



Summary:

This Directive is intended to address the problems which are commonly associated with structural steel.

Overview:

Provide drawings and specifications that comply with the requirements, recommendations, and guidance in the latest version of the American Institute of Steel Construction (AISC) "Manual of Steel Construction".

Responsibility:

In this document, the word "Engineer" means the Structural Engineer responsible for structural design for the project.

Detailed Requirements

- I. General
 - A. Comply with applicable requirements of [Directive 1B-2. CLCPA, E.O. 22 and SUNY Policy Compliance](#).
 - 1) In the technical specifications for steel materials exceeding the quantity thresholds in Directive 1B-2, require submission of environmental product declarations that include the amount of embodied carbon in such steel materials.
 - B. Coordinate and comply with applicable requirements of Directive [1B-1 Building Codes, Code Review and Construction Permit Application Form](#), and [Statement of Special Inspections Form](#).
 - C. Design should anticipate and accommodate the Contractor's means and methods and other local practices that may have a significant cost impact.
 - D. Where connection, modification or other use of existing steel is part of the design, perform field investigations prior to the Schematic submission to determine and document the size, type and other essential data for the existing steel and to test coatings on the steel for lead. See [Directive 1C-4 Extra Compensation Authorization](#). and show such information on the drawings and in the specifications
- II. Rolled Steel Sections, Trusses, Plate Girders and Built-up Sections
 - A. The Engineer shall design all of the structural steel framing for the project. Submit the letter required by Directive 1C-13 Design Delegation describing proposed design delegation, if any. To verify alignment with local practices for work delegated, it would be prudent to review the specifications requirements with local fabricators prior to bidding.
 - B. The Engineer shall clearly identify the minimum load required to be carried by each connection in the bid documents and specifications, especially in cases where eccentric loads and concentrated loads apply. The steel fabricator shall be required to indicate the basis for any delegated design connection in the steel shop drawing submission.

- C. The Engineer shall design all special connections, which shall include, but not be limited to, eccentric connections, composite beams, connections in tension or compression, all moment connections, seated beam connections, clevis and pin connections, and end plate shear connections. Gusset plate connections joining steel angles or light beams shall be designed rather than stating loads.
- D. Sizes shall be provided for all welds shown on the contract drawings.
- E. Column base plates and anchor rod size and embedment shall be designed by the Engineer and detailed on the contract drawings.

III. Steel Bar Joists and Joist Girders

- A. The Engineer shall identify on the drawings the required size, spacing, and the type and/or model number of steel joists. This shall include the bridging required, the end bearing condition required and any special top or bottom chord extension.
- B. It is the responsibility of the manufacturer of the steel joists to assure that their products will carry the loads described in the product literature. The Engineer may require the manufacturer to provide structural calculations to be submitted when he deems it to be appropriate.
- C. Where uplift forces due to wind are a design requirement, these forces must be indicated on the contract drawings in terms of net uplift per square foot.

IV. Steel Deck

- A. On the drawings, show the required depth, gauge and type and/or model number of the steel deck. Also, when required, show any negative steel over the reaction identifying bar size, spacing, and length. When selecting the steel deck, consider any unusual loads which the floor or roof will be subjected to during construction (for example, over pouring, storage of building materials and/or equipment, etc.) and dead loads due to mechanical, plumbing and electrical systems. See [Directive 3-1 Concrete](#).
- B. The maximum allowable un-shored span for the steel deck shall be stated on the contract documents. Require shoring to remain in place until the Engineer determines the concrete has developed sufficient strength.
- C. It is the responsibility of the manufacturer of the metal deck to assure that it will carry the load described in the product literature. The Engineer may require the manufacturer to provide structural calculations to be submitted.
- D. Shear connectors must be designed to accommodate the specified deck. If the deck submitted and approved is not the same as specified, it is the responsibility of the Engineer to determine if any modification in shear connector spacing is necessary and, if necessary, to design and provide the supplemental information showing the modification(s)

V. Mill Test Reports: The specifications shall require the following:

- A. Submit certified copies of mill test reports for all steel furnished. Comply with all applicable parts of ASTM specifications. Beyond ordering information normally provided by

Contractor, the mill shall be instructed to color-code in accordance with ASTM A6, and to mark with heat number, size, and type and grade of steel.

- B. Submit manufacturer's certification of bolts, nuts, washers, DTIs, and the like for each production of each grade of each type and each size of fastener component and filler material for welding.
- C. Mill test reports shall clearly state the governing ASTM specification.
- D. Material provided in accordance with the above requirements may be used in the work without further in situ tests. In the case of dispute, Contractor shall perform tension, bend and such other tests as are required to demonstrate compliance with the requirements of the Contract Documents.
- E. Tests for unidentified steel:
 - 1) In the event that steel cannot be identified by heat or melt numbers but is accompanied by mill analysis and test reports, such stock may be used provided that one tension and one bend test is made for each 30 tons or fraction thereof. Complete, six-sided surface inspection shall be performed for such materials.
 - 2) The costs of testing, retesting, and inspection shall be the responsibility of the Contractor.
 - 3) All steel that is not properly identified or whose source is subject to question shall be rejected.
- F. Steel pipe and tubing shall have not less than one tension, one bend, and one flattening test for each 100 lengths or fraction thereof, for each size, for each wall thickness and for each grade. Both tension and bend tests shall be made from coupons taken longitudinally.
