

# practice guide



**American  
Iron and Steel  
Institute**

## **Code of Standard Practice for Cold-Formed Steel Structural Framing**

Committee on Framing Standards

**2005 EDITION**

Endorsed by the Steel Framing Alliance and  
the Steel Stud Manufacturers Association



Steel Framing Alliance™



**Code of Standard Practice  
for Cold-Formed Steel Structural Framing**

**August 2005  
Practice Guide CF05-1**

**Committee on Framing Standards**

**American Iron and Steel Institute  
1140 Connecticut Avenue  
Washington, DC 20036**

**DISCLAIMER**

The material contained herein has been developed by the American Iron and Steel Institute Committee on Framing Standards. The Committee has made a diligent effort to present accurate, reliable, and useful information on trade practices for fabrication and installation of cold-formed steel structural framing. The Committee acknowledges and is grateful for the contributions of the numerous engineers, manufacturers, contractors and others who have contributed to the body of knowledge on the subject. Specific references are included in the *Code of Standard Practice* document.

With anticipated improvements in understanding of the behavior of cold-formed steel framing and the continuing development of new technology, this material may eventually become dated. It is anticipated that AISI will publish updates of this material as new information becomes available, but this cannot be guaranteed.

No conflict between this *Code of Standard Practice* and any legal building regulation is intended. This *Code of Standard Practice* is intended only to supplement and amplify such legal building regulations and laws.

The materials set forth herein are for general purposes only. They are not a substitute for competent professional advice. Application of this information to a specific project, particularly if included as part of a contract, should be reviewed by competent legal counsel. Anyone making use of the information set forth herein does so at their own risk and assumes any and all liability arising there from.

1st Printing - August 2005

Copyright American Iron and Steel Institute 2005

## PREFACE

The American Iron and Steel Institute (AISI) Committee on Framing Standards (COFS) has developed this *Code of Standard Practice for Cold-Formed Steel Structural Framing* [*Code of Standard Practice*] to address trade practices for design, fabrication and installation of *cold-formed steel structural framing* products.

This *Code of Standard Practice*, as revised to date, defines and sets forth accepted norms of good practice and has been developed and reviewed by a peer committee of the *cold-formed steel structural framing* industry. The practices defined in this *Code of Standard Practice* are the commonly accepted standards of custom and usage for *cold-formed steel structural framing* fabrication and installation. This voluntary document is intended to be used by *owner's representatives, design professionals, contractors, construction managers, suppliers, manufacturers, installers* and others on individual projects that utilize *cold-formed steel structural framing*.

This *Code of Standard Practice* is not applicable to *non-structural members*, including but not limited to interior drywall framing, which is addressed by ASTM C645 and C754, or *structural steel, structural steel joists, steel deck, metal building systems* or rack structures, which are addressed by AISC, SJI, SDI, MBMA and RMI, respectively.

The Committee acknowledges and is grateful for the numerous engineers, manufacturers, contractors and others who have contributed to the body of knowledge on the subject. The Committee wishes to also express their appreciation for the support and encouragement of the Steel Framing Alliance and Steel Stud Manufacturers Association.

**AISI COMMITTEE ON FRAMING STANDARDS**

Richard Haws, <i>Chairman</i>	NUCONSTEEL
Steve Fox, <i>Vice Chairman</i>	Canadian Sheet Steel Building Institute
Jay Larson, <i>Secretary</i>	American Iron and Steel Institute
Don Allen	Steel Stud Manufacturers Association
Bill Babich	Alpine Engineered Products
John Butts	John F. Butts & Associates
Brad Cameron	Keymark Engineering
Nader Elhadj	NAHB Research Center
Jeff Ellis	Simpson Strong-Tie
Ray Frobosilo	Super Stud Building Products
Michael Gardner	Gypsum Association
Stephen Gatto	Compass International
Greg Greenlee	USP Structural Connectors
John Heydon	Heydon Building Systems
Jeff Klaiman	ADTEK Engineers
Roger LaBoube	University of Missouri-Rolla
John Matsen	Matsen Ford Design Associates
Michael Meek	Allied Studco
Kenneth Pagano	Scosta Corporation
Nabil Rahman	The Steel Network
Greg Ralph	Dietrich Industries
Gary Rolih	SENCO Fastening Systems
Reynaud Serrette	Santa Clara University
Fernando Sesma	California Expanded Metal Products
Sutton Stephens	Kansas State University
Peter Tian	Berridge Manufacturing
Steven Walker	Steven H. Walker, P.Eng.
Lei Xu	University of Waterloo
Rahim Zadeh	Marino\Ware

**CODE OF STANDARD PRACTICE SUBCOMMITTEE**

Jeff Klaiman, <i>Chairman</i>	ADTEK Engineers
Jay Larson, <i>Secretary</i>	American Iron and Steel Institute
Don Allen	Steel Stud Manufacturers Association
Bill Babich	Alpine Engineered Products
Luis Bolivar	Allied Studco
Kirk Grundahl	Steel Truss and Component Association
Richard Layding	NUCONSTEEL
Hank Martin	American Iron and Steel Institute
Kenneth Pagano	Scosta Corporation
Mike Pellock	Aegis Metal Framing
Nabil Rahman	The Steel Network
Greg Ralph	Dietrich Industries
Fernando Sesma	California Expanded Metal Products
Peter Tian	Berridge Manufacturing
Steven Walker	Steven H. Walker, P.Eng.
Rahim Zadeh	Marino\Ware

AISI also acknowledges the following individuals who helped develop this document.

Brent Allen	South Texas Drywall
John Carpenter	Alpine Engineered Products

**TABLE OF CONTENTS**  
**CODE OF STANDARD PRACTICE**  
**FOR**  
**COLD-FORMED STEEL STRUCTURAL FRAMING**

<b>DISCLAIMER .....</b>	<b>ii</b>
<b>PREFACE.....</b>	<b>iii</b>
<b> AISI COMMITTEE ON FRAMING STANDARDS .....</b>	<b>iv</b>
<b>CODE OF STANDARD PRACTICE SUBCOMMITTEE.....</b>	<b>v</b>
<b>A. GENERAL .....</b>	<b>1</b>
A1 Scope .....	1
A2 Definitions .....	1
A3 Referenced Documents.....	4
A4 Responsibility for Design.....	4
<b>B. CLASSIFICATION OF MATERIALS .....</b>	<b>6</b>
B1 Definition of Cold-Formed Steel Structural Framing.....	6
B2 Other Items.....	6
<b>C. CONTRACT DOCUMENTS.....</b>	<b>8</b>
C1 Responsibilities.....	8
C2 Limit of Responsibility .....	8
C3 Jurisdiction .....	8
C4 Discrepancies .....	8
<b>D. INSTALLATION DRAWINGS.....</b>	<b>9</b>
D1 Owners Responsibility.....	9
D2 Component Manufacturer and/or Installer Responsibility.....	9
D3 Review Process .....	9
D4 Responsibility.....	10
<b>E. MATERIALS .....</b>	<b>11</b>
E1 Structural Members.....	11
E2 Fasteners .....	11
E3 Preparation of Material.....	11
E4 Member Identification .....	11
E5 Special Marking.....	11
E6 Camber.....	11
<b>F. INSTALLATION .....</b>	<b>12</b>
F1 Scope .....	12
F2 Site Conditions.....	12
F3 Delivery, Handling and Storage of Materials.....	12
F4 Field Modifications and Repairs .....	13
F5 Installation Tolerances .....	13
<b>G. QUALITY CONTROL.....</b>	<b>14</b>
G1 General.....	14
G2 Material Inspection.....	14
G3 Workmanship .....	14

---

**H. CONTRACTUAL RELATIONS..... 15**  
H1 Presentation of Proposals..... 15  
H2 Acceptance of Proposals..... 15  
H3 Terms of Payment ..... 15  
H4 Change Orders..... 15

**This Page Intentionally Left Blank**

# CODE OF STANDARD PRACTICE FOR COLD-FORMED STEEL STRUCTURAL FRAMING

## A. GENERAL

### A1 Scope

In the absence of specific instructions to the contrary in the *contract documents*, the trade practices that are defined in this *Code of Standard Practice* shall govern the design, fabrication and installation of *cold-formed steel structural framing*.

### A2 Definitions

*AISC*. American Institute of Steel Construction.

*ISI*. American Iron and Steel Institute.

*Applicable Building Code*. Building code under which the building is designed.

*Approved*. Approved by a building official or *design professional*.

*Base Steel Thickness*. The thickness of bare steel exclusive of all coatings.

*Blocking*. C-shaped track, break shape, or flat strap material attached to *structural members*, flat strap or sheathing panels to transfer shear forces.

*Bracing*. Structural elements that are installed to provide restraint or support (or both) to other framing members so that the complete assembly forms a stable structure.

*Cold-Formed Sheet Steel*. Sheet steel or strip steel that is manufactured by (1) press braking blanks sheared from sheets or cut length of coils or plates, or by (2) continuous roll forming of cold- or hot-rolled coils of sheet steel; both forming operations are performed at ambient room temperature, that is, without any addition of heat such as would be required for hot forming.

*Cold-Formed Steel*. See *Cold-Formed Sheet Steel*.

*Cold-Formed Steel Structural Framing*. The elements of the structural frame, as given in Section B1 of this *Code of Standard Practice*.

*Component Assembly*. A fabricated assemblage of *cold-formed steel structural members* that is manufactured by the *component manufacturer*, which may also include *structural steel framing*, sheathing, insulation or other products.

*Component Design Drawing*. The written, graphic and pictorial definition of an individual *component assembly*, which includes engineering design data.

*Component Designer*. The individual or organization responsible for the engineering design of *component assemblies*.

*Component Manufacturer*. The individual or organization responsible for the manufacturing of *component assemblies* for the project.

*Component Placement Diagram.* The illustration supplied by the *component manufacturer* identifying the location assumed for each of the *component assemblies* which references each individually designated *component design drawing*.

*Construction Manager.* The individual or organization designated by the *owner* to issue contracts for the construction of the project and to purchase products.

*Contract Documents.* The documents, including, but not limited to, *plans* and *specifications*, which define the responsibilities of the parties involved in bidding, purchasing, designing, supplying, and installing *cold-formed steel framing*.

*Contractor.* The individual or organization that is contracted to assume full responsibility for the construction of the structure.

*Design Load.* Applied load determined in accordance with either *LRFD load combinations* or *ASD load combinations*, whichever is applicable.

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

*Discrepancy.* Any conflicts or omissions within the *contract documents*, or conflicts between the *contract documents* and *applicable building codes*, standards of good engineering or industry practice.

*Drawings.* See *Plans* and *Installation Drawings*.

*Embedded Anchor.* A structural anchor or device (bolt, strap, plate, etc.) intended for fastening *cold-formed steel structural framing* to masonry or concrete that is installed prior to hardening of the grout or concrete.

*Framing Contractor.* See *installer*.

*Framing Material.* Steel products, including but not limited to *structural members* and *prefabricated structural assemblies*, ordered expressly for the requirements of the project.

*General Contractor.* See *Contractor*.

*Installation Drawings.* Drawings that show the location and installation of the *cold-formed steel structural framing*.

*Installer.* Party responsible for the installation of *cold-formed steel* products.

*Lateral Force Resisting System.* The *structural* elements and connections required to resist racking and overturning due to wind and/or seismic forces imposed upon the structure in accordance with the *applicable building code*.

*Material Supplier.* An individual or entity responsible for furnishing *framing materials* for the project.

*MBMA.* Metal Building Manufacturers Association.

*Metal Building System.* A complete integrated set of mutually dependent components and assemblies that form a building. As defined by the *MBMA*, a *metal building system* includes the primary and secondary framing, covering, and accessories, all of which are manufactured to permit inspection on site prior to assembly or installation.

*Non-Structural Member.* A member in a steel framed assembly which is limited to a transverse (out-of-plane) load of not more than 10 lb/ft<sup>2</sup> (480 Pa), a superimposed axial load, exclusive of sheathing materials, of not more than 100 lb/ft (1460 N/m), or a superimposed axial load of not more than 200 lbs (890 N).

*Owner.* The individual or entity organizing and financing the design and construction of the project.

*Owner's Representative.* The *owner* or individual designated contractually to act for the *owner*.

*Owner's Representative for Construction.* The *owner* or the entity that is responsible to the *owner* for the overall construction of the project, including its planning, quality and completion. This is usually the *contractor, construction manager* or similar authority at the job site.

*Owner's Representative for Design.* The *owner* or the entity that is responsible to the *owner* for the overall structural design of the project. This is usually the *Structural Engineer-of-Record*.

*Plans.* Drawings prepared by the *design professional* for the *owner* of the project. These drawings include but are not limited to floor plans, framing plans, elevations, sections, details and schedules as necessary to define the desired construction.

*Post-installed Anchor.* A structural anchor or device (bolt, clip, angle, bracket, etc.) intended for fastening *cold-formed steel structural framing* to hardened masonry or concrete. For anchorage to concrete, these anchors are installed after the concrete has achieved sufficient stiffness to be sawn or drilled.

*Release for Construction.* The release by the *owner's representative*, permitting the *component manufacturer and/or installer* to commence work under the contract, including ordering *framing material* and preparing *installation drawings*.

*Receiving Entity.* The individual or entity responsible to the *owner's representative for construction* for accepting or rejecting furnished *framing materials*, and proper storage of received *framing materials* on the job site.

RMI. Rack Manufacturers Institute.

SDI. Steel Deck Institute.

*Specialty Designer.* The *design professional*, individual or organization having responsibility for the design of the specialty items. 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 *component designer, specialty engineer, design engineer, registered engineer, and engineer*, but hereinafter will be referred to as *Specialty Designer*. The requirement for a *Specialty Designer* is typically called out on architectural *specifications* or structural general notes. The *Specialty Designer* is typically not the *Structural Engineer-of-Record*.

*Shop Drawings.* Drawings for the production of individual *component assemblies* for the project.

*Specifications.* Written instructions, which, with the *plans*, define the materials, standards, design of the products, and workmanship expected on a construction project.

SJI. Steel Joist Institute.

*Standard Cold-Formed Steel Structural Shapes.* *Cold-formed steel structural members* that meet the requirements of the SSMA *Product Technical Information*.

*Structural Engineer-of-Record.* The design professional who is responsible for sealing the contract documents, which indicates that he or she has performed or supervised the analysis, design and document preparation for the structure and has knowledge of the requirements for the load-carrying structural system.

*Structural Member.* A member that resists design loads, as required by the applicable building code, except when defined as a non-structural member.

*Structural Steel.* The elements of the structural frame defined as structural steel by AISC in the Code of Standard Practice for Steel Buildings and Bridges.

*Sub-Contractor.* The individual or organization with whom a contractor has contracted to furnish, install and/or install a portion of the project.

*Truss.* A coplanar system of structural members joined together at their ends usually to construct a series of triangles that form a stable beam-like framework.

### **A3 Referenced Documents**

1. AISI, *Standard for Cold-Formed Steel Framing – General Provisions*, 2004 Edition, American Iron and Steel Institute, Washington, DC.
2. AISI, *Standard for Cold-Formed Steel Framing – Truss Design*, 2004 Edition, American Iron and Steel Institute, Washington, DC.
3. ASTM, A1003/A1003M-02a, *Standard Specification for Sheet Steel, Carbon, Metallic and Non-Metallic Coated for Cold-Formed Framing Members*, ASTM International, West Conshohocken, PA.
4. ASTM, A780-01, *Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings*, ASTM International, West Conshohocken, PA.
5. ASTM C645-04, *Standard Specification for Nonstructural Steel Framing Members*, ASTM International, West Conshohocken, PA.
6. ASTM C754-00, *Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products*, ASTM International, West Conshohocken, PA.
7. ASTM, C955-03, *Standard Specification for Load-Bearing (Transverse and Axial) Steel Studs, Runners (Tracks), and Bracing or Bridging for Screw Application of Gypsum Panel Products and Metal Plaster Bases*, ASTM International, West Conshohocken, PA.
8. SSMA, *Product Technical Information*, 2001 Edition, Steel Stud Manufacturers Association, Chicago, IL.

### **A4 Responsibility for Design**

**A4.1** The design professionals of record are responsible for the suitability and adequacy of all aspects of design. The design professionals and/or the owner shall have a right to solicit designs, plans, specifications and/or data from the component manufacturer, installer and/or specialty designer, but the responsibility for the safety of the structure, property and conformance to applicable building codes and standards remains with the design professionals of record.

**A4.2** If the contract documents require that the installer and/or specialty designer prepare designs, plans and/or specifications, the contract documents shall state clearly and precisely the exact requirements, including all applicable building codes and design requirements and all

other regulatory requirements. The *design professional* of record assumes the responsibility for these designs. The *design professionals* of record shall confirm that the effect of the *specialty designer's* work conforms to the intent of the *structural engineer of record* on the overall project. The *design professional* of record shall coordinate the work of all the *specialty designers* with the *design professionals'* work and/or that of other *specialty designers* to ensure compatibility and integrate the connection and conformity of the components designed by the different *specialty designers*. This coordination includes, but is not limited to, addressing the forces and reactions as identified by the *specialty designer* that are transmitted to those elements of the structure that are not designed by the *specialty designer*.

**A4.3** If the *contract documents* specify *trusses*, the design responsibilities defined in the *AISI Standard for Cold-Formed Steel Framing - Truss Design* shall apply. If the *contract documents* specify *component assemblies* other than *trusses*, the *contract documents* shall define the responsibility for design of the *component assemblies*. If the *contract documents* require that the *component manufacturer* be responsible for the design of the *component assemblies*, the *contract documents* shall state clearly and precisely the exact requirements, including all *applicable building codes* and design requirements and all other regulatory requirements. The *owner's representative for design* assumes the responsibility for these designs.

**A4.4** If the *owner* chooses not to hire a *design professional*, the *owner* is responsible for the suitability, adequacy and legality of all aspects of design in the *plans* and *specifications*. In this case, the *owner* is responsible for the review and approval of *component design drawings*, *component placement diagrams* and/or *installation drawings*.

## B. CLASSIFICATION OF MATERIALS

### B1 Definition of Cold-Formed Steel Structural Framing

*Cold-formed steel structural framing* shall consist of the elements of the structural frame that are shown and sized in the *contract documents*, essential to support the design loads and described as:

- *Cold-formed steel structural members.*
- *Cold-formed steel component assemblies.*
- *Bracing and blocking necessary for the cold-formed steel structural framing or to provide stability for cold-formed steel structural members.*
- *Connection methods, hardware (fasteners, connectors, and post-installed anchors) and processes necessary for the installation of cold-formed steel structural framing.*
- *Lateral force resisting system.*
- *Welding materials and processes related to the fabrication or installation of cold-formed steel structural framing.*

### B2 Other Items

*Cold-formed steel structural framing* shall not include other items that are not generally described in Section B1, even where such items are shown in the structural *plans* or are attached to the *cold-formed steel structural framing* unless specifically identified by item in the *contract documents*. Other items include but are not limited to:

- Awnings.
- Blocking for other attachments, such as door, window, cabinet, handrail, plumbing, awnings, storefront, glazing and other systems.
- Building cleaning equipment and equipment anchor support.
- Cables for permanent *bracing* or suspension systems.
- *Cold-formed steel* concrete form decking.
- *Cold-formed steel* floor decking.
- *Cold-formed steel non-structural framing.*
- *Cold-formed steel* roof decking.
- *Cold-formed steel* wall sheathing, except as part of a *lateral force resisting system*.
- Chimney support framing.
- Concrete slab edge forms.
- Drywall and plaster trims and accessories.
- Eave struts deployed as a component of a *metal building system*.
- Edge angles, plates, embeds and *structural steel* supports necessary for the support of suspended *cold-formed steel structural framing*.
- *Embedded anchors.*
- Expansion and control joints.
- Fastening systems for ceiling, wall, floor and roof sheathing materials.
- Fire, smoke and draft stopping.
- Flagpole support framing.
- Girts deployed as a component of a *metal building system*.
- Handrails and handrail support members.
- Insulation products.
- Interior drywall (*non-structural*) framing.

- Mechanical equipment support framing.
- *Metal building systems.*
- Metal panels deployed as a component of a *metal building system.*
- Miscellaneous metal.
- Opening framing, if made from other than *standard cold-formed steel structural shapes.*
- Open-web steel joists.
- Plaster lathing, except where included with a *prefabricated structural assembly.*
- Purlins deployed as a component of a *metal building system.*
- Sheathing, unless part of a *prefabricated structural assembly.*
- Stairs, stair landings and stair railings.
- Stair component support framing.
- *Structural steel* framing.
- *Structural steel* lintels, if job-site installed.
- *Structural steel* plate.
- Support framing for cables.
- Support framing for sign structures.
- Suspended ceiling systems, proprietary or pre-engineered.
- Window washing supports.

## C. CONTRACT DOCUMENTS

### C1 Responsibilities

**C1.1** The *owner's representative* shall furnish to the *component manufacturer* and/or *installer* a set of *contract documents* of current issue including addenda showing the type of support supplied, method of attachment, correct dimensions, and required size and spacing.

**C1.2** If *contract documents* are not available, the *owner's representative* shall provide complete information as specified in Section A4.2.

**C1.3** The *contract documents* may require the *component manufacturer* and/or *installer* to submit a complete design for *approval* prior to the commencement of construction. In the process of this submittal, the *component manufacturer* and/or *installer* shall bring to the attention of the *owner's representative*, any conflicts within the construction documents. The *owner's representative*, must present clear instructions to the *component manufacturer* and/or *installer* on how to resolve each conflict. Changes resulting from such conflicts shall be handled in accordance with Section H4.

**C1.4** Architectural *plans* shall be legible, shall indicate the design intent of *cold-formed steel structural framing*, and shall include at a minimum the location of *cold-formed steel structural framing*, constraints on member size (e.g., web depth), wall and other assembly types, non-standard spacing and location requirements.

**C1.5** Structural *plans* shall show the *structural member* locations, sizes, reinforcing and connections in sufficient scale and detail to enable the construction of the building in a reasonable sequence by a competent *contractor* experienced in the techniques of construction for the specified materials. Structural *plans* may refer to architectural *plans* for dimensions, where appropriate. Elevations, sections and details should be of appropriate scale, number and extent to portray clearly the relationship of members to each other and their interconnection(s). Care should be taken to determine that details noted "typical" are applicable to the project or condition being portrayed.

### C2 Limit of Responsibility

The *owner's* construction documents are assumed to be correct in all details, and the *component manufacturer's* and/or *installer's* responsibility is limited to furnishing products in accordance with these documents and this *Code of Standard Practice*. Any change to these *contract documents* must be authorized in writing by the *owner's representative*.

### C3 Jurisdiction

Where state and local boards or other regulatory agencies have jurisdiction, the *owner* is to indicate such information in the *contract documents*.

### C4 Discrepancies

When a *discrepancy* is discovered in the *contract documents* in the course of work by the *contractor*, *component manufacturer*, *installer* and/or any other parties involved with the construction, the entity finding the discrepancy shall promptly notify the *owner's representative for construction* so that the *discrepancy* can be resolved by the *owner's representative for design*. Such resolutions shall be timely so as not to affect the work of the *component manufacturer* and/or *installer*. Changes resulting from such *discrepancies* shall be handled in accordance with Section H4.

## **D. INSTALLATION DRAWINGS**

### **D1 Owners Responsibility**

**D1.1** When the project is *released for construction*, the *owner's representative* shall provide complete *contract documents* and relevant information, including addenda and other related drawings such as window shop drawings and architectural metal panel drawings, in a timely manner for the installation of *cold-formed steel structural framing* and, if required, preparation of *component design drawings* and *installation drawings*. A scope of work for items required, having been agreed upon at the time of the contract, shall also be incorporated with these documents. This scope shall include and indicate all items that are to be fabricated and installed.

**D1.2** If the *owner's representative* requests that *component design drawings*, *component placement diagrams* and/or *installation drawings* be prepared before the timely submittal of any other required documents, such as window shop drawings or architectural metal panel drawings, any changes required due to the differences between these drawings and the assumptions made in preparation of the *component design drawings*, *component placement diagrams* and/or *installation drawings* will be the responsibility of the *owner's representative*. Delays in obtaining required information can extend the schedule agreed to at time of contract.

### **D2 Component Manufacturer and/or Installer Responsibility**

**D2.1** The *component manufacturer* and/or *installer* shall submit *component design drawings*, *component placement diagrams* and/or *installation drawings*, with supporting calculations, when required by and per the *contract documents*, on a schedule formulated and agreed to at time of contract.

**D2.2** Requests for supplemental structural support elements, such as miscellaneous structural steel and/or embedded items, shall be submitted by the *component manufacturer* and/or *installer*. Delays in obtaining confirmation of such requests can extend the schedule agreed to at time of contract.

### **D3 Review Process**

**D3.1** The *owner's representative* shall return to the *component manufacturer* and/or *installer* one set of the *component design drawings*, *component placement diagrams* and/or *installation drawings* indicating one of the following: approved (no exception taken), approved as noted (re-submittal not required), revise and resubmit or rejected.

**D3.2** If modifications are required, the *component manufacturer* and/or *installer* and *specialty designer*, if retained by the *component manufacturer* and/or *installer*, shall have at least fourteen (14) calendar days for incorporating the required changes.

**D3.3** If modifications with re-submittal are required, the *component design drawings*, *component placement diagrams* and/or *installation drawings* shall be resubmitted to the *owner's representative* for review after all required modifications and/or corrections have been executed.

**D3.4** Should modifications be required which were not part of the agreed to scope of work, the *component manufacturer* and/or *installer* shall submit in writing the extra costs for this additional work (including but not limited to engineering, material, labor, overhead and profit), for approval by the *owner's representative*.

**D3.5** The *component manufacturer* and/or *installer* shall not proceed with any work until all *drawings*, modifications and extra charges are resolved, except those portions of the work where all parties have agreed to the completeness and correctness of all drawings, modifications, and any extra charges.

**D3.6** It is the responsibility of the *owner's representative*, to assure that the above approval process is coordinated with the proper sequence for submittal and project schedule.

#### **D4 Responsibility**

**D4.1** Approval by the *owner's representative* of *component design drawings*, *component placement diagrams* and/or *installation drawings* prepared by the *component manufacturer* and/or *installer* indicates that the *component manufacturer* and/or *installer* has correctly interpreted the contract requirements and is released to start fabrication and installation. The *owner's representative* is responsible for adequacy of designs, structural configurations, material and code requirements, and the above approval constitutes the *owner's* acceptance of this responsibility.

**D4.2** Approval by the *owner's representative* of *component design drawings*, *component placement diagrams* and/or *installation drawings* does not relieve the *component manufacturer* and/or *installer* of the responsibility for accuracy of dimensions on *component design drawings*, *component placement diagrams* and/or *installation drawings*, nor the general fit-up of parts to be assembled in the field, nor for providing acceptable workmanship.

## **E. MATERIALS**

### **E1 Structural Members**

**E1.1** *Structural members* shall be of the grade, *base steel thickness* and coating specified by the *approved design*. However, steel of a higher grade, *base steel thickness*, or coating may be substituted for the grade, *base steel thickness*, or coating as specified, unless specifically prohibited in the *contract documents*.

**E1.2** *Structural members* shall be of the size and shape specified by the *approved design*. Changes in size and/or shape shall require the approval of the *owner's representative for design*.

**E1.3** *Structural members* shall comply with the manufacturing tolerances listed in ASTM C955.

**E1.4** *Component assemblies* shall have *structural members* that are cut and assembled in accordance with the tolerances prescribed in the *AISI Standard for Cold-Formed Steel Framing - General Provisions*. *Trusses* shall have *structural members* that are cut and assembled in accordance with the additional requirements of the *AISI Standard for Cold-Formed Steel Framing - Truss Design*.

### **E2 Fasteners**

Fasteners shall be at minimum the type and size specified by the *approved design*. Use of a larger than specified fastener shall be permitted, providing that the minimum spacing and edge distance requirements of the larger fastener are met and the strength requirements of the specified fastener are met.

### **E3 Preparation of Material**

**E3.1** Cutting shall be by sawing, abrasive cutting, shearing, plasma cutting or other *approved* methods. Proper methods of cutting are to be selected by the *installer*, unless otherwise specified in the *contract documents*.

**E3.2** Mechanical braking, bending or forming is to be used when *standard cold-formed steel structural shapes* cannot be obtained.

### **E4 Member Identification**

*Structural members* shall be identified in accordance with the product identification requirements for framing members defined in the *AISI Standard for Cold-Formed Steel Framing - General Provisions*.

### **E5 Special Marking**

*Component assemblies* shall be marked, as necessary, to document such items as proper orientation, special bearing conditions and permanent *bracing* requirements. Alternatively, it shall be acceptable for the *specialty designer* to provide this information to the *installer* by means of indications on the *component placement diagrams*.

### **E6 Camber**

*Component assemblies* will only be provided with camber if specified by the *specialty designer*.

## F. INSTALLATION

### F1 Scope

Items of *cold-formed steel* to be installed shall be enumerated in the *contract documents*.

### F2 Site Conditions

**F2.1** The *installer* shall be permitted to use the most efficient and economical method and sequence of installation or assembly available consistent with the *contract documents*. When the *owner* contracts separately with a *component manufacturer* and *installer*, the *owner* is responsible for coordinating work between *contractors*.

**F2.2** The *installer* shall examine areas and conditions under which *framing materials* are to be installed. Work shall not proceed until unsatisfactory conditions have been corrected by those responsible.

**F2.3** The *owner's representative for construction* shall provide and maintain adequate access necessary for equipment and *framing materials* to be installed. The *owner's representative for construction* shall provide the *installer* level, convenient, and adequate space to safely use the necessary equipment and install the *framing materials*.

**F2.4** The *contractor* shall coordinate setting drawings, dimensional problems, compatibility of various trades and/or installation.

### F3 Delivery, Handling and Storage of Materials

**F3.1** It is the *receiving entity's* responsibility to verify that *framing materials* arrive in good condition. If *framing materials* arrive at a destination in a damaged condition, the *receiving entity* shall promptly notify the *material supplier* or *component manufacturer* prior to unloading the *framing material*, or promptly upon discovery and prior to installation.

**F3.2** It is the *contractor's* and/or the *installer's* responsibility to verify the framing material is not damaged and meets the project *specifications* and/or *approved* submittals before installation. The *material supplier* or *component manufacturer* shall be responsible solely for the replacement of damaged material or material that does not meet the project *specifications* and/or *approved* submittals. If the *contractor* and/or the *installer* installs damaged material then the *contractor* and/or the *installer* assumes the cost of repairing or installing new materials. At no time will the consequential costs to be assumed by the *material supplier* or *component manufacturer* exceed the selling price of the particular material in question.

**F3.3** Damage caused by improper storage or handling of *framing materials* on the job site is not the responsibility of the *material supplier* or *component manufacturer*.

**F3.4** Proper storage of *framing materials* on the job site is the responsibility of the *receiving entity*, and requires that *framing materials* not be in direct contact with the ground and are protected from the elements. Adequate drainage and ventilation shall be provided to minimize the formation of "wet storage stain" or "white rust".

**F3.5** Proper handling of *framing materials* on the job site is the responsibility of the *contractor* and *installer*, and requires that care be exercised to not cause significant damage to the metallic coating. Bare steel exposed at minor scuffs and scratches is generally protected by the zinc's ability to provide cathodic protection and does not require any repair; however, significant damage to the metallic coating, such as is caused by field welding, must be repaired in accordance with Section F4.

#### **F4 Field Modifications and Repairs**

**F4.1** If the *contractor, sub-contractor* or any others modify or damage *framing materials*, that party is responsible for all costs necessary to analyze and, when necessary, correct the situation.

**F4.2** Installation of holes in the *webs* of *structural members* is limited to the size, configuration, and location as specified in the *approved* design or recognized design standard. Any *webs* of *structural members* with holes violating the above requirements must be evaluated by the *design professional*.

**F4.3** Field repairs to damaged *structural members* shall be made in accordance with the *design professional's* recommendation. The *design professional* may request that the *specialty designer* provide recommendations on field repairs, with final approval by the *design professional*.

**F4.4** Repairs to the metallic coating, when required, shall be in accordance with ASTM A780.

**F4.5** Changes orders resulting from such *approved* field modifications or repairs shall be handled in accordance with Section H4.

#### **F5 Installation Tolerances**

**F5.1** *Structural members* and *component assemblies* shall be installed in accordance with the tolerances prescribed in the *AISI Standard for Cold-Formed Steel Framing – General Provisions*.

**F5.2** *Trusses* shall be installed in accordance with the additional requirements of the *AISI Standard for Cold-Formed Steel Framing – Truss Standard*.

## **G. QUALITY CONTROL**

### **G1 General**

**G1.1** *Material suppliers and component manufacturers shall maintain a properly documented quality control program to assure that their work is performed in accordance with this Code of Standard Practice and relevant ASTM and AISI standards.*

**G1.2** *The contractor shall maintain a quality control program so that the work performed by the installer is in accordance with this Code of Standard Practice and the contract documents, component design drawings, component placement diagrams and installation drawings.*

**G1.3** *The installer shall maintain a quality control program so that their work is performed in accordance with this Code of Standard Practice and the contract documents. The installer shall be capable of performing the necessary installation or assembly and provide the equipment, personnel and management for the scope, magnitude and required quality of each project. The installer shall employ sufficient qualified personnel to properly complete the work required by the contract documents.*

### **G2 Material Inspection**

**G2.1** *The receiving entity shall verify that the framing materials delivered meet the requirements of the contract documents.*

**G2.2** *The receiving entity shall check the framing materials to verify that the framing materials have been properly labeled as required by Section E4.*

### **G3 Workmanship**

The quality of workmanship expected for the *cold-formed steel structural framing* product shall be specified in the *contract documents*.

## **H. CONTRACTUAL RELATIONS**

### **H1 Presentation of Proposals**

All proposals for furnishing *framing material* shall be made on a sales contract form. After acceptance by the *owner*, these proposals must be accepted or executed by a qualified official of the *component manufacturer* and/or *installer*. Upon such acceptance, the proposal becomes a contract.

### **H2 Acceptance of Proposals**

All proposals shall have a specified term of acceptance. If the proposal is not accepted within this term the proposal becomes invalid.

### **H3 Terms of Payment**

The terms of payment for the work to be completed shall be specified in the *contract documents*.

### **H4 Change Orders**

The *component manufacturer* and/or *installer* shall submit change orders for work that is determined to be of no fault of theirs and will provide the *owner's representative for construction* with their opinion as to which other trade on the project was at fault. These change orders may be necessitated by any conflicts, in accordance with Section C1; *discrepancies*, in accordance with Section C4; delivery, handling and storage of materials, in accordance with Section F3; or field modifications and repairs, in accordance with Section F4. The *owner's representative for construction* shall review the change order within fourteen (14) days, or sooner if the decision delays the project schedule, and issue a formal response. The *owner's representative for construction's* compensation of the *component manufacturer* and/or *installer* for conflicts, *discrepancies* and *approved* field modifications and repairs shall not be delayed due to the *owner's representative for construction's* negotiations with the *contractor* determined to be at fault.



1140 Connecticut Avenue, NW  
Suite 705  
Washington DC 20036  
[www.steel.org](http://www.steel.org)



Steel Framing Alliance

National Housing Center  
1201 15th Street NW  
Suite 320  
Washington DC 20005  
[www.steel framing alliance.com](http://www.steel framing alliance.com)



8 S. Michigan Avenue  
Suite 100  
Chicago IL 60603  
[www.ssma.com](http://www.ssma.com)

