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## MAXIMUM ALLOWABLE LOAD FOR 10 GAGE AND 12 GAGE WIRES

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# IR 25-1

References:

California Code of Regulations (CCR) Title 24  
Part 2, California Building Code (CBC)  
2001 CBC, Section 2501A.5  
2007 CBC, Sections 803.9.1 and 1614A.1.2  
2010 CBC, Sections 803.9.1 and 1615A.1.2, 1610.1.2\*

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Discipline: Structural

This IR is intended for use by DSA staff and by design professionals to promote statewide consistency for review and approval of plans and specifications as well as construction oversight of projects within the jurisdiction of DSA, which includes State of California public schools (K-12), community colleges and state-owned or state-leased essential services buildings. This IR indicates an acceptable method for achieving compliance with applicable codes and regulations, although other methods proposed by design professionals may be considered by DSA.

This IR is subject to revision at any time. Please check DSA's website for currently effective IRs. Only IRs listed on the webpage at [www.dgs.ca.gov/dsa/publications](http://www.dgs.ca.gov/dsa/publications) at the time of project application submittal to DSA are considered applicable.

\* Indicates alternative 2010 CBC sections that may be used by community colleges, per 2010 CBC Section 1.9.2.2.

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**Purpose:** The purpose of this IR is to clarify the allowable loads for mild steel wire.

**1. Description.** "Galvanized soft annealed mild steel wire," as defined in ASTM A641 (Class 1 Coating) is the wire referred to in this IR.

**2. Basis of Design Strength.** Based on tests which the Division of the State Architect (DSA) has received to-date for this type of wire, an ultimate stress of 60,000 psi will be used for #10 gage and #12 gage wire.

**3. Design Value.** Basic stress will be the ultimate stress divided by 2.5, or 24,000 psi. Testing is not required when these values are used.

**4. Diameter of Wire.** #10 wire is 0.135 inches in diameter and a #12 wire is 0.106 inches in diameter as shown by the U.S. Steel Wire Gage.

**5. Allowable Load.**

Wire Size	Basic Load
#10 wire	343 lbs.
#12 wire	209 lbs.

**6. Fabrication.** When using twists on wire to develop the maximum allowable load, use a minimum of 4 twists within 1½". Three twists may be used to develop not more than one half the above values.

**7. Limitations.**

**7.1** These values are for tension only. Tearing of thin metal by wire must be considered.

If the specification requires a special wire, a higher allowable base load may be used, subject to DSA approval.