CHAPTER 2
STANDARD RESPONSIBILITIES IN THE DESIGN AND APPLICATION OF METAL PLATE CONNECTED WOOD TRUSSES

2.1 GENERAL PURPOSES

The purpose of this Chapter of the Standard is to define and draw attention to the responsibilities of the Owner, Building Designer, Registered Design Professional for the Building, Truss Manufacturer, and Truss Designer or Truss Design Engineer, with respect to the application of Trusses in the construction of a Building.

2.2 DEFINITIONS

BCSI: *Guide to Good Practice for Handling, Installing, Restraining & Bracing of Metal Plate Connected Wood Trusses* jointly produced by *WTCA – Representing the Structural Building Components Industry* and the *Truss Plate Institute.*

BCSI-B1: *Guide for Handling, Installing, Restraining & Bracing of Trusses* of the Building Component Safety Information (BCSI).

BCSI-B2: *Truss Installation and Temporary Restraint/Bracing* of the Building Component Safety Information (BCSI).

BCSI-B3: *Permanent Restraint/Bracing of Chords and Web Members* of the Building Component Safety Information (BCSI).

BCSI-B7: *Temporary & Permanent Restraint/Bracing for Parallel Chord Trusses* of the Building Component Safety Information (BCSI).

BCSI-B10: *Post Frame Truss Installation & Temporary Restraint/Bracing* of the Building Component Safety Information (BCSI).

Building: Structure used or intended for supporting or sheltering any use or occupancy.

Building Code: As it applies to a Building, any set of standards set forth and enforced by a Jurisdiction for the protection of public safety.

Building Designer: Owner of the Building or the person that contracts with the Owner for the design of the Framing Structural System and/or who is responsible for the preparation of the Construction Documents. When mandated by the Legal Requirements, the Building Designer shall be a Registered Design Professional.

Building Official: Officer or other designated authority charged with the administration and enforcement of the Building Code, or a duly authorized representative.

Building Permit: Certificate of permission issued by a Jurisdiction to an Owner to construct, enlarge, or alter a Building.

Construction Documents: Written, graphic and pictorial documents prepared or assembled for describing the design (including the Framing Structural System), location and physical characteristics of the elements of a Building necessary to obtain a Building Permit and construct a Building.

Contract: Legally recognized agreement between two parties.

Contractor: Owner of a Building, or the person who contracts with the Owner, who constructs the Building in accordance with the Construction Documents and the Truss Submittal Package. The term "Contractor" shall include those subcontractors who have a direct contract with the Contractor to construct all or a portion of the construction.

Cover/Truss Index Sheet: Sheet that is signed and sealed, where required by the Legal Requirements, by the Truss Design Engineer, and depending on the Legal Requirements shall be permitted to contain the following information: *(1)* identification of the Building, including Building name and address, lot, block, subdivision, and city or county; *(2)* identification of Construction Documents by drawing number(s) with revision date; *(3)* specified Building Code; *(4)* computer program used; *(5)* roof dead and live loads; *(6)* floor dead and live loads; *(7)* wind load criteria from a specifically defined code (e.g., *ASCE 7*) and any other design loads (such as ponding, mechanical loads, etc.); *(8)* name, address and license number of Registered Design Professional for the Building, if known; *(9)* a listing of the individual identification numbers and dates of each Truss Design Drawing referenced by the Cover/Truss Index Sheet; and *(10)* name, address, date of drawing and license number of Truss Design Engineer.

Deferred Submittal: Those portions of the design that are not completed at the time of the application for the Building Permit and that are to be submitted to the Building Official within a specified period in accordance with the Legal Requirements.

Diagonal Bracing: Structural member installed at an angle to a Truss chord or web member and intended to temporarily and/or permanently stabilize Truss member(s) and/or Truss(es) (See *BCSI-B1*, *BCSI-B2, BCSI-B3, BCSI-B7,* and *BCSI-B10*).

Framing Structural System: Completed combination of Structural Elements, Trusses, connections and other systems, which serve to support the Building's self-weight and the specified loads.

Jurisdiction: Governmental unit that is responsible for adopting and enforcing the Building Code.

Lateral Restraint: Also known as continuous lateral brace or CLB. A structural member installed at right angles to a chord or Web member of a Truss to reduce the laterally unsupported length of the Truss member (See *BCSI-B1*, *BCSI-B2, BCSI-B3, BCSI-B7,* and *BCSI-B10*).

Legal Requirements: Any applicable provisions of all statutes, laws, rules, regulations, ordinances, codes, or orders of the governing Jurisdiction.

Owner: Person having a legal or equitable interest in the property upon which a Building is to be constructed, and: *(1)* either prepares, or retains the Building Designer or Registered Design Professional to prepare the Construction Documents; and *(2)* either constructs, or retains the Contractor to construct the Building.

Permanent Building Stability Bracing: Lateral force resisting system for the Building that resists forces from gravity, wind, seismic and/or other loads.

Permanent Individual Truss Member Restraint: Restraint that is used to prevent local buckling of an individual Truss chord or Web member due to the axial forces in the individual Truss member (See *BCSI-B2* and *BCSI-B3*).

Person: Individual or organization that may exist in accordance with the Legal Requirements. (The term “Person” as used in this Chapter 2 may either appear as "Person" or "person.")

Registered Design Professional: Architect or engineer, who is licensed to practice their respective design profession as defined by the Legal Requirements of the Jurisdiction in which the Building is to be constructed.

Standard: *National Design Standard for Metal Plate Connected Wood Truss Construction (ANSI/TPI 1).*

Structural Element: Single structural member (other than a Truss) that is specified in the Construction Documents.

Temporary Installation Restraint/Bracing: Lateral Restraint and Diagonal Bracing installed during construction for the purposes of holding Trusses in their proper location, plumb and in plane, until Permanent Individual Truss Member Restraint, Diagonal

Bracing and Permanent Building Stability Bracing are completely installed (See *BCSI-B1*, *BCSI-B2, BCSI-B3, BCSI-B7,* and *BCSI-B10*).

Truss: Individual metal-plate-connected wood component manufactured for the construction of a Building.

Truss Design Drawing: Written, graphic and pictorial depiction of an individual Truss that includes the information required in Sections 2.3.5.5 and 2.4.5.4.

Truss Design Engineer: Person who is licensed to practice engineering as defined by the Legal Requirements of the Jurisdiction in which the Building is to be constructed and who supervises the preparation of the Truss Design Drawings.

Truss Designer: Person responsible for the preparation of the Truss Design Drawings.

Truss Manufacturer: Person engaged in the fabrication of Trusses.

Truss Placement Diagram: Illustration identifying the assumed location of each Truss.

Truss Submittal Package: Package consisting of each individual Truss Design Drawing, and, as applicable, the Truss Placement Diagram, the Cover/Truss Index Sheet, Lateral Restraint and Diagonal Bracing details designed in accordance with generally accepted engineering practice, applicable *BCSI* defined Lateral Restraint and Diagonal Bracing details, and any other structural details germane to the Trusses.

2.3 RESPONSIBILITIES WHERE THE LEGAL REQUIREMENTS MANDATE A REGISTERED DESIGN PROFESSIONAL FOR BUILDINGS

2.3.1 REQUIREMENTS OF THE OWNER

2.3.1.1 Building Permit. Where required by Legal Requirements, including the Building Code, the Owner shall obtain a Building Permit.

If special inspections or structural observations related to Trusses are required as part of the Construction Documents and/or permitting process, these requirements shall be communicated in writing to the Contractor or Truss Manufacturer as appropriate.

2.3.1.2 Registered Design Professional Designation. The Owner shall engage and designate on the Building Permit application the Registered Design Professional for the Building.

2.3.1.3 Engagement with the Registered Design Professional. The Owner shall engage a Registered Design Professional to prepare the Construction Documents and review the Truss Submittal Package.

The Truss Manufacturer shall be notified in writing by either the Owner or Contractor if the Registered Design Professional for the Building is changed or is unable to continue to perform their duties.

2.3.1.4 Engagement with the Contractor. The Owner shall engage a Contractor to store, handle and install the Trusses for the Building, in compliance with any and all Legal Requirements.

2.3.1.5 Review and Coordinate Submittal Packages. The Owner or Owner's representative shall be responsible for ensuring that the requirement of Section 2.3.4.2 is accomplished.

2.3.1.6 Long Span Truss Requirements.

2.3.1.6.1 Restraint/Bracing Design. In all cases where a Truss clear span is 60 ft. (18 m) or greater, the Owner shall contract with any Registered Design Professional for the design of the Temporary Installation Restraint/Bracing and the Permanent Individual Truss Member Restraint and Diagonal Bracing.

2.3.1.6.2 Special Inspection. In all cases where a Truss clear span is 60 ft. (18 m) or greater, the Owner shall contract with any Registered Design Professional to provide special inspections to assure that the Temporary Installation Restraint/Bracing and the Permanent Individual Truss Member Restraint and Diagonal Bracing are installed properly.

2.3.1.7 Responsibility Exemptions. The Owner is responsible for items listed in Section 2.3.1, and is not responsible for the requirements of other parties specified outside of Section 2.3.1.

2.3.2 REQUIREMENTS OF THE REGISTERED DESIGN PROFESSIONAL

2.3.2.1 Construction Documents. The Construction Documents shall be prepared by the Registered Design Professional for the Building and shall be of sufficient clarity to indicate the location, nature and extent of the work proposed, and show in detail that such documents conform to the Legal Requirements, including the Building Code.

2.3.2.2 Deferred Submittals. The Registered Design Professional for the Building shall list the Deferred Submittals on the Construction Documents. The Registered Design Professional shall review Deferred Submittals in accordance with Section 2.3.2.3.

2.3.2.3 Review Submittal Packages. The Registered Design Professional for the Building shall review the Truss Submittal Package for compatibility with the Building design. All such submittals shall include a notation indicating that they have been reviewed and whether or not they have been found to be in general conformance with the design of the Building.

2.3.2.4 Required Information in the Construction Documents. The Registered Design Professional for the Building, through the Construction Documents, shall provide information sufficiently accurate and reliable to be used for facilitating the supply of the Structural Elements and other information for developing the design of the Trusses for the Building, and shall provide the following:

(a) All Truss and Structural Element orientations and locations;

(b) Information to fully determine all Truss profiles;

(c) All Structural Element and Truss support locations and bearing conditions (including the allowable bearing stress);

(d) The location, direction, and magnitude of all dead, live, and lateral loads applicable to each Truss including, but not limited to, loads attributable to: roof, floor, partition, mechanical, fire sprinkler, attic storage, rain and ponding, wind, snow (including snow drift and unbalanced snow), seismic; and any other loads on the Truss;

(e) All anchorage designs required to resist uplift, gravity, and lateral loads,

(f) Truss-to-Structural Element connections, but not Truss-to-Truss connections.

(g) Permanent Building Stability Bracing; including Truss anchorage connections to the Permanent Building Stability Bracing.

(h) Criteria related to serviceability issues including:

(1) Allowable vertical, horizontal or other required deflection criteria,

(2) Any dead load, live load, and in-service creep deflection criteria for flat roofs subject to ponding loads.

(3) Any truss camber requirements.

(4) Any differential deflection criteria from Truss-to-Truss or Truss-to-adjacent Structural Element.

(5) Any deflection and vibration criteria for floor Trusses including:

(a) Any strongback bridging requirements.

(b) Any dead load, live load, and in-service creep deflection criteria for floor Trusses supporting stone or ceramic tile finishes.

(6) Moisture, temperature, corrosive chemicals and gases expected to result in:

(a) Wood moisture content exceeding 19 percent,

(b) Sustained temperatures exceeding 150 degrees F, and/or

(c) Corrosion potential from wood preservatives or other sources that may be detrimental to Trusses.

2.3.2.5 Responsibility Exemptions. The Registered Design Professional for the Building is responsible for items listed in Section 2.3.2, and is not responsible for the requirements of other parties specified outside of Section 2.3.2.

2.3.3 REQUIREMENTS FOR THE PERMANENT MEMBER RESTRAINT/ BRACING OF TRUSS SYSTEMS

2.3.3.1 Method of Restraint. The method of Permanent Individual Truss Member Restraint/Bracing and the method of anchoring or restraining to prevent lateral movement of all Truss members acting together as a system shall be accomplished by:

2.3.3.1.1 Standard Industry Details. Standard industry Lateral Restraint and Diagonal Bracing details in accordance with *BCSI-B3: Permanent Restraint/Bracing of Chords and Web Members and/or BCSI-B7: Temporary & Permanent Restraint/Bracing for Parallel Chord Trusses* of the Building Component Safety Information (*BCSI*).

2.3.3.1.2 Substitution with Reinforcement. Permanent Individual Truss Member Restraint shall be permitted to be replaced with reinforcement designed to prevent buckling (e.g., buckling reinforcement by T-reinforcement or L-reinforcement, proprietary reinforcement, etc.).

2.3.3.1.3 Project Specific Design. A project specific Truss member permanent lateral restraint/bracing design for the roof or floor Framing Structural System shall be permitted to be specified by any Registered Design Professional.

2.3.3.2 Method Specified by any Registered Design Professional. The method of Permanent Individual Truss Member Restraint and Diagonal Bracing for the Truss Top Chord, Bottom Chord, and Web members shall be permitted to be specified by any Registered Design Professional.

2.3.3.3 Absence of Truss Restraint/Bracing Method or Details. If a specific Truss member permanent bracing design for the roof or floor Framing Structural System is not provided by the Owner or any Registered Design Professional, the method of Permanent Individual Truss Member Restraint and Diagonal Bracing for the Truss Top Chord, Bottom Chord, and Web Members shall be in accordance with *BCSI-B3* or *BCSI-B7*.

2.3.3.4 Trusses Spanning 60 Feet (18 m) or Greater. For trusses with clear spans 60 ft. (18 m) or greater, see Section 2.3.1.6.

2.3.4 REQUIREMENTS OF THE CONTRACTOR

2.3.4.1 Information Provided to the Truss Manufacturer. The Contractor shall provide to the Truss Manufacturer a copy of all Construction Documents pertinent to the Framing Structural System and the design of the Trusses (i.e., framing plans, specifications, details, structural notes), and the name of the Registered Design Professional for the Building if not noted on the Construction Documents.

Amended Construction Documents upon approval through the plan review/permitting process shall be immediately communicated to the Truss Manufacturer.

2.3.4.2 Information Provided to the Registered Design Professional. The Contractor, after reviewing and/or approving the Truss Submittal Package, shall forward the Truss Submittal Package for review by the Registered Design Professional for the Building.

2.3.4.3 Truss Submittal Package Review. The Contractor shall not proceed with the Truss installation until the Truss Submittal Package has been reviewed by the Registered Design Professional for the Building.

2.3.4.4 Means and Methods. The Contractor is responsible for the construction means, methods, techniques, sequences, procedures, programs, and safety in connection with the receipt, storage, handling, installation, restraining, and bracing of the Trusses.

2.3.4.5 Truss Installation. The Contractor shall ensure that the Building support conditions are of sufficient strength and stability to accommodate the loads applied during the Truss installation process. Truss installation shall comply with installation tolerances shown in *BCSI-B1*. Temporary Installation Restraint/Bracing for the Truss system and the permanent Truss system Lateral Restraint and Diagonal Bracing for the completed Building and any other construction work related directly or indirectly to the trusses shall be installed by the Contractor in accordance with:

(a) The Construction Documents, and/or

(b) The Truss Submittal Package.

For Trusses clear spanning 60 ft. (18 m) or greater, see Section 2.3.1.6.

2.3.4.6 Pre-Installation Check. The Contractor shall examine the Trusses delivered to the job site for:

(a) Dislodged or missing connectors,

(b) Cracked, dislodged or broken members, or

(c) Any other damage that may impair the structural integrity of the Truss.

2.3.4.7 Post-Installation Check. The Contractor shall examine the Trusses after they are erected and installed for:

(a) Dislodged or missing connectors,

(b) Cracked, dislodged or broken members, or

(c) Any other damage that may impair the structural integrity of the Truss.

2.3.4.8 Truss Damage Discovery. In the event that damage to a Truss is discovered the Contractor shall:

(a) Ensure that the Truss not be erected, or

(b) 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 field repairs have been properly completed per Section 2.3.4.9.

2.3.4.9 Truss Damage Responsibilities. In the event of damage, the Contractor shall:

(a) Contact the Truss Manufacturer and Registered Design Professional for the Building to determine an adequate field repair and

(b) Construct the field repair in accordance with the written instructions and details provided by any Registered Design Professional.

2.3.4.10 Responsibility Exemptions. The Contractor is responsible for items listed in Section 2.3.4, and is not responsible for the requirements of other parties specified outside of Section 2.3.4.

2.3.5 REQUIREMENTS OF THE TRUSS DESIGN ENGINEER

2.3.5.1 Preparation of Truss Design Drawings. The Truss Design Engineer shall supervise the preparation of the Truss Design Drawings based on the Truss design criteria and requirements set forth in the Construction Documents or as otherwise set forth in writing by the Registered Design Professional for the Building as supplied to the Truss Design Engineer by the Contractor through the Truss Manufacturer.

2.3.5.2 Single Truss Component Design. The Truss Design Engineer shall be responsible for the single Truss component design depicted on the Truss Design Drawing.

2.3.5.3 Truss Design Drawing Seal and Signature. Each individual Truss Design Drawing shall bear the seal and signature of the Truss Design Engineer.

Exception: When a Cover/Truss Index Sheet is used, it is the only document required to be signed and sealed by the Truss Design Engineer.

2.3.5.4 Truss Placement Diagram. When the Truss Placement Diagram serves only as a guide for Truss installation, it does not require the seal of the Truss Design Engineer.

2.3.5.5 Information on Truss Design Drawings. Truss Design Drawings shall include, at a minimum, the information specified below:

(a) Building Code used for Design, unless specified on Cover/Truss Index Sheet.

(b) Slope or depth, span and spacing.

(c) Location of all joints and support locations.

(d) Number of plys if greater than one.

(e) Required bearing widths.

(f) Design loads as applicable, including:

(1) Top Chord live load (for roof Trusses, this shall be the controlling case of live load or snow load);

(2) Top Chord dead load;

(3) Bottom Chord live load;

(4) Bottom Chord dead load;

(5) Additional loads and locations;

(6) Environmental Load Design Criteria (wind speed, snow, seismic, and all applicable factors as required to calculate the Truss loads); and

(7) Other lateral loads, including drag strut loads.

(g) Adjustments to Wood Member and Metal Connector Plate design values for conditions of use.

(h) Maximum reaction force and direction, including maximum uplift reaction forces where applicable.

(i) Metal Connector Plate type, manufacturer, size, and thickness or gauge, and the dimensioned location of each Metal Connector Plate except where symmetrically located relative to the joint interface.

(j) Size, species and grade for each Wood Member.

(k) Truss-to-Truss connection and Truss field assembly requirements.

(l) Calculated span to deflection ratio and/or maximum vertical and horizontal deflection for live and total load and K_{CR} as applicable.

(m) Maximum axial tension and compression forces in the Truss members.

(n) Fabrication tolerance per Section 6.4.10.

(o) Required Permanent Individual Truss Member Restraint location and the method of Restraint/Bracing to be used per Section 2.3.3.

2.3.5.6 Responsibility Exemptions. The Truss Design Engineer is responsible for items listed in Section 2.3.5, and is not responsible for the requirements of other parties specified outside of Section 2.3.5.

2.3.6 REQUIREMENTS OF THE TRUSS MANUFACTURER

2.3.6.1 Truss Design Criteria and Requirements. The Truss Manufacturer shall obtain the Truss design criteria and requirements from the Construction Documents.

2.3.6.2 Communication to Truss Design Engineer. The Truss Manufacturer shall communicate the Truss design criteria and requirements to the Truss Design Engineer.

2.3.6.3 Alternate Truss Designs. If an alternative or partial set of Truss design(s) is proposed by either the Truss Manufacturer or the Truss Design Engineer, such alternative set of design(s) shall be sent to and reviewed by the Registered Design Professional for the Building prior to manufacturing. These alternative set of design(s) do not require the seal of the Truss Design Engineer until accepted by the Registered Design Professional for the Building, whereupon these alternative Truss Design Drawings shall be sealed by the Truss Design Engineer.

2.3.6.4 Truss Placement Diagram. Where required by the Construction Documents or Contract, the Truss Manufacturer shall prepare the Truss Placement Diagram that identifies the assumed location for each individually designated Truss and references

the corresponding Truss Design Drawing. The Truss Placement Diagram shall be permitted to include identifying marks for other products including Structural Elements, so that they may be more easily identified by the Contractor during field erection. When the Truss Placement Diagram serves only as a guide for Truss installation and requires no engineering input, it does not require the seal of any Truss Design Engineer or Registered Design Professional.

2.3.6.5 Required Documents. The Truss Manufacturer shall supply to the Contractor the Truss Submittal Package, including the Truss Design Drawings sealed by a Truss Design Engineer, a Truss Placement Diagram, if required by the Construction Documents or Contract, and the required Permanent Individual Truss Member Restraint and the method to be used per Section 2.3.3.

2.3.6.6 Special Application Conditions. The Truss Manufacturer shall be allowed to provide detail drawings to the Contractor to document special application conditions.

2.3.6.7 Truss Submittal Packages. Where required by the Construction Documents or Contract, Legal Requirements or the Building Official, the Truss Manufacturer shall provide the appropriate Truss Submittal Package to one or more of the following: Building Official; Registered Design Professional for the Building and/or Contractor for review and/or approval per Section 2.3.4.2.

2.3.6.8 Reliance on Construction Documents. The Truss Manufacturer shall be permitted to rely on the accuracy and completeness of information furnished in the Construction Documents or otherwise furnished in writing by the Registered Design Professional for the Building and/or Contractor.

2.3.6.9 Fabrication Tolerance. The Truss Manufacturer shall determine the value for the Fabrication Tolerance to be used in the design of the Trusses (see Section 6.4.10).

2.3.6.10 Manufacturer Quality Criteria. The Truss Manufacturer shall manufacture the Trusses in accordance with the final Truss Design Drawings, using the quality criteria required by this Standard unless more stringent quality criteria is provided by the Owner in writing or through the Construction Documents.

2.3.6.11 In-Plant Truss Inspections. Truss inspections, as required by the Jurisdiction, shall be performed at the manufacturer's facility using the manufacturer's in-plant quality control program monitored by an inspection agency approved by the Jurisdiction, and shall satisfy any quality control/quality assurance requirements for the Trusses, and shall satisfy any designated in-plant special inspection requirements for the Trusses.

2.3.6.12 Responsibility Exemptions. The Truss Manufacturer is responsible for items listed in Section 2.3.6, and is not responsible for the requirements of other parties specified outside of Section 2.3.6.

2.4 RESPONSIBILITIES WHERE THE LEGAL REQUIREMENTS DO NOT MANDATE A REGISTERED DESIGN PROFESSIONAL FOR BUILDINGS

2.4.1 REQUIREMENTS OF THE OWNER

2.4.1.1 Building Permit. Where required by Legal Requirements, including the Building Code, the Owner shall obtain a Building Permit.

If special inspections or structural observations related to Trusses are required as part of the Construction Documents and/or permitting process, these requirements shall be communicated in writing to the Contractor or Truss Manufacturer as appropriate.

2.4.1.2 Engagement with the Building Designer. The Owner shall engage a Building Designer to prepare the Construction Documents.

In the absence of an independent Building Designer, the Owner shall assume the role of Building Designer.

2.4.1.3 Engagement with the Contractor. The Owner shall engage a Contractor in compliance with Legal Requirements, to store, handle and install the Trusses for the Building.

2.4.1.4 Review and Coordinate Submittal Packages. The Owner or Owner's representative shall be responsible for ensuring that the requirements of Section 2.4.4.2 are accomplished.

2.4.1.5 Long Span Truss Requirements.

2.4.1.5.1 Restraint/Bracing Design. In all cases where a Truss clear span is 60 ft. (18 m) or greater, the Owner shall contract with any Registered Design Professional for the design of the Temporary Installation Restraint/Bracing and the Permanent Individual Truss Member Restraint and Diagonal Bracing.

2.4.1.5.2 Special Inspection. In all cases where a Truss clear span is 60 ft. (18 m) or greater, the Owner shall contract with any Registered Design Professional to provide special inspections to assure that the Temporary Installation Restraint/Bracing and the Permanent Individual Truss Member Restraint and Diagonal Bracing are installed properly.

2.4.1.6 Responsibility Exemptions. The Owner is responsible for items listed in Section 2.4.1, and is not responsible for the requirements of other parties specified outside of Section 2.4.1.

2.4.2 REQUIREMENTS OF THE BUILDING DESIGNER

2.4.2.1 Construction Documents. The Construction Documents shall be prepared by a Building Designer and shall be of sufficient clarity to indicate the location, nature and extent of the work proposed, and show in detail that such documents conform to the Legal Requirements, including the Building Code.

2.4.2.2 Deferred Submittals. The Building Designer shall list the Deferred Submittals on the Construction Documents. The Building Designer shall review Deferred Submittals in accordance with Section 2.4.2.3.

2.4.2.3 Review Submittal Packages. The Building Designer shall review the Truss Submittal Package for compatibility with the Building design. All such submittals shall include a notation indicating that they have been reviewed and whether or not they have been found to be in general conformance with the design of the Building.

2.4.2.4 Required Information in the Construction Documents. The Building Designer, through the Construction Documents, shall provide information sufficiently accurate and reliable to be used for facilitating the supply of the Structural Elements and other information for developing the design of the Trusses for the Building, and shall provide the following:

(a) All Truss and Structural Element orientations and locations;

(b) Information to fully determine all Truss profiles;

(c) All Structural Element and Truss support locations and bearing conditions (including the allowable bearing stress);

(d) The location, direction, and magnitude of all dead, live, and lateral loads applicable to each Truss including, but not limited to, loads attributable to: roof, floor, partition, mechanical, fire sprinkler, attic storage, rain and ponding, wind, snow (including snow drift and unbalanced snow), seismic; and any other loads on the Truss;

(e) All anchorage designs required to resist uplift, gravity, and lateral loads,

(f) Adequate Truss-to-Structural Element connections, but not Truss-to-Truss connections.

(g) Permanent Building Stability Bracing; including Truss anchorage to the Permanent Building Stability Bracing.

(h) Criteria related to serviceability issues including:

(1) Allowable vertical, horizontal or other required deflection criteria,

(2) Any dead load, live load, and in-service creep deflection criteria for flat roofs subject to ponding loads.

(3) Any Truss camber requirements.

(4) Any differential deflection criteria from Truss-to-Truss or Truss-to-adjacent Structural Element.

(5) Any deflection and vibration criteria for floor Trusses including:

(a) Any strongback bridging requirements.

(b) Any dead load, live load, and in-service creep deflection criteria for floor trusses supporting stone or ceramic tile finishes.

(6) Moisture, temperature, corrosive chemicals and gases expected to result in:

(a) Wood moisture content exceeding 19 percent,

(b) Sustained temperatures exceeding 150 degrees F, and/or

(c) Corrosion potential from wood preservatives or other sources that may be detrimental to Trusses.

2.4.2.5 Responsibility Exemptions. The Building Designer is responsible for items listed in Section 2.4.2, and is not responsible for the requirements of other parties specified outside of Section 2.4.2.

2.4.3 REQUIREMENTS FOR THE PERMANENT MEMBER RESTRAINT/ BRACING OF TRUSS SYSTEMS

2.4.3.1 Method of Restraint. The method of Permanent Individual Truss Member Restraint/Bracing and the method of anchoring or restraining to prevent lateral movement of all Truss members acting together as a system shall be accomplished by:

2.4.3.1.1 Standard Industry Details. Standard industry Lateral Restraint and Diagonal Bracing details in accordance with *BCSI-B3: Permanent Restraint/Bracing of Chords and Web Members and/or BCSI-B7: Temporary & Permanent Restraint/Bracing for Parallel Chord Trusses* of the Building Component Safety Information (*BCSI*).

2.4.3.1.2 Substitution with Reinforcement. Permanent Individual Truss Member Restraint shall be permitted to be replaced with reinforcement designed to prevent buckling (e.g., buckling reinforcement by T-reinforcement or L-reinforcement, proprietary reinforcement, etc.).

2.4.3.1.3 Project Specific Design. A project specific Truss member permanent lateral restraint/bracing design for the roof or floor Framing Structural System shall be permitted to be specified by any Building Designer.

2.4.3.2 Method Specified by any Building Designer. The method of Permanent Individual Truss Member Restraint and Diagonal Bracing for the Truss Top Chord, Bottom Chord, and Web members shall be permitted to be specified by any Building Designer.

2.4.3.3 Absence of Truss Restraint/Bracing Method or Details. If a specific Truss member permanent bracing design for the roof or floor Framing Structural System is not provided by the Owner or any Building Designer, the method of Permanent Individual Truss Member Restraint and Diagonal Bracing for the Truss Top Chord, Bottom Chord, and Web members shall be in accordance with *BCSI-B3 or BCSI-B7*.

2.4.3.4 Trusses Spanning 60 Feet (18 m) or Greater. For Trusses with clear spans 60 ft. (18 m) or greater, see Section 2.4.1.5.

2.4.4 REQUIREMENTS OF THE CONTRACTOR

2.4.4.1 Information Provided to the Truss Manufacturer. The Contractor shall provide to the Truss Manufacturer a copy of all Construction Documents pertinent to the Framing Structural System and the design of the Trusses (i.e., framing plans, specifications, details, structural notes), and the name of the Building Designer if not noted on the Construction Documents.

Amended Construction Documents upon approval through the plan review/permitting process shall be immediately communicated to the Truss Manufacturer.

2.4.4.2 Information Provided to the Building Designer. The Contractor, after reviewing and/or approving the Truss Submittal Package, shall forward the Truss Submittal Package to the Building Designer for review.

2.4.4.3 Shop Drawing Review. The Contractor shall not proceed with the Truss installation until the Truss Submittal Package has been reviewed by the Building Designer.

2.4.4.4 Means and Methods. The Contractor is responsible for the construction means, methods, techniques, sequences, procedures, programs, and safety in connection with the receipt, storage, handling, installation, restraining, and bracing of the Trusses.

2.4.4.5 Truss Installation. The Contractor shall ensure that the Building support conditions are of sufficient strength and stability to accommodate the loads applied during the Truss installation process. Truss installation shall comply with installation tolerances shown in *BCSI-B1*. Temporary Installation Restraint/Bracing for the Truss system and the permanent Truss system Lateral Restraint and Diagonal Bracing for the completed Building and any other construction work related directly or indirectly to the trusses shall be installed by the Contactor in accordance with:

(a) The Construction Documents, and/or

(b) The Truss Submittal Package.

For Trusses clear spanning 60 ft. (18 m) or greater, see Section 2.4.1.5

2.4.4.6 Pre-Installation Check. The Contractor shall examine the Trusses delivered to the job site for:

(a) Dislodged or missing connectors,

(b) Cracked, dislodged or broken members, or

(c) Any other damage that may impair the structural integrity of the Truss.

2.4.4.7 Post-Installation Check. The Contractor shall examine the Trusses after they are erected and installed for:

(a) Dislodged or missing connectors,

(b) Cracked, dislodged or broken members, or

(c) Any other damage that may impair the structural integrity of the Truss.

2.4.4.8 Truss Damage Discovery. In the event that damage to a Truss is discovered that would likely impair the structural integrity of the Truss, the Contractor shall:

(a) Ensure that the Truss not be erected, or

(b) 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 field repairs have been properly completed per Section 2.4.4.9.

2.4.4.9 Truss Damage Responsibilities. In the event of damage, the Contractor shall:

(a) Contact the Truss Manufacturer to determine an adequate field repair and

(b) Construct the field repair in accordance with the written instructions and details provided by any Registered Design Professional.

2.4.4.10 Responsibility Exemptions. The Contractor is responsible for items listed in Section 2.4.4, and is not responsible for the requirements of other parties specified outside of Section 2.4.4.

2.4.5 REQUIREMENTS OF THE TRUSS DESIGNER

2.4.5.1 Preparation of Truss Design Drawings. The Truss Designer is responsible for the preparation of the Truss Design Drawings based on the Truss design criteria and requirements set forth in the Construction Documents or as otherwise set forth in writing by the Building Designer as supplied to the Truss Designer by the Truss Manufacturer.

2.4.5.2 Single Truss Component Design. The Truss Designer shall be responsible for the single Truss component design depicted on the Truss Design Drawing.

2.4.5.3 Truss Placement Diagram. When the Truss Placement Diagram serves only as a guide for Truss installation, it does not require the seal of the Truss Design Engineer.

2.4.5.4 Information on Truss Design Drawings. Truss Design Drawings shall include, at a minimum, the information specified below:

(a) Building Code used for Design, unless specified on Cover/Truss Index Sheet.

(b) Slope or depth, span and spacing.

(c) Location of all joints and support locations.

(d) Number of plys if greater than one.

(e) Required bearing widths.

(f) Design loads as applicable, including:

(1) Top Chord live load (for roof Trusses, this shall be the controlling case of live load or snow load);

(2) Top Chord dead load;

(3) Bottom Chord live load;

(4) Bottom Chord dead load;

(5) Additional loads and locations;

(6) Environmental Load Design Criteria (wind speed, snow, seismic, and all applicable factors as required to calculate the Truss loads); and

(7) Other lateral loads, including drag strut loads.

(g) Adjustments to Wood Member and Metal Connector Plate design values for conditions of use.

(h) Maximum reaction force and direction, including maximum uplift reaction forces where applicable.

(i) Metal Connector Plate type, manufacturer, size, and thickness or gauge, and the dimensioned location of each Metal Connector Plate except where symmetrically located relative to the joint interface.

(j) Size, species and grade for each Wood Member.

(k) Truss-to-Truss connection and Truss field assembly requirements.

(l) Calculated span to deflection ratio and/or maximum vertical and horizontal deflection for live and total load and K_{CR} as applicable.

(m) Maximum axial tension and compression forces in the Truss members.

(n) Fabrication tolerance per Section 6.4.10.

(o) Required Permanent Individual Truss Member Restraint location and the method of Restraint/Bracing to be used per Section 2.4.3.

2.4.5.6 Responsibility Exemptions. The Truss Designer is responsible for items listed in Section 2.4.5, and is not responsible for the requirements of other parties specified outside of Section 2.4.5.

2.4.6 REQUIREMENTS OF THE TRUSS MANUFACTURER

2.4.6.1 Truss Design Criteria and Requirements. The Truss Manufacturer shall obtain the Truss design criteria and requirements from the Construction Documents.

2.4.6.2 Communication to Truss Designer. The Truss Manufacturer shall communicate the Truss design criteria and requirements to the Truss Designer.

2.4.6.3 Alternate Truss Designs. If an alternative or partial set of Truss design(s) is proposed by either the Truss Manufacturer or the Truss Designer, such alternative set of design(s) shall be sent to and reviewed by the Building Designer prior to manufacturing.

2.4.6.4 Truss Placement Diagram. Where required by the Construction Documents or Contract, the Truss Manufacturer shall prepare the Truss Placement Diagram that identifies the assumed location for each individually designated Truss and references the corresponding Truss Design Drawing. The Truss Placement Diagram shall be permitted to include identifying marks for other products including Structural Elements, so that they may be more easily identified by the Contractor during field erection.

2.4.6.5 Required Documents. The Truss Manufacturer shall supply to the Contractor the Truss Submittal Package, including the Truss Design Drawings, a Truss Placement Diagram, if required by the Construction Documents or Contract,

and the required Permanent Individual Truss Member Restraint and the method to be used per Section 2.4.3.

2.4.6.6 Special Application Conditions. The Truss Manufacturer shall be allowed to provide detail drawings to the Contractor to document special application conditions.

2.4.6.7 Truss Submittal Packages. Where required by the Construction Documents or Contract, Legal Requirements or the Building Official, the Truss Manufacturer shall provide the appropriate Truss Submittal Package to one or more of the following: Building Official; Building Designer and/or Contractor for review and/or approval per Section 2.4.4.2.

2.4.6.8 Reliance on Construction Documents. The Truss Manufacturer shall be permitted to rely on the accuracy and completeness of information furnished in the Construction Documents or otherwise furnished in writing by the Building Designer and/or Contractor.

2.4.6.9 Fabrication Tolerance. The Truss Manufacturer shall determine the value for the Fabrication Tolerance to be used in the design of the Trusses (see Section 6.4.10).

2.4.6.10 Manufacturer Quality Criteria. The Truss Manufacturer shall manufacture the Trusses in accordance with the final Truss Design Drawings, using the quality criteria required by this Standard.

2.4.6.11 In-Plant Truss Inspections. Truss inspections, as required by the Jurisdiction, shall be performed at the manufacturer's facility using the manufacturer's In-Plant Quality Assurance Program (see Section 3.2) monitored by an inspection agency approved by the Jurisdiction, and shall satisfy any quality control/quality assurance requirements for the Trusses, and shall satisfy any designated in-plant special inspection requirements for the Trusses.

2.4.6.12 Responsibility Exemptions. The Truss Manufacturer is responsible for items listed in Section 2.4.6, and is not responsible for the requirements of other parties specified outside of Section 2.4.6.

2.5 CONTRACTS

2.5.1 Defer to Construction Documents. This Chapter of the Standard is not intended to take precedence over the Construction Documents, where a Contract between parties incorporates by reference the Construction Documents, and therefore the Construction Documents shall apply as between the parties to the Contract.

2.5.2 Defer to Contract. This Chapter of the Standard is not intended to take precedence over a Contract as a Contract shall be permitted to contain provisions that take precedence over the Standard and/or the Construction Documents. A party shall not exclude in a Contract a responsibility established by this Standard or the Construction Documents unless that responsibility is assigned to a qualified party and that party agrees to that assignment.

Any changes made to the Construction Documents by contract shall be submitted, reviewed and approved by the Building Official.

2.5.3 Incorporation into Contract. A Contract shall be permitted to incorporate this Chapter of the Standard to establish the responsibilities of the parties to such Contract.