manufacturer shall rely on the accuracy and completeness of information furnished in writing by the Owner, Building Designer or Contractor, and by the Building Structural System Design Documents.
- 6.5 The Truss Manufacturer shall manufacture the Trusses in accordance with the final and approved (if applicable) Truss Design Drawings, using the quality criteria required of the Truss Design Standard.
- 6.6 Where required by the Contract, the Truss Manufacturer shall prepare the Truss Placement Plan. The Truss Placement Plan shall be permitted to include identifying marks for other products, including Structural Elements otherwise supplied by the Truss Manufacturer so that they may be more easily identified by the Contractor during field erection. As the Truss Placement Plan serves only as a guide for Truss installation and requires no engineering input, it does not require the seal of a Truss Design Engineer.

## 7.0 TRUSS DESIGNER RESPONSIBILITIES

- 7.1 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 Building Structural System Design Documents, and in conformance with the requirements set forth in the Truss Design Standard.
- 7.2 The Truss Designer is only responsible for the singular element design depicted on the Truss Design Drawing.
- 7.3 The Truss Designer is also referred to as a Truss Design Engineer when the Truss design calculations and/or Truss Design Drawings resulting from the design of the Trusses shall be sealed by an engineer as required by the Contract, the Legal Requirements or the Local Building Official. The Truss Design Engineer shall define the scope of work undertaken with respect to sealed Truss Design Drawings as required by Legal Requirements.
- 7.4 To the greatest extent possible, repair designs shall be based on: applicable wood engineering standards such as the Truss Design Standard, the *National Design Specification® for Wood Construction*, NDS® and other code recognized reports and standards; design loads specified in the Building Structural System 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; and reevaluation of all member stresses and deflections and joint designs (plating) for the repaired condition using the Truss Design Standard design criteria.

WTCA Commentary to ANSI/TPI/WTCA 4-2002 document has been produced in conjunction with this document. Available at [www.woodtruss.com](http://www.woodtruss.com)

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These recommendations should not be interpreted as superior to the project Architect's or Engineer's design specification for handling, installing and bracing wood trusses for a particular roof or floor.

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