

Wood Truss Council of America

Standard Responsibilities in the Design Process Involving Metal Plate Connected Wood Trusses

WTCA 1-1995

Developed by the WTCA Engineering Review Committee in cooperation with the Truss Plate Institute.

The Wood Truss Council of America publishes standard practice materials prepared and edited by knowledgeable authors from the construction industry to give as much assistance as possible to owners, architects, engineers, contractors, building officials, and others involved in the metal plate connected wood truss industry. The competence of the authors ensures accurate and authoritative information in regard to the subject matter covered, but, of course, neither the Wood Truss Council of America, nor the authors make either express or implied warranties in regard to the use of the materials.

1.0 SCOPE AND DEFINITIONS

1.1 This standard defines the design responsibilities of the individuals and organizations involved in the preparation, submittal, review and approval of each Truss Design Drawing and Truss Placement Plan associated with the use of metal plate connected wood trusses. These guidelines are presented as industry standard practice. The guidelines are not intended to preclude alternate provisions as agreed upon by the parties involved.

1.2 The following definitions shall apply:

1.2.1 "Architect" shall mean the individual registered architect responsible for the architectural design of the structure and who produces the architectural drawings included in the Construction Design Documents.

1.2.2 "Building Designer" is the individual or organization having responsibility for the overall building or structure design in accordance with the state's statutes and regulations governing the professional registration and certification of architects or engineers. This responsibility includes but is not limited to foundation design, structural member sizing, load transfer, bearing conditions, and the structure's compliance with the applicable building codes. Also referred to as registered architect or engineer, building designer, and registered building designer, but hereinafter will be referred to as Building Designer.

1.2.3 "Construction Design Documents" are the architectural drawings, structural drawings, mechanical drawings, electrical drawings, and any other drawings, specifications, and addenda which set forth the overall design of the structure and issued by the Building Designer.

1.2.4 "Contractor" shall mean the individual or organization responsible for the field storage, handling, and installation of trusses including, but not limited to, temporary bracing, permanent bracing, anchorage, connections and field assembly. 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, and installation of the trusses.

1.2.5 "Engineer-of-Record" shall mean the registered professional engineer responsible for the structural design of the structure and who produces the structural drawings included in the Construction Design Documents.

1.2.6 "Owner" shall mean the individual or organization for whom the structure is designed.

1.2.7 "Truss" is an individual metal plate connected wood structural component manufactured by the Truss Manufacturer.

1.2.8 "Truss Designer" is the design professional, individual or organization, having responsibility for the design of metal plate connected wood trusses. This responsibility shall be in accordance with the state's statutes and regulations governing the professional registration and certification of architects or engineers. Also referred to as truss engineer, design engineer, registered engineer, and engineer, but hereinafter will be referred to as Truss Designer.

1.2.9 "Truss Design Drawing" shall mean the graphic depiction of an individual Truss prepared by the Truss Designer.

1.2.10 "Truss Manufacturer" shall mean an individual or organization regularly engaged in the manufacturing of Trusses.

1.2.11 "Truss Placement Plan" is the drawing identifying the location assumed for each Truss based on the Truss Manufacturer's interpretation of the Construction Design Documents.

2.0 OWNER RESPONSIBILITIES

2.1 Directly or through its representatives, which may include the Contractor and/or Building Designer;

- (a) Review and approve each Truss Design Drawing.
- (b) Review and approve the Truss Placement Plan.
- (c) Resolve and approve all design issues arising out of the preparation of each Truss Design Drawing and Truss Placement Plan.
- (d) Coordinate the return of each approved Truss Design Drawing and Truss Placement Plan to the Truss Manufacturer prior to truss manufacturing.

3.0 BUILDING DESIGNER RESPONSIBILITIES

3.1 Design a structure suitable to ensure that the intended function of each Truss is not affected by adverse influences including, but not limited to, moisture, temperature, corrosive chemicals and gases.

3.2 Prepare the Construction Design Documents, showing all trussed areas, which must provide as a minimum the following:

3.2.1 All truss orientations and locations.

3.2.2 Information to fully determine all truss profiles.

3.2.3 Adequate support of the Truss and all truss bearing conditions.

3.2.4 Permanent bracing design for the structure including the Trusses, except as provided in 3.4 and 6.2.12.

3.2.5 The location, direction and magnitude of all dead and live loads applicable to each Truss including, but not limited to, loads attributable to: roof, floor, partition, mechanical, fire sprinkler, attic, storage, wind, snow drift and seismic;

3.2.6 All Truss anchorage designs required to resist uplift, gravity, and lateral loads.

3.2.7 Allowable vertical and horizontal deflection criteria.

3.2.8 Proper transfer of design loads affecting the Truss.

3.2.9 Adequate connections between Truss and non- Truss components, except as noted in Section 6.2.9.

3.3 Review and approve the Truss Placement Plan and each Truss Design Drawing for conformance with the requirements and intent of the Construction Design Documents, the effect of each Truss Design Drawing and Truss Placement Plan on other parts of the structure, and the effect of the structure on each Truss.

3.4 Specify permanent lateral bracing where indicated by the Truss Designer on the Truss Design Drawings, to prevent buckling of the individual truss members due to design loads. The Building Designer shall specify how the permanent lateral bracing is to be anchored or restrained to prevent lateral movement if all truss members, so braced, buckle together. This shall be accomplished by:

(a) Anchorage to solid end walls.

(b) Permanent diagonal bracing in the plane of the web members.

(c) Other means when demonstrated by the Building Designer to provide equivalent bracing.

4.0 CONTRACTOR RESPONSIBILITIES

4.1 Provide to the Truss Manufacturer the Construction Design Documents and all revisions and supplements thereto.

4.2 Review and approve the Truss Placement Plan and each Truss Design Drawing for conformance with the requirements and intent of the Construction Design Documents, and the effect of the Truss Placement Plan and each Truss Design Drawing on other trades involved in the construction of the structure and the effect of the other trades on the Trusses.

4.3 Coordinate the review, approval and return of each Truss Design Drawing and the Truss Placement Plan by the Owner and Building Designer.

4.4 Provide the approved Truss Design Drawings, approved Truss Placement Plans, and any supplemental information provided by the Truss Manufacturer to the individual or organization responsible for the installation of the Trusses.

4.5 Comply with the field storage, handling, installation, permanent bracing, anchorage, connections and field assembly requirements of the Construction Design Documents.

4.6 Determine and install the temporary bracing for the structure, including the Trusses.

5.0 TRUSS MANUFACTURER RESPONSIBILITIES

5.1 Communicate the design criteria from the Construction Design Documents to the Truss Designer.

5.2 Where required by the Construction Design Documents, prepare the Truss Placement Plan, providing as a minimum the location assumed for each Truss based on the Truss Manufacturer's interpretation of the Construction Design Documents.

5.3 Submit to the Contractor the Truss Placement Plan, as may be required, and each Truss Design Drawing for review and approval.

5.4 Manufacture the Trusses in accordance with the final approved Truss Design Drawings using the quality criteria for Metal Plate Connected Wood Trusses established by the ANSIn"PI 1-1995 "National Design Standard for Metal Plate Connected Wood Truss Construction."

6.0 TRUSS DESIGNER RESPONSIBILITIES

6.1 Prepare the Truss Design Drawings in conformance with the requirements set forth in the latest approved edition of ANSIn'PI 1-1995 "National Design Standard for Metal Plate Connected Wood Truss Construction."

6.2 For each Truss Design Drawing, set forth as a minimum the following:

6.2.1 Slope or depth, span and spacing.

6.2.2 Location of all joints.

6.2.3 Required bearing widths;

6.2.4 Design loads as applicable:

6.2.4.1 Top chord live load (including snow loads);

6.2.4.2 Top chord dead load.

6.2.4.3 Bottom chord live load.

6.2.4.4 Bottom chord dead load.

6.2.4.5 Concentrated loads and their points of Application.

6.2.4.6 Controlling wind and earthquake loads.

6.2.5 Adjustments to lumber and metal connector plate design values for conditions of use.

6.2.6 Each reaction force and direction.

6.2.7 Metal connector plate type, size, thickness or gage, and the dimensioned location of each metal connector plate except where symmetrically located relative to the joint interface.

6.2.8 Lumber size, species, and grade for each member.

6.2.9 Connection Requirements for:

(a) Trusstotruss girder.

(b) Truss ply to ply.

(c) Field splices.

6.2.10 Calculated deflection ratio and/or maximum deflection for live and total load.

6.2.11 Maximum axial compression forces in the Truss members to enable the Building Designer to design the size, connections and anchorage of the permanent continuous lateral bracing. Forces may be shown on the Truss Design Drawing or on supplemental documents.

6.2.12 Required permanent Truss member bracing location.

7.0 OTHER RESPONSIBILITIES

7.1 Any party who cuts or damages a truss shall be responsible for securing the engineering required for the repair and for subsequent costs.