

3.4.4 Deflections

Cables shall be so proportioned that the maximum deflections under the combined action of applied loads, temperature change, and cable stretch will satisfy the serviceability requirements.

3.4.5 Erection Analysis

A structural analysis shall be performed for the suggested or mandatory erection procedure considering the effects listed in Section 3.4.1. Should deviations be made in the suggested erection procedure, the erector shall have an independent professional engineer experienced in cable-system erection perform an erection analysis to match the revised methods, equipment, and sequence.

4.0 CABLE MATERIALS

4.1 CABLE SPECIFICATIONS

This Standard applies to cables conforming to the following standard specifications:

- ASTM A368-95a(2009). *Standard Specification for Stainless Steel Wire Strand*
- ASTM A474-03(2008). *Standard Specification for Aluminum-Coated Steel Wire Strand*
- ASTM A475-03(2009)e1. *Standard Specification for Zinc-Coated Steel Wire Strand*
- ASTM A492-95(2009). *Standard Specification for Stainless Steel Rope Wire*
- ASTM A586-04a(2009)e1. *Standard Specification for Zinc-Coated Parallel and Helical Steel Wire Structural Strand*
- ASTM A603-98(2009)e1. *Standard Specification for Zinc-Coated Steel Structural Wire Rope*
- ASTM A855/A855M-03(2009). *Standard Specification for Zinc-5% Aluminum-Mischmetal Alloy-Coated Steel Wire Strand*
- ASTM A1023/A1023M-09 (2009). *Standard Specification for Carbon Steel Wire Ropes for General Purposes, Table 9* (for specific application, see Commentary Section C4.0)
- UNE-EN 12385-10:2004 + A1:2008 (2008). *Steel Wire Ropes – Safety – Part 10: Spiral Ropes for General Structural Applications*

Some of the above cable specifications apply to cables of a specific construction. This Standard does not exclude cables of other construction provided that the chemical and mechanical properties of the wires constituting the cables conform to the requirements of one of the above specifications, and provided that the cables do not have nonmetallic (fiber) cores. Stainless

steel cable construction similar to the above specifications is acceptable provided that the stainless steel wire conforms to ASTM A492.

4.2 PRESTRETCHING

For each type and construction of cable specified in the Contract Documents, the prestretching requirements shall be explicitly stated. For prestretched cables, the minimum value of the modulus of elasticity, E_s , of the cable after prestretching shall be specified. Prestretching force shall not exceed 55% of the minimum breaking force. For cables more than 2.5 in. (63 mm) in diameter, consultation with cable manufacturers during structural design is recommended.

5.0 FITTINGS

5.1 MATERIALS

When selecting fitting materials, the compatibility of the cable and fitting materials shall be considered. Compatibility includes thermal expansion and corrodibility.

5.2 INSPECTION

Stock or standard sockets shall be subjected to the manufacturer's quality control testing. For special sockets, additional inspection and/or proof loading of the fittings shall be specified. Approved ASTM nondestructive testing procedures are: magnetic particle, dye penetrant, ultrasonics, and radiography. No cracks or other injurious defects shall be present in the fittings. The design documents shall specify the type of nondestructive tests, the frequency of testing, and acceptance criteria.

The following standards for nondestructive testing of fittings may be used:

- ASTM E94-04 (2004). *Standard Guide for Radiographic Examination*
- ASTM E125-63(2008). *Standard Reference Photographs for Magnetic Particle Indications on Ferrous Castings*
- ASTM E165-09 (2009). *Standard Practice for Liquid Penetrant Examination for General Industry*
- ASTM E709-08 (2008). *Standard Guide for Magnetic Particle Testing*
- ASTM E1030-05 (2005). *Standard Test Method for Radiographic Examination of Metallic Castings*