

Definitions

A

Acceleration-sensitive nonstructural component: A nonstructural component that is sensitive to, and subject to, damage from inertial loading.

Acceptance criteria: Limiting values of properties such as drift, strength demand, and inelastic deformation used to determine the acceptability of a component at a given performance level.

Action: An internal moment, shear, torque, axial load, deformation, displacement, or rotation corresponding to a displacement due to a structural degree of freedom; designated as force- or deformation-controlled.

Active Fault: A fault for which there is an average historic slip rate of 1 mm per year or more, and evidence of seismic activity within Holocene times (past 11,000 years).

Adjusted Resistance: The reference resistance adjusted to include the effects of applicable adjustment factors resulting from end use and other modifying factors excluding time-effect adjustments, which are considered separately and not included.

Aspect ratio: Ratio of height to width for shear walls and span to width for horizontal diaphragms.

Assembly: Two or more interconnected components.

B

Balloon framing: Continuous stud framing from sill to roof, with intervening floor joists nailed to studs and supported by a let-in ribbon.

Base: The level at which earthquake effects are imparted to the building.

Beam: A structural member whose primary function is to carry loads transverse to its longitudinal axis.

Bearing wall: A wall that supports gravity loads of at least 200 pounds per lineal foot from floors and/or roofs.

Bed joint: The horizontal layer of mortar on which a masonry unit is laid.

Boundary component (boundary member): A member at the perimeter (edge or opening) of a shear wall or horizontal diaphragm that provides tensile and/or compressive strength.

Braced frame: A vertical lateral-force-resisting element consisting of vertical, horizontal, and diagonal components joined by concentric or eccentric connections.

BSE-1: Basic Safety Earthquake-1, taken as the lesser of the ground shaking for a 10%/50 year earthquake or two-thirds of the BSE-2 at a site.

BSE-2: Basic Safety Earthquake-2, taken as the ground shaking based on the MCE at a site.

BSO: Basic Safety Objective is a Rehabilitation Objective that achieves the dual rehabilitation goals of the Life Safety Building Performance Level for the BSE-1 Earthquake Hazard Level and the Collapse Prevention Building Performance Level for the BSE-2 Earthquake Hazard Level.

Building Occupancy: The purpose for which a building, or part thereof, is used, or intended to be used, designated in accordance with the applicable building code.

Building Performance Level: A limiting damage state for a building, considering structural and nonstructural components, used in the definition of Rehabilitation Objectives.

C

Cast Iron: A hard, brittle nonmalleable iron-carbon alloy containing 2.0 to 4.5 percent carbon. Shapes are obtained by reducing iron ore in a blast furnace, forming it into bars (or pigs), and remelting and casting it into its final form.

Cavity wall: A masonry wall with an air space between wythes.

Chord: See **diaphragm chord**.

Clay tile masonry: Masonry constructed with hollow units made of clay tile.

Clay-unit masonry: Masonry constructed with solid, cored, or hollow units made of clay; can be ungrouted or grouted.

Closed stirrups or ties: Transverse reinforcement defined in Chapter 7 of ACI 318 consisting of standard stirrups or ties with 90-degree hooks and lap splices in a pattern that encloses longitudinal reinforcement.

Code Official: The organization, political subdivision, office, or individual legally charged with responsibility for administering and enforcing the provisions of this standard.

Coefficient of variation: For a sample of data, the ratio of the standard deviation for the sample to the mean value for the sample.

Collar joint: Vertical longitudinal joint between wythes of masonry or between masonry wythe and back-up construction; can be filled with mortar or grout.

Collector: See **drag strut**.

Column (or beam) jacketing: A rehabilitation method in which a concrete column or beam is encased in a steel or concrete “jacket” to strengthen and/or repair the member by confining the concrete.

Component, flexible: A component, including attachments, having a fundamental period greater than 0.06 seconds.

Component, rigid: A component, including attachments, having a fundamental period less than or equal to 0.06 seconds.

Components: The basic structural members that constitute a building, including beams, columns, slabs, braces, walls, piers, coupling beams, and connections; designated as primary or secondary.

Composite masonry wall: Multi-wythe masonry wall acting with composite action.

Composite panel: A structural panel comprising thin wood strands or wafers bonded together with exterior adhesive.

Concentric Braced Frame: Braced frame element in which component worklines intersect at a single point or at multiple points such that the distance between intersecting components, or eccentricity, is less than or equal

to the width of the smallest member connected at the joint.

Concrete masonry: Masonry constructed with solid or hollow units made of concrete; can be ungrouted or grouted.

Condition of service: The environment to which the structure will be subjected.

Connection: A link that transmits actions from one component or element to another component or element, categorized by type of action (moment, shear, or axial).

Connection hardware: Proprietary or custom fabricated body of a component that is used to link wood components.

Connectors: Nails, screws, lags, bolts, split rings, and shear plates used to link wood components to other wood or metal components.

Contents: Movable items within the building introduced by the owner or occupants, weighing 400 pounds or more.

Continuity plates: Column stiffeners at the top and bottom of a panel zone.

Control node: A node located at the center of mass at the roof of a building used in the NSP to measure the effects of earthquake shaking on a building.

Corrective measure: Any modification of a component or element, or the structure as a whole, implemented to improve building performance.

Coupling beam: A component that ties or couples adjacent shear walls acting in the same plane.

Cripple studs: Short studs between a header and top plate at openings in wall framing, or studs between the base and sill of an opening.

Cripple wall: Short wall between the foundation and first floor framing.

Critical action: The component action that reaches its elastic limit at the lowest level of lateral deflection or loading of the structure.

Cross tie: A component that spans the width of the diaphragm and delivers out-of-plane wall forces over the full depth of the diaphragm.

D

Decay: Decomposition of wood caused by action of wood-destroying fungi. The term “dry rot” is used interchangeably with decay.

Decking: Solid sawn lumber or glue-laminated decking, nominally two to four inches thick and four inches and wider. Decking shall be tongue-and-groove or connected at longitudinal joints with nails or metal clips.

Deep foundation: Driven piles made of steel, concrete, or wood, or cast-in-place concrete piers or drilled shafts of concrete.

Deformation-sensitive nonstructural component: A nonstructural component that is sensitive to deformation imposed by the drift or deformation of the structure, including deflection or deformation of diaphragms.

Demand: The amount of force or deformation imposed on an element or component.

Design displacement: The design earthquake displacement of an isolation or energy dissipation system, or elements thereof, excluding additional displacement due to actual and accidental torsion.

Design earthquake: A user-specified earthquake for the design of an isolated building having ground shaking criteria described in Chapter 2.

Design resistance (force or moment as appropriate): Resistance provided by member or connection; the product of adjusted resistance, the resistance factor, and time effect factor.

Diagonal bracing: Inclined components designed to carry axial load, enabling a structural frame to act as a truss to resist lateral forces.

Diaphragm: A horizontal (or nearly horizontal) structural element used to distribute inertial lateral forces to vertical elements of the lateral-force-resisting system.

Diaphragm chord: A component provided to resist tension or compression at the edges of a diaphragm.

Diaphragm collector: A component provided to transfer lateral forces in the diaphragm to vertical elements of the lateral-force-resisting system or to other portions of the diaphragm.

Diaphragm ratio: See **aspect ratio**.

Diaphragm strut: See **drag strut**.

Differential compaction: An earthquake-induced process in which soils become more compact and settle in a nonuniform manner across a site.

Dimensioned lumber: Lumber from nominal two through four inches thick and nominal two or more inches wide.

Displacement-dependent energy dissipation devices: Devices having mechanical properties such that the force in the device is related to the relative displacement in the device.

Displacement restraint system: Collection of structural components and elements that limit lateral displacement of seismically-isolated buildings during the BSE-2.

Dowel-bearing strength: The maximum compression strength of wood or wood-based products when subjected to bearing by a steel dowel or bolt of specific diameter.

Dowel type fasteners: Bolts, lag screws, wood screws, nails, and spikes.

Drag strut: A component parallel to the applied load that collects and transfers diaphragm shear forces to the vertical lateral-force-resisting elements, or other portions of the diaphragm. Also called collector, diaphragm strut, or tie.

Dressed size: The dimensions of lumber after surfacing with a planing machine.

Dry rot: See **Decay**.

Dry service: Structures wherein the maximum equilibrium moisture content does not exceed 19%.

Dual system: A structural system with the following features:

1. A space frame included to support gravity loads with or without capability of resisting lateral loads.
2. Lateral-load-resisting system included to resist at least 25% of the lateral loads provided by one or more of the following: concrete or steel shear walls, steel eccentrically braced frames (EBF), concentrically braced frames (CBF), and moment-resisting frames (Special Moment Frames, or Ordinary Moment Frames).
3. Each system designed to resist the total lateral load in proportion to relative rigidity.

E

Earthquake Hazard Level: Ground shaking demands of specified severity, developed on either a probabilistic or deterministic basis.

Eccentric Braced Frame: Braced frame element in which component worklines do not intersect at a single point and the distance between the intersecting components, or eccentricity, exceeds the width of the smallest member connecting at the joint.

Edge distance: The distance from the edge of the member to the center of the nearest fastener.

Effective damping: The value of equivalent viscous damping corresponding to the energy dissipated by the building, or element thereof, during a cycle of response.

Effective stiffness: The value of the lateral force in the building, or an element thereof, divided by the corresponding lateral displacement.

Effective Void Ratio: Ratio of collar joint area without mortar to the total area of the collar joint.

Element: An assembly of structural components that act together in resisting forces, including gravity frames, moment-resisting frames, braced frames, shear walls, and diaphragms.

Energy dissipation device: Non-gravity-load-supporting element designed to dissipate energy in a stable manner during repeated cycles of earthquake demand.

Energy dissipation system: Complete collection of all energy dissipation devices, their supporting framing, and connections.

Expected Strength: The mean value of resistance of a component at the deformation level anticipated for a population of similar components, including consideration of the variability in yield strength as well as strain hardening and plastic section development.

F

Fair Condition: Masonry found during condition assessment to have mortar and units intact but with minor cracking.

Fault: Plane or zone along which earth materials on opposite sides have moved differentially in response to tectonic forces.

Flexible connection: A link between components that permits rotational and/or translational movement without degradation of performance, including universal joints, bellows expansion joints, and flexible metal hose.

Flexible diaphragm: A diaphragm with horizontal deformation along its length more than twice the average interstory drift.

Foundation system: An assembly of structural components, located at the soil-structure interface, that transfer loads from the superstructure into the supporting soil.

Fundamental period: The highest natural period of the building in the direction under consideration.

G

Gauge or row spacing: The center-to-center distance between fastener rows or gauge lines.

Glulam beam: Shortened term for glue-laminated beam, which is a wood-based component made up of layers of wood bonded with adhesive.

Good Condition: Masonry found during condition assessment to have mortar and units intact and no visible cracking.

Grade: The classification of lumber with regard to strength and utility, in accordance with the grading rules of an approved agency.

Grading rules: Systematic and standardized criteria for rating the quality of wood products.

Gypsum wallboard or drywall: An interior wall surface sheathing material; can sometimes be considered for resisting lateral forces.

H

Head joint: Vertical mortar joint placed between masonry units in the same wythe.

Hold-down: Hardware used to anchor vertical chord forces in a shear wall to the foundation or framing of the structure in order to resist the effects of overturning.

Hollow masonry unit: A masonry unit with net cross-sectional area in every plane parallel to the bearing surface less than 75% of the gross cross-sectional area in the same plane.

Hoops: Transverse reinforcement defined in Chapter 21 of ACI 318 consisting of closed ties with 135-degree hooks embedded into the core and no lap splices.

I

Infill: A panel of masonry placed within a steel or concrete frame. Panels separated from the surrounding frame by a gap are termed “isolated infills.” Panels that are in full contact with a frame around its full perimeter are termed “shear infills.”

In-plane wall: See **shear wall**.

Inter-story drift: The relative horizontal displacement of two adjacent floors in a building; can also be expressed as a percentage of the story height separating the two adjacent floors.

Isolation interface: The boundary between the upper portion of the structure (superstructure), which is isolated, and the lower portion of the structure, which moves rigidly with the ground.

Isolation system: The collection of structural elements that includes all individual isolator units, all structural elements that transfer force between elements of the isolation system, and all connections to other structural elements. The isolation system also includes the wind-restraint system, if such a system is used to meet the design requirements of this section.

Isolator unit: A horizontally flexible and vertically stiff structural element of the isolation system that permits large lateral deformations under seismic load. An isolator unit shall be used either as part of or in addition to the weight-supporting system of the building.

J

Joint: An area where ends, surfaces, or edges of two or more components are attached; categorized by type of fastener or weld used and method of force transfer.

K

King stud: Full height studs adjacent to openings that provide out-of-plane stability to cripple studs at openings.

Knee Joint: A joint that in the direction of framing has one column and one beam.

L

Landslide: A down-slope mass movement of earth resulting from any cause.

Lateral support member: A member designed to inhibit lateral buckling or lateral-torsional buckling of a component.

Lateral-force-resisting system: Those elements of the structure that provide its basic lateral strength and stiffness.

Light framing: Repetitive framing with small, uniformly spaced members.

Lightweight concrete: Structural concrete that has an air-dry unit weight not exceeding 115 pcf.

Link beam: A component between points of eccentrically connected members in an eccentric braced frame element.

Link intermediate web stiffeners: Vertical web stiffeners placed within a link.

Link rotation angle: Angle of plastic rotation between the link and the beam outside of the link, derived using the specified base shear, V .

Liquefaction: An earthquake-induced process in which saturated, loose, granular soils lose shear strength and liquefy as a result of increase in pore-water pressure during earthquake shaking.

Load and Resistance Factor Design: A method of proportioning structural components (members, connectors, connecting elements, and assemblages) using load factors and strength reduction factors such that no applicable limit state is exceeded when the structure is subjected to all design load combinations.

Load duration: The period of continuous application of a given load, or the cumulative period of intermittent applications of load. See **time effect factor**.

Load path: A path through which seismic forces are delivered from the point at which inertial forces are generated in the structure to the foundation and, ultimately, the supporting soil.

Load sharing: The load redistribution mechanism among parallel components constrained to deflect together.

Load/slip constant: The ratio of the applied load to a connection and the resulting lateral deformation of the connection in the direction of the applied load.

Lumber: The product of the sawmill and planing mill, usually not further manufactured other than by sawing, resawing, passing lengthwise through a standard planing machine, crosscutting to length, and matching.

M

Masonry: The assemblage of masonry units, mortar, and possibly grout and/or reinforcement; classified with respect to the type of masonry unit, including clay-unit masonry, concrete masonry, or hollow-clay tile masonry.

Mat-formed panel: A structural panel manufactured in a mat-formed process including oriented strand board and waferboard.

Maximum Considered Earthquake (MCE): An extreme earthquake hazard level defined by MCE maps which are a combination of mean 2%/50 year probabilistic spectra and 150% of median deterministic spectra at a given site.

Maximum displacement: The maximum earthquake displacement of an isolation or energy dissipation system, or elements thereof, excluding additional displacement due to actual or accidental torsion.

Mean Return Period: The average period of time, in years, between the expected occurrences of an earthquake of specified severity.

Model Building Type: One of the common building types listed and described in Table 10-2.

Moisture content: The weight of the water in wood expressed as a percentage of the weight of the oven-dried wood.

Moment frame: A building frame system in which seismic shear forces are resisted by shear and flexure in members and joints of the frame.

N

Narrow wood shear wall: Wood shear walls with an aspect ratio (height-to-width) greater than two-to-one.

Nominal size: The approximate rough-sawn commercial size by which lumber products are known and sold in the market. Actual rough-sawn sizes vary from nominal. Reference to standards or grade rules is required to determine nominal to actual finished size relationships, which have changed over time.

Nominal strength: The capacity of a structure or component to resist the effects of loads, as determined by (1) computations using specified material strengths and dimensions, and formulas derived from accepted principles of structural mechanics; or (2) field tests or laboratory tests of scaled models, allowing for modeling effects and differences between laboratory and field conditions.

Nonbearing wall: A wall that supports gravity loads less than 200 pounds per lineal foot.

Noncompact member: A steel section that has width-to-thickness ratios exceeding the limiting values for compactness specified in AISC (1993) *LRFD Specifications*.

Noncomposite masonry wall: Multi-wythe masonry wall acting without composite action.

Nonstructural component: Architectural, mechanical or electrical components of a building that are permanently installed in, or are an integral part of, a building system.

Nonstructural Performance Level: A limiting damage state for nonstructural building components used to define Rehabilitation Objectives.

O

Ordinary Moment Frame: A moment frame system that meets the requirements for Ordinary Moment Frames as defined in seismic provisions for new construction in AISC (1997) *Seismic Provisions*, Chapter 5.

Oriented strand board: A structural panel composed of thin elongated wood strands with surface layers arranged in the long panel direction and core layers arranged in the cross panel direction.

Out-of-plane wall: A wall that resists lateral forces applied normal to its plane.

Overtuning: Action resulting when the moment produced at the base of vertical lateral-force-resisting elements is larger than the resistance provided by the building weight and foundation resistance to uplift.

P

Panel: A sheet-type wood product.

Panel rigidity or stiffness: The in-plane shear rigidity of a panel; the product of panel thickness and modulus of rigidity.

Panel shear: Shear stress acting through the panel thickness.

Panel zone: Area of a column at a beam-to-column connection delineated by beam and column flanges.

Parapet: Portions of a wall extending above the roof diaphragm.

Partially grouted masonry wall: A masonry wall containing grout in some of the cells.

Particleboard: A panel manufactured from small pieces of wood, hemp, and flax, bonded with synthetic or organic binders, and pressed into flat sheets.

Perforated wall or infill panel: A wall or panel not meeting the requirements for a solid wall or infill panel.

Pier: Vertical portion of a wall between two horizontally adjacent openings. Piers resist axial stresses from gravity forces and bending moments from combined gravity and lateral forces.

Pitch or spacing: The longitudinal center-to-center distance between any two consecutive holes or fasteners in a row.

Plan irregularity: Horizontal irregularity in the layout of vertical lateral-force-resisting elements, producing a misalignment between the center of mass and center of rigidity.

Platform framing: Construction method in which stud walls are constructed one floor at a time, with a floor or

roof joist bearing on top of the wall framing at each level.

Ply: A single sheet of veneer, or several strips laid with adjoining edges that form one veneer lamina in a glued plywood panel.

Plywood: A structural panel composed of plies of wood veneer arranged in cross-aligned layers bonded with adhesive cured upon application of heat and pressure.

Pole: A round timber of any size or length, usually used with the larger end in the ground.

Pole structure: A structure framed with generally round continuous poles that provide the primary vertical frame and lateral-load-resisting system.

Poor condition: Masonry found during condition assessment to have degraded mortar, degraded masonry units and significant cracking.

Pounding: The action of two adjacent buildings coming into contact with each other during earthquake excitation as a result of their close proximity and differences in dynamic response characteristics.

Preservative: A chemical that, when suitably applied to wood, makes the wood resistant to attack by fungi, insects, marine borers, or weather conditions.

Pressure-preservative treated wood: Wood products pressure-treated by an approved process and preservative.

Primary elements or components: Those elements or components that are essential to the ability of the structure to resist collapse under earthquake-induced forces and deformations. Primary elements or components resist lateral forces at full capacity, prior to the onset of strength degradation.

Primary (strong) panel axis: The direction that coincides with the length of the panel.

Probability of Exceedance: The chance, expressed as a percentage (%), that a more severe event will occur within a specified mean return period expressed in number of years.

Punched metal plate: A light steel plate fastener with punched teeth of various shapes and configurations that are pressed into wood members to effect force transfer.

P-Δ effect: The secondary effect of column axial loads and lateral deflection on the shears and moments in various components of a structure.

R

Redundancy: The quality of having alternative paths in the structure by which the lateral forces can be transferred, which allows the structure to remain stable following the failure of any single element.

Re-entrant corner: Plan irregularity in a diaphragm, such as an extending wing, plan inset, or E-, T-, X-, or L-shaped configuration, where large tensile and compressive forces can develop.

Rehabilitation Measures: Modifications to existing components, or installation of new components, that correct deficiencies identified in a seismic evaluation as part of a scheme to rehabilitate a building to achieve a selected Rehabilitation Objective.

Rehabilitation Method: For the purpose of this standard, a rehabilitation method is one or more procedures and strategies for improving the seismic performance of existing buildings.

Rehabilitation Objective: A Rehabilitation Objective consists of one or more rehabilitation goals, each goal consisting of the selection of a target Building Performance Level and an Earthquake Hazard Level.

Rehabilitation Strategy: A technical approach for developing rehabilitation measures for a building to improve seismic performance.

Reinforced masonry wall: A masonry wall with the following minimum amounts of vertical and horizontal reinforcement: vertical reinforcement of at least 0.20 in² in cross section at each corner or end, at each side of each opening, and at a maximum spacing of at least 4 feet throughout. Horizontal reinforcement of at least 0.20 in² in cross section at the top of the wall, at the top and bottom of wall openings, at structurally connected roof and floor openings, and at a maximum spacing of 10 feet.

Repointing: A method of repairing cracked or deteriorating mortar joints in which the damaged or deteriorated mortar is removed and the joints are refilled with new mortar.

Required member resistance (or required strength): Load effect acting on an element or connection, determined by structural analysis, resulting from the factored loads and the critical load combinations.

Resistance: The capacity of a structure, component, or connection to resist the effects of loads.

Resistance factor: A reduction factor applied to member resistance that accounts for unavoidable deviations of the actual strength from the nominal value, and the manner and consequences of failure.

Rigid diaphragm: A diaphragm with horizontal deformation along its length less than half the average interstory drift as specified in Section 3.2.4.

Rough lumber: Lumber as it comes from the saw prior to any dressing operation.

Row of fasteners: Two or more fasteners aligned with the direction of load.

Running bond: A pattern of masonry where the head joints are staggered between adjacent courses by more than a third of the length of a masonry unit. Also refers to the placement of masonry units such that head joints in successive courses are horizontally offset at least one-quarter the unit length.

S

Scragging: The process of subjecting an elastomeric bearing to one or more cycles of large amplitude displacement.

Seasoned lumber: Lumber that has been dried either by open air drying within the limits of moisture contents attainable by this method, or by controlled air drying.

Secondary elements or components: Those elements or components not designated as primary but affect the lateral stiffness of the structure, the distribution of the stresses in the building, or are loaded as a result of lateral deformation of the building. In nonlinear analyses, secondary elements or components can resist lateral forces at residual strength levels.

Seismic demand: Seismic hazard expressed in the form of a ground shaking response spectrum or accelogram with or without an estimate of permanent ground deformation.

Seismic evaluation: An approved process or methodology of evaluating deficiencies in a building which prevent the building from achieving a selected Rehabilitation Objective.

Shallow foundation: Isolated or continuous spread footings or mats.

Shear wall: A wall that resists lateral forces applied parallel with its plane. Also known as an in-plane wall.

Sheathing: Lumber or panel products that are attached to parallel framing members, typically forming wall, floor, ceiling, or roof surfaces.

Short captive column: Columns with height-to-depth ratios less than 75% of the nominal height-to-depth ratios of the typical columns at that level.

Shrinkage: Reduction in the dimensions of wood due to a decrease of moisture content.

Simplified NSP Analysis: A nonlinear static analysis in which only primary lateral-force-resisting elements are modeled, and component degradation is not explicitly modeled.

Simplified Rehabilitation Method: An approach applicable to certain types of buildings and Rehabilitation Objectives in which an analysis of the response of the entire building to earthquake hazards is not required.

Slip-critical joint: A bolted joint in which slip resistance of the connection is required.

Solid masonry unit: A masonry unit with net cross-sectional area in every plane parallel to the bearing surface equal to 75% or more of the gross cross-sectional area in the same plane.

Solid wall or solid infill panel: A wall or infill panel with openings not exceeding 5% of the wall surface area. The maximum length or height of an opening in a solid wall must not exceed 10% of the wall width or story height. Openings in a solid wall or infill panel must be located within the middle 50% of a wall length and story height, and must not be contiguous with adjacent openings.

Special Moment Frame (SMF): A moment frame system that meets the special requirements for frames as defined in seismic provisions for new construction.

Stack bond: A placement of masonry units such that the head joints in successive courses are aligned vertically.

cally.

Stiff diaphragm: A diaphragm that is neither flexible nor rigid.

Storage racks: Industrial pallet racks, movable shelf racks, and stacker racks made of cold-formed or hot-rolled structural members. Does not include other types of racks such as drive-in and drive-through racks, cantilever wall-hung racks, portable racks, or racks made of materials other than steel.

Strength: The maximum axial force, shear force, or moment that can be resisted by a component.

Stress resultant: The net axial force, shear, or bending moment imposed on a cross section of a structural component.

Strong back system: A secondary system, such as a frame, commonly used to provide out-of-plane support for an unreinforced or under-reinforced masonry wall.

Strong column-weak beam: A connection required to localize damage and control drift; the capacity of the column in any moment frame joint must be greater than that of the beams, to ensure inelastic action in the beams.

Structural components: Components of a building that provide gravity and lateral load resistance as part of a continuous load path to the foundation.

Structural Performance Level: A limiting structural damage state; used in the definition of Rehabilitation Objectives.

Structural Performance Range: A range of structural damage states; used in the definition of Rehabilitation Objectives.

Structural system: An assemblage of load-carrying components that are joined together to provide regular interaction or interdependence.

Stud: Vertical framing member in interior or exterior walls of a building.

Subassembly: A portion of an assembly.

Sub-diaphragm: A portion of a larger diaphragm used to distribute loads between members.

Systematic Rehabilitation Method: An approach to rehabilitation in which complete analysis of the response of the building to earthquake hazards is performed.

T

Target displacement: An estimate of the maximum expected displacement of the roof of a building calculated for the design earthquake.

Tie: See **drag strut**.

Tie-down: Hardware used to anchor the vertical chord forces to the foundation or framing of the structure in order to resist overturning of the wall.

Tie-down system: The collection of structural connections, components, and elements that provide restraint against uplift of the structure above the isolation system.

Timbers: Lumber of nominal five or more inches in cross-section dimension.

Time effect factor: A factor applied to adjusted resistance to account for effects of duration of load. (See **load duration**.)

Total design displacement: The BSE-1 displacement of an isolation or energy dissipation system, or elements thereof, including additional displacement due to actual and accidental torsion.

Total maximum displacement: The maximum earthquake displacement of an isolation or energy dissipation system, or elements thereof, including additional displacement due to actual and accidental torsion.

Transverse wall: A wall that is oriented transverse to in-plane shear walls, and resists lateral forces applied normal to its plane. Also known as an out-of-plane wall.

U

Unreinforced masonry (URM) wall: A masonry wall containing less than the minimum amounts of reinforcement as defined for masonry (RM) walls. An unreinforced wall is assumed to resist gravity and lateral loads solely through resistance of the masonry materials.

V

V-braced frame: A concentric braced frame (CBF) in which a pair of diagonal braces located either above or below a beam is connected to a single point within the clear beam span.

Velocity-dependent energy dissipation devices: Devices having mechanical characteristics such that the force in the device is dependent on the relative velocity in the device.

Veneer: A masonry wythe that provides the exterior finish of a wall system and transfers out-of-plane load directly to a backing, but is not considered to add load-resisting capacity to the wall system.

Vertical irregularity: A discontinuity of strength, stiffness, geometry, or mass in one story with respect to adjacent stories.

W

Waferboard: A non-veneered structural panel manufactured from two- to three-inch flakes or wafers bonded together with a phenolic resin and pressed into sheet panels.]

Wind-restraint system: The collection of structural elements that provides restraint of the seismic-isolated structure for wind loads. The wind-restraint system may be either an integral part of isolator units or a separate device.

Wood structural panel: A wood-based panel product bonded with an exterior adhesive, meeting the requirements of PS 1-95 or PS 2-92, including plywood, oriented strand board, waferboard, and composite panels.

Wrought iron: An easily welded or forged iron containing little or no carbon. Initially malleable, it hardens quickly when rapidly cooled.

Wythe: A continuous vertical section of a wall, one masonry unit in thickness.

X

X-braced frame: A concentric braced frame (CBF) in which a pair of diagonal braces crosses near the mid-length of the braces. K

Y

Y-braced frame: An eccentric braced frame (EBF) in which the stem of the Y is the link of the EBF system.