



BUILDINGS BULLETIN 2019-011

Technical

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Issuance Date: December 2, 2019

Purpose: This bulletin highlights cold-formed steel light-frame construction requirements for special inspectors, construction superintendents, design professionals, and permit holders.

Related Code/Zoning Section(s):	BC 1702	BC 1704.1	BC 1704.3.4	BC 2210
	BC 2210.3.2	BC 2210.1 thru 2210.7	BC 3301.7	BC 3301.13
	BC 3301.4	BC 3305	AC 28-116.1	

Subject(s): Cold-formed steel light-frame construction; Cold-formed steel light-frame bracing and assembly; Cold-formed steel light-frame design; Cold-formed steel light-frame special inspection; Documentation required on site; Construction superintendent; Registered General Contractor; Special inspector.

I. Background

This bulletin highlights requirements specific to the erection of cold-formed steel light-frame construction for special inspectors, construction superintendents, general contractors, design professionals, and permit holders.

Improper erection procedures by contractors - including loading decking that has not been properly braced, or overloading floors with temporary construction loads - increases the risk of collapse. The NYC Building Code mandates specific requirements during erection to prevent such failures.

Permit holders must ensure that structural capacity of the cold form steel is established prior to placing any temporary loading. Temporary as well as permanent bracing may be required prior to placing any loads on the cold form steel. The NYC Building Code mandates special inspection of temporary and permanent bracing as part of the special inspector's duties, and this bulletin clarifies the requirements that apply during construction in order to ensure temporary loading is only placed in areas intended for such loading.

II. Requirements for the Permit Holder and General Contractor

The permit holder is ultimately responsible for ensuring a safe jobsite and compliance with approved documents and the New York City Building Code, including standards for cold-formed steel referenced in the Building Code. For a 1-, 2-, or 3-family new building construction project the permit holder must be a registered general contractor. As part of the fulfillment of their responsibilities during cold-formed steel light-frame construction, the permit holder must:

- a. Inform designer of anticipated loading.** The permit holder shall not allow loads for which the drawings do not account. When intended loading, including concentrated loading caused by material delivery, exceeds the loading shown on the approved documents, the permit holder must promptly inform the designer and proceed as instructed. Additional instructions or drawings shall be communicated to the special inspector.

- b. **No loading without special inspection.** The permit holder and when applicable, the construction superintendent, shall ensure that loading of the cold-formed steel framing does not occur until the special inspection has been performed and any identified defects or incomplete installations have been corrected to the satisfaction of the special inspector.
- c. **Scheduling of special inspections.** Keep the special inspector aware of the progress of work, and schedule periodic special inspections with the special inspector as indicated in this bulletin. Administrative Code §28-116.3.1 requires the permit holder to notify the relevant special inspection agency in writing at least 72 hours prior to the commencement of any work that requires a special inspection.
- d. **Work to remain accessible and exposed.** Ensure that all work requiring special inspection remains accessible and exposed until the special inspector approves the relevant work.
- e. **Construction superintendents.** For projects that require a construction superintendent in accordance with Section 3301.13, the permit holder must ensure that the superintendent is performing their duties and following the procedures outlined in this bulletin. If the project does not require a construction superintendent in accordance with Section 3301.13 of the New York City Building Code, the permit holder shall ensure the duties specified in items a through f of part III of this bulletin are performed for such project.

III. Requirements for Construction Superintendents

Section 3301.13 of the New York City Building Code requires the construction superintendent to act “in a reasonable and responsible manner to maintain a safe job site,” “assure compliance with the approved documents,” perform inspections to “verify work is being conducted in accordance with sound construction/demolition practices...and approved documents,” and maintain a log of “the general progress of work at the site,” and “the construction superintendent’s activities at the site, including areas and floors inspected.” As part of the fulfillment of these responsibilities during cold-formed steel light-frame construction, the construction superintendent must:

- a. **Compliance with approved documents.** Ensure compliance with approved documents, including requirements for the sequence of operation, alignment of joists, rafters, trusses, and structural wall studs (above or below), and installation of screws, bolts, anchors, and other fasteners. The construction superintendent shall also ensure compliance with manufacturer specifications pursuant to 3301.1.3.
- b. **Bracing and shoring.** Ensure all members are braced & shored as indicated on the drawings. Ensure no temporary bracing or shoring is removed or modified until the special inspector has determined it is no longer required.
- c. **Placement of material and equipment.** Ensure material and equipment is placed only on the temporary loading areas as indicated on the approved documents, and only after the area(s) have passed special inspection with no defects noted by the special inspector. The construction super shall not allow material and equipment – other than individual decking panels being placed – to be placed directly on framing until the construction superintendent has received written documentation from the special inspector that no deficiencies were identified during the special inspection for that section of decking (temporary or permanent) where material or equipment will be placed.
- d. **Capacity.** Ensure no placed load exceeds the capacity of the framing/decking as indicated on the approved documents.
- e. **Bracing of masonry walls.** Ensure masonry walls are properly braced during construction. See Section 2104.6 of the New York City Building Code and Buildings Bulletin 2017-003 for masonry bracing requirements.
- f. **Fall protection.** Ensure proper fall protection is provided and used at all times.
- g. **Inspection.** As part of the construction superintendent’s daily inspection, inspect framing, component assemblies, connections, bracing & shoring, and decking (temporary or permanent) to verify compliance with the approved documents.
- h. **Log.** As part of the construction superintendent’s log, record in the log:
 1. Special inspections, including date and time of inspection, name of special inspector, special inspector identification or accreditation number, floors and areas inspected, and outcome of special inspection

- (e.g. deficiencies identified or no deficiencies identified);
2. Floors, or portions thereof, where persons, material, or equipment are authorized; and
 3. Deliveries to the site, or operations at the site, that results in materials or equipment being placed on decking (temporary or permanent).
 - i. **Documentation of special inspection.** The construction superintendent must ensure written documentation provided by the special inspector to the construction superintendent in accordance with item d of part IV of this bulletin is maintained at the site with the construction superintendent's log.

IV. Requirements for Special Inspectors

Sections 1704.3 and 1704.3.4 of the New York City Building Code require special inspection of cold-formed steel light-frame construction. The special inspector must verify the size, quality, framing, erection, and both temporary and permanent bracing of the construction.

- a. **Periodic inspection timing.** The required periodic special inspections must, at a minimum, occur after each floor or portion thereof which is to be loaded, is installed.
- b. **Coordination of inspection and construction.** The schedule of special inspections is to be coordinated with the permit holder and the construction superintendent if the scope of work requires a construction superintendent per Section 3301.13 of the Building Code, to ensure the relevant portions can be inspected prior to any loading occurring on the cold-formed steel framing.
- c. **Scope of special inspection.** The special inspector must examine all framing, component assemblies, connections, bracing & shoring, and decking (temporary or permanent), and verify that they comply with all relevant items specified in Tables 1704.3 and 1704.3.4 of the New York City Building Code. This includes but is not limited to:
 1. Verify that materials including framing, component assemblies, connections, bracing & shoring, and decking (temporary or permanent) are in compliance with the details shown in the approved documents.
 2. Verify that in-line framing of joists, rafters, trusses, and structural wall studs (above and below) with any associated distribution members is in accordance with the approved documents.
 3. Verify that joists are installed with full bearing support and/or proper connection fastening, and have their bridging completely attached in accordance with the drawings. For joists bearing on masonry walls, confirm the width of the bearing on the wall below complies with approved documents and the displacement of the joist is restrained.
 4. Verify that temporary bracing, shoring, jacks, etc., are not removed until the structure can resist unreduced forces as required for permanent structures.
- d. **Record of special inspection.** The special inspector shall produce and maintain records of special inspections in accordance with the applicable requirements of Article 115 of Title 28 of the NYC Administrative Code, Chapter 17 of the New York City Building Code, and 1 RCNY 101-06. The special inspection agency shall maintain written documentation of which areas have passed special inspection and been accepted by the special inspector as complying with the approved construction documents. Such written document shall be provided to the permit holder and the construction superintendent, and shall be made available to the Department upon request.
- e. **Notification of incomplete installations or defects.** The special inspector must immediately notify the permit holder and, when applicable, the construction superintendent of any defects identified during the special inspection. The permit holder and, when applicable, the construction superintendent shall ensure that no loading of the cold-formed steel framing occurs until the special inspection has been completed and identified defects have been corrected to the satisfaction of the special inspector.

V. Approved Document Requirements

- a. **Drawing compliance.** Drawings must set forth the location and entire nature and extent of the work proposed with sufficient clarity and detail to show that the proposed work conforms to the provisions of the New York

City Construction Codes and other applicable laws and rules. Where construction documents filed with the Department defer certain details to shop or erection drawings, those drawings shall be signed and sealed by a NYS registered design professional and maintained at the site by the permit holder, and when applicable the construction superintendent, and also made available to the Department and the special inspector. Such approved documents must provide job-specific information for the proper erection of cold-formed steel light-framed construction, including:

1. In-line framing limits as depicted in Figure C1-1 of AISI S200-2007, or where the registered design professional of record has authorized a deviation, the limits as determined by the registered design professional of record.
 2. Tolerances for foundations, floors, walls, roofs, and ceilings in accordance with Section C of AISI S200-2007.
 3. Diameter, length, quantity, spacing, edge distance, and location requirements for screws, bolts, anchors, and other fasteners in accordance with Section D of AISI S200-2007.
 4. Cuts, seating, and gap tolerances for end bearing connections in accordance with Section C3.4.4 of AISI S200-2007.
- b. Decking and temporary placement of loads during construction.** Drawings must detail decking (temporary and permanent) and any temporary storage or placing of construction loads, including, at a minimum:
1. Permanent decking material;
 2. Allowable temporary decking material;
 3. Members and fasteners, including bridging, strapping, stiffeners, and placement of diaphragm;
 4. Shoring and bracing, whether permanent or temporary, for joists, trusses, and decking, through all phases of work, including interim sequences;
 5. Designated temporary loading areas;
 6. Types of materials and maximum loads allowed in each temporary loading area;
 7. The permissible live and construction loads of the decking (temporary and permanent) and structure outside of temporary loading areas;
 8. The minimum spacing of deck screws required for loading of the deck (temporary and permanent) during construction; and
 9. Conditions to be satisfied before temporary shoring and bracing can be removed.
- c. Account for all loads during construction.** Framing and decking (temporary or permanent) shall be designed to sustain all anticipated loads to be imposed by construction activity, including construction loads, concentrated loading caused by material delivery, and loads generated by the movement of material and equipment. Drawings must list all anticipated loads that were included in the design and the location of such permitted loads. If temporary storage of materials and other construction loads are not included in the design, the construction documents shall indicate such restrictions, and the permit holder and, when applicable, the construction superintendent shall ensure such restrictions are adhered to.
- d. Construction documents or erection drawings.** Required details may be included on the construction documents or erection drawings. All approved documents shall be maintained at the jobsite by the permit holder, and when applicable the construction superintendent.
- e. Deviations from approved document sequences.** Deviations from the approved documents that are not immediately corrected shall be brought to the attention of the registered design professional who signed and sealed such plans. Such registered design professional shall respond to reported deviations in accordance with 1704.1.1 item 4.

VI. Definitions

For the purpose of this Bulletin the following terms have the following meaning:

Approved documents – Construction documents, erection drawings, shop drawings, specifications, and manufacturer's instructions and standards that have been accepted by the design professional of record or such other design professional retained by the owner for this purpose. This includes any post approval amendments.

Component assemblies – Steel straps screwed to top and bottom flanges, stud walls systems, bridging between joists, web reinforcement, cross bracing, or any other ancillary supporting systems necessary to brace the cold-formed steel system.

Special inspection, periodic – The intermittent observation of work requiring special inspection by a special inspector who is present in the area where the work has been or is being performed and at the completion of the work. All work requiring special inspection shall remain accessible and exposed until approved by the special inspector.

VII. NYC Construction Code references and referenced standards.

Cold-formed steel light-framed construction is required to be designed, detailed, erected and inspected in accordance with the applicable provisions of Chapters 17, 19, 22, 25 and 33 of the New York City Building Code, and referenced standards, including AISI S 100-2007, AISI S 110-2007, AISI S 200-2007, AISI S 210-2007, AISI S 211-2007, AISI S 212-2007, AISI S 213-2007, AISI S 214-2007, AISI S 230-2007, and AISC 360-2005.

Appendix A
Table 1704.3.4

**TABLE 1704.3.4
 REQUIRED VERIFICATION AND INSPECTION OF
 COLD-FORMED STEEL LIGHT-FRAME CONSTRUCTION**

Verification and inspection	Continuous	Periodic	Referenced Standard	Code Reference
1. Material Verification:				
a. Verify that identification markings conform to AISI S200 and as specified in the approved construction documents.		X	AISI 200, Section A5.4	
b. Verify that material is clean, straight and undamaged.		X		
2. Inspection of general framing:				
a. Verify that member sizes conform to the approved construction documents.		X		
b. Verify that member layout conforms to the approved construction documents.		X		
c. Verify that proper bearing lengths are provided in accordance with approved construction documents.		X		
d. Verify that punched holes and sheared or flame cut edges of material in members are clean and free from notches and burred edges.		X		
3. Inspection of framing connections and anchorages:				
a. Verify that screws, bolts, and other fasteners conform to approved construction document requirements for diameter, length, quantity, spacing, edge distance, and location.		X	AISI S200, Section D	
b. Verify that manufactured connectors, such as joist hangers, caps, straps, clips, ties, hold-downs, and anchors conform to approved construction document requirements for manufacturer, type, gauge, and fastener requirements.		X	AISI S200, Section D	
4. Inspection of welding:				
a. Inspect welds in accordance with Table 1704.3.		X	AWS D1.3	

5. Bracing:				
a. Verify that temporary bracing, shoring, jacks, etc., are installed, and not removed until no longer necessary, in accordance with the approved construction documents and approved erection drawings.		X		
b. Verify that permanent bracing, web stiffeners, bridging, blocking, wind bracing, etc, are installed in accordance with the approved construction documents and approved erection drawings.		X		
c. Where a cold-formed steel truss clear span is 60 feet (18 288 mm) or greater, the special inspector shall verify that the temporary installation restraint/bracing and the permanent individual truss member restraint/bracing are installed in accordance with the approved truss submittal package.		X		2210.3.4

Excerpt from Table 1704.3, Items 5.a.6 and 5.a.7:

**TABLE 1704.3
REQUIRED VERIFICATION AND INSPECTION OF STEEL CONSTRUCTION**

VERIFICATION AND INSPECTION	CONTINUOUS	PERIODIC	REFERENCED STANDARD ^a	BC REFERENCE
5. Inspection of welding: a. Structural steel, cold-formed steel and cold-formed steel deck:	—	—	—	—
6) Floor and roof deck welds.	—	X	AWS D1.3	—
7) Cold-formed steel welds.	—	X	AWS D1.3	—