



**American  
Iron and Steel  
Institute**

# **AISC AND AISI STANDARD**

## **Standard Definitions for Use in the Design of Steel Structures**

2004 EDITION

Approved by

the AISC Committee on Specifications

and

the AISI Committee on Specifications for the Design of

Cold-Formed Steel Structural Members



The material contained herein has been developed by a joint effort of the American Institute of Steel Construction Committee on Specifications and the American Iron and Steel Institute Committee on Specifications. The organizations and the committees have made a diligent effort to present accurate, reliable, and useful information on joint terminology used in the standards developed by the consensus bodies of both organizations. The Committees acknowledge and are grateful for the participation of the numerous researchers, engineers, and others who have contributed to the body of knowledge on the subject.

It is anticipated that the terminology will be expanded and updated in future editions.

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American Iron and Steel Institute

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# STANDARD DEFINITIONS FOR USE IN THE DESIGN OF STEEL STRUCTURES

## PREFACE

In an effort to standardize terminology used for the design of steel structures, the Committees on Specifications of the American Institute of Steel Construction and the American Iron and Steel Institute formed a joint Committee on Terminology to develop a common terminology for use by all standards committees of both institutes. We are pleased to present this first edition of the terminology standard. The terms presented herein have been approved by both committees in accordance with our operating procedures. These terms are only a subset of the complete glossary lists given in the AISI and AISC Standards.

To date, the terminology in this standard has been used as the basis for the following standards:

### **American Institute of Steel Construction**

- *Specification for Structural Steel Buildings (ANSI/AISC 360)*
- *Seismic Provisions for Structural Steel Buildings (ANSI/AISC 341)*
- *Prequalified Connections for Special and Intermediate Moment Frames in Seismic Applications (ANSI/AISC 358)*

### **American Iron and Steel Institute**

- *Standard for Cold-Formed Steel Framing, 2004 Edition--*
  - *General Provisions*
  - *Header Design*
  - *Lateral Design*
  - *Wall Stud Design*
  - *Truss Design*

AISI Standards published after 2005 where these terms are expected to be used:

- *North American Specification for the Design of Cold-Formed Steel Structural Members*
- *Standard for Cold-Formed Steel Framing--*
  - *Prescriptive Method for One and Two Family Dwellings*
  - *Product Data*
  - *Load and Span Tables*

It is also suggested that other steel-related standards use these terms in an effort to bring commonality, where possible, across the design of all steel structures. We expect that future editions of this standard will expand to include additional common terms and nomenclature.

American Institute of Steel Construction  
American Iron and Steel Institute

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## STANDARD DEFINITIONS FOR USE IN THE DESIGN OF STEEL STRUCTURES

*ASD (Allowable Strength Design).* Method of proportioning structural components such that the *allowable strength* equals or exceeds the *required strength* of the component under the action of the *ASD load combinations*.

*ASD Load Combination.* Load combination in the *applicable building code* intended for *allowable strength design* (allowable stress design).

*Allowable Strength\*.* *Nominal strength* divided by the *safety factor*,  $R_n/\Omega$ .

*Applicable Building Code.* Building code under which the structure is designed.

*Available Strength\*.* *Design strength* or *allowable strength* as appropriate.

*Braced Frame.* An essentially vertical truss system that provides resistance to lateral loads and provides stability for the structural system.

*Cold-Formed Steel Structural Member.* Shape manufactured by press-braking blanks sheared from sheets, cut lengths of coils or plates, or by roll forming cold- or hot-rolled coils or sheets; both forming operations being performed at ambient room temperature, that is, without manifest addition of heat such as would be required for hot forming.

*Connection.* Combination of structural elements and *joints* used to transmit forces between two or more members.

*Design Load.* Applied load determined in accordance with either *LRFD load combinations* or *ASD load combinations*, whichever is applicable.

*Design Strength\*.* *Resistance factor* multiplied by the *nominal strength*,  $\phi R_n$ .

*Diaphragm.* Roof, floor or other membrane or bracing system that transfers in-plane forces to the lateral force resisting system.

*Factored Load.* Product of a *load factor* and the *nominal load*.

*Flexural-Torsional Buckling.* Buckling mode in which a compression member bends and twists simultaneously without change in cross-sectional shape.

*Girt.* Horizontal structural member that supports wall panels and is primarily subjected to bending under horizontal loads, such as wind load.

*Joint.* Area where two or more ends, surfaces, or edges are attached. Categorized by type of fastener or weld used and the method of force transfer.

*Load.* Force or other action that results from the weight of building materials, occupants and their possessions, environmental effects, differential movement, or restrained dimensional changes.

*Load Effect.* Forces, stresses, and deformations produced in a *structural component* by the applied loads.

*Load Factor.* Factor that accounts for deviations of the *nominal load* from the *actual load*, for uncertainties in the analysis that transforms the load into a *load effect*, and for the probability that more than one extreme load will occur simultaneously.

*LRFD (Load and Resistance Factor Design).* Method of proportioning *structural components* such that the *design strength* equals or exceeds the *required strength* of the *component* under the action of the *LRFD load combinations*.

*LRFD Load Combination.* Load combination in the *applicable building code* intended for strength design (*Load and Resistance Factor Design*).

*Moment Frame.* Framing system that provides resistance to lateral loads and provides stability to the structural system primarily by shear and flexure of the framing members and their connections.

*Nominal load.* Magnitude of the *load* specified by the *applicable building code*.

*Nominal Strength\*.* Strength of a structure or component (without the *resistance factor* or *safety factor* applied) to resist the *load effects*, as determined in accordance with this *Specification or Standard*.

*Permanent Load.* Load in which variations over time are rare or of small magnitude. All other loads are *variable loads*.

*Purlin.* Horizontal structural member that supports roof deck and is primarily subjected to bending under vertical loads such as snow, wind or dead loads.

*Rational Engineering Analysis.* Analysis based on theory that is appropriate for the situation, relevant test data if available, and sound engineering judgment.

*Required Strength\*.* Forces, stresses, and deformations produced in a *structural component*, determined by either *structural analysis*, for the *LRFD* or *ASD load combinations*, as appropriate, or as specified by this *Specification or Standard*.

*Resistance Factor,  $\phi$ .* Factor that accounts for unavoidable deviations of the *nominal strength* from the actual strength and for the manner and consequences of failure.

*Safety Factor,  $\Omega$ .* Factor that accounts for deviations of the actual strength from the *nominal strength*, deviations of the actual load from the *nominal load*, uncertainties in the analysis that transforms the load into a *load effect*, and for the manner and consequences of failure.

*Service Load.* Load under which serviceability limit states are evaluated.

*Shear Wall.* Wall that provides resistance to lateral loads in the plane of the wall and provides stability for the structural system.

*Specification or Standard.* [Editorial note: This will have to be defined for each specification or standard with language in the scope such as, The "*Specification (or Standard) for the design of XXXXX*" hereinafter referred to as this *Specification (or Standard)* shall apply.....]

*Specified Minimum Yield Stress.* Lower limit of *yield stress* specified for a material as defined by ASTM.

*Structural Analysis.* Determination of *load effects* on members and connections based on principles of structural mechanics.

*Structural Component.* Member, connector, connecting element or assemblage.

*Tensile Strength (of material).* Maximum tensile stress that a material is capable of sustaining as defined by ASTM.

*Variable Load.* Load not classified as *permanent load*.

*Yield Point.* First stress in a material at which an increase in strain occurs without an increase in stress as defined by ASTM.

*Yield Strength.* Stress at which a material exhibits a specified limiting deviation from the proportionality of stress to strain as defined by ASTM.

*Yield Stress.* Generic term to denote either *yield point* or *yield strength*, as appropriate for the material.

Note:

- \* These terms are usually qualified by the type of *load effect*, for example, nominal tensile strength, available compressive strength, or design flexural strength.





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