

Seismic Terminology

Active Fault

A fault determined to be active by the AHJ from properly substantiated data.

AFSA

American Fire Sprinkler Association

Aircraft Cable

The type of cable used for seismic bracing; should be "pre-stretched."

Anchorage

Can be post installed concrete anchors, pre-pour anchors, or other structural attachment designed for the fastening of seismic bracing to the structure.

ASCE

American Society of Civil Engineers

Brace Assembly

Installed to prevent the horizontal movement of pipe, duct or conduit in non-structural building systems.

Brace Material

Typically pipe or strut/channel used with structural and pipe system attachments to form a brace assembly. This can also be pre-stretched aircraft cable if tension only braces are required.

Break-Off Bolt

A bolt with a break-off head that breaks away once the proper installation torque is achieved.

Break-Off Nut

A hex nut with a break-off portion that breaks away once the proper installation torque is achieved.

CASA

Canadian Automatic Sprinkler Association

CBC

California Building Code

Cross Bolt Spacer

Required on all clevis hangers that have bracing attached to keep the clevis hanger from collapsing during a seismic event. (TOLCO FG 1CBS)

Channel

Structural steel member also referred to as "Strut," typically has a width of 1 5/8" and complies with the standards of the Metal Framing Manufacturers Association (MFMA).

Critical Damping

A system that returns to the equilibrium position in the shortest amount of time.

Dead Load

Vertical load of pipe at a hanger location.

Deformation

The change in the shape or size of an object due to an applied force.



Powering Business Worldwide

Design Earthquake

The earthquake effects that are two-thirds of the corresponding Maximum Considered Earthquake (MCE) effects.

Design Strength

Nominal strength multiplied by a strength reduction factor.

Designated Seismic Systems

A seismic force-resisting system for mechanical electrical and architectural systems or their components.

Dual Use

A brace that is positioned to act as a lateral brace on one pipe run and a longitudinal brace to an adjacent pipe run.

Duct

Sheet metal conduit to direct air flow for heating and cooling systems.

Elastic Deformation

A deformation of a body in which the applied stress is small enough so that the object retains its original dimensions once the stress is released.

Embedment

Amount of concrete insert enveloped in concrete. Typically called out to be 1" to 1 ½" shorter than slab thickness for maximum load capacity.

Equipment Support

Can refer to either the base to which equipment is attached or to a designed seismic support for equipment. This will typically also involve some type of vibration isolation.

Factory Mutual (FM Global) Approval

Seismic bracing products are marked with the FM Approved logo and marketed as "FM Approved" when they have been tested and found to comply with a demanding dynamic test criteria, (FM Test Standard 1950).

Fire Protection

Fire Sprinkler System

Force (F)

An external influence on an object that causes it to accelerate.

Four Way Brace

Prevents movement in 4 directions.

Ground Motion

The movement of the earth's surface from earthquakes or explosions.

Hazardous Contents

A material that is highly toxic or potentially explosive and in sufficient quantity to pose a significant life-safety threat to the general public if an uncontrolled release were to occur.

Horizontal Seismic Load (Fp)

The force applied (separately) in the lateral and longitudinal direction.

IBC

International Building Code

Importance Factor (Ip)

A factor assigned to each structure according to its Occupancy Category.

In-Line

Concentric

IOR

Inspector of Record

Lateral Brace

Prevents movement perpendicular (or across) the pipe.

Longitudinal Brace

Prevents movement parallel (or along) the pipe.

Mapped Acceleration Maps

Historically based maps with isolines defining regions subject to varying levels of seismic accelerations.

Maximum Considered Earthquake (MCE)

The most severe earthquake effects considered by ASCE Standard.

Mechanically Anchored

Non-friction, non-welded, typically a bolt and nut or pin- type of connection.

Moment Frame

A frame in which members and joints resist lateral forces by flexure as well as along the axis of the members.

NFPA

National Fire Protection Association

NFSA

National Fire Sprinkler Association

Nominal Strength

Strength of a member or cross-section before application of any strength-reduction factors.

OSHPD

California Office of Statewide Health Planning and Development

Plastic Deformation

Permanent change in shape or size of a solid body without fracture resulting from the application of sustained stress beyond the elastic limit.

Rigid Brace

A brace that resists a load in both tension and compression. It is typically composed of pipe or strut/channel as the brace member.

Rod Stiffener

A bolt and clip that when assembled with strut keeps all thread rod from buckling due to upward thrust loading. (TOLCO FG 98B)

Seismic Design Category (SDC)

A classification system adopted by IBC 2000, can be category A, B, C, D, E or F and is typically found on the project S-1 drawing or the project specifications, the .most recent development in structural classification.

Seismic Zones

Previously used by building codes for seismic design criteria, the U.S. was divided into Seismic Zones 0 through 4, with 0 indicating the weakest earthquake ground motion and 4 indicating the strongest.

Seismic Load

Is the Horizontal Load (F_p) plus the Vertical Load (F_v).

SEOR

Structural Engineer of Record

Site Class

A classification assigned to a site based on the types of soils present and their engineering properties.

Special Inspection

A person approved by the authority having jurisdiction to perform special inspection.

Two-way Way Brace

Prevents movement in 2 directions.

Underwriters Laboratories Listed (UL)

Seismic bracing products are marked with the UL logo and marketed as "UL Listed" when they have been tested and found to comply with a demanding test criteria, (UL Test Standard 203A).

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