



IBC requirements for Steel Cable Assemblies used for Seismic Bracing

Referenced Standards

Permitted and Prohibited Cable Fittings



International Building Code (IBC) (also FEMA, CBC, UFGS, etc.)



ASCE 7

NFPA 13



ASCE 19



**ASCE 19 Formal Interpretation
Prohibiting “U” Shaped Clips & Wedge Type Fittings**

IBC Application of Referenced Standards

[A] 102.4 Referenced codes and standards. The codes and standards referenced in this code shall be considered part of the requirements of this code to the prescribed extent of each such reference and as further regulated in Sections 102.4.1 and 102.4.2.

[A] 102.4.1 Conflicts. Where conflicts occur between provisions of this code and referenced codes and standards, the provisions of this code shall apply.

[A] 102.4.2 Provisions in referenced codes and standards. Where the extent of the reference to a referenced code or standard includes subject matter that is within the scope of this code or the International Codes listed in Section 101.4, the provisions of this code or the International Codes listed in Section 101.4, as applicable, shall take precedence over the provisions in the referenced code or standard.

IBC Reference to ASCE 19

SECTION 2208

STEEL CABLE STRUCTURES

2208.1 General. The design, fabrication and erection including related connections, and protective coatings of steel cables for buildings shall be in accordance with ASCE 19.

2208.2 Seismic requirements for steel cable. The design strength of steel cables shall be determined by the provisions of ASCE 19 except as modified by these provisions.

IBC Reference to ASCE 7 Seismic Provisions

SECTION 1613 EARTHQUAKE LOADS

1613.1 Scope. Every structure, and portion thereof, including nonstructural components that are permanently attached to structures and their supports and attachments, shall be designed and constructed to resist the effects of earthquake motions in accordance with ASCE 7, excluding Chapter 14 and Appendix 11A. The *seismic design category* for a structure is permitted to be determined in accordance with Section 1613 or ASCE 7.

IBC Reference to NFPA 13

[F] 903.3.1 Standards. Sprinkler systems shall be designed and installed in accordance with Section 903.3.1.1 unless otherwise permitted by Sections 903.3.1.2 and 903.3.1.3 and other chapters of this code, as applicable.

[F] 903.3.1.1 NFPA 13 sprinkler systems. Where the provisions of this code require that a building or portion thereof be equipped throughout with an *automatic sprinkler system* in accordance with this section, sprinklers shall be installed throughout in accordance with NFPA 13 except as provided in Sections 903.3.1.1.1 and 903.3.1.1.2.

ASCE 7 Application of Referenced Standards

Chapter 23

SEISMIC DESIGN REFERENCE DOCUMENTS

23.1 CONSENSUS STANDARDS AND OTHER REFERENCE DOCUMENTS

This section lists the reference documents that are referenced in Chapters 11 through 22. The reference documents are listed herein by the promulgating agency of the reference document, the reference document identification, the section(s), and tables of ASCE 7 that cite the reference document, the title, and effective date. Unless identified by an asterisk, the following reference documents are consensus standards and are to be considered part of this standard to the extent referenced in the specified section.

Partial List

ASCE 19

*Structural Applications for Steel
Cables for Buildings*

NFPA 13

*Standard for the Installation of
Sprinkler Systems,*

ASCE 7 Reference to ASCE 19

14.1.6 Steel Cables

The design strength of steel cables shall be determined by the requirements of ASCE 19 except as modified by this chapter.

ASCE 7 Reference to NFPA 13

13.6.8.2 Fire Protection Sprinkler Piping Systems

Fire protection sprinkler piping, pipe hangers, and bracing designed and constructed in accordance with NFPA 13 shall be deemed to meet the force and displacement requirements of this section.

NFPA 13 Reference to ASCE 19

Table A.9.3.5.4.2 Specially Listed Tension-Only Seismic Bracing

| Materials and Dimensions | Standard |
|--|-----------------|
| <i>Manual for Structural Application of Steel Cables</i> | ASCE 19 |
| <i>Wire Rope Users Manual of the Wire Rope Technical Board</i> | ASCE 19 |
| <i>Mechanical Strength Requirements</i> | ASTM A 603 |
| <i>Breaking Strength Failure Testing</i> | ASTM E 8 |

ASCE 19 Cable Fitting Requirements

3.3.2 End Fittings

Fittings shall develop an ultimate strength greater than the specified nominal cable strength.

Table 3-1 Fitting Reduction Factors

| Type of Termination | Fitting Reduction Factor N_f | |
|--|--------------------------------|-------------------|
| | Rope | Strand |
| Poured socket (zinc, zinc-aluminum-mischmetal alloy, or resin) | 1.00 | 1.00 |
| Swaged socket | 1.00 ^a | 0.90 ^b |



Structural Applications of Steel Cables for Buildings
ASCE/SEI 19-10

This document contains interpretations by the Structural Applications of Steel Cables for Buildings Standard Committee regarding the above standard. Interpretations may be periodically updated and posted online (<http://ascelibrary.org/doi/book/10.1061/9780784411247>) .

Interpretation

Effective: May 24, 2012

Section 5.3 End Fittings

Question: Are cable clips and wedge type end fittings not listed as acceptable end fittings for use primarily because they are normally intended to be used in temporary construction activities and are subject to loosening over time and or damaging the cable thereby reducing the cable and end fitting assembly strength below the specified nominal cable strength as is prohibited by Section 3.3.2?

Committee Interpretation: Yes.

Question: Are cable clips and wedge type end fittings unacceptable for use as end fittings?

Committee Interpretation: Yes.