

APPENDIX C GLOSSARY

Acceptance Criteria: Permissible values of such properties as drift, component strength demand, and inelastic deformation used to determine the acceptability of a component's projected behavior at a given Performance Level.

Action: Sometimes called a generalized force, most commonly a single force or moment. However, an action may also be a combination of forces and moments, a distributed loading, or any combination of forces and moments. Actions always produce or cause displacements or deformations; for example, a bending moment action causes flexural deformation in a beam; an axial force action in a column causes axial deformation in the column; and a torsional moment action on a building causes torsional deformations (displacements) in the building.

Addition: An increase in building area, aggregate floor area, height, or number of stories of a structure.

Alteration: Any construction or renovation to an existing structure other than an addition.

Appendage: An architectural component such as a canopy, marquee, ornamental balcony, or statuary.

Approval: The written acceptance by the regulatory agency of documentation that establishes the qualification of a material, system, component, procedure, or person to fulfill the requirements of these provisions for the intended use.

Architectural Component Support: Those structural members or assemblies of members, including braces, frames, struts and attachments, that transmit all loads and forces between architectural systems, components, or elements and the structure.

Attachments: Means by which components and their supports are secured or connected to the seismic-force-resisting system of the structure. Such attachments include anchor bolts, welded connections, and mechanical fasteners.

Base: The level at which the horizontal seismic ground motions are considered to be imparted to the structure.

Base Shear: Total design lateral force or shear at the base.

Basement: A basement is any level below the first story.

Boundary Elements: Diaphragm and shear wall boundary members to which sheathing transfers forces. Boundary members include chords and drag struts at diaphragm and shear wall perimeters, interior openings, discontinuities, and reentrant corners.

Boundary Members: Portions along wall and diaphragm edges strengthened by longitudinal and transverse reinforcement and/or structural steel members.

Braced Frames: An essentially vertical truss, or its equivalent, of the concentric or eccentric type that is provided in a building frame system or dual frame system to resist in-plane lateral loads.

Concentrically Braced Frame (CBF): A braced frame in which the members are subjected primarily to axial forces.

Eccentrically Braced Frame (EBF): A diagonally braced frame in which at least one end of each brace frames into a beam a short distance from a beam-column joint or from another diagonal brace.

Ordinary Concentrically Braced Frame (OCBF): A steel concentrically braced frame in which members and connections are designed in accordance with the AISC Seismic Provisions.

Special Concentrically Braced Frame (SCBF): A steel or composite steel and concrete concentrically braced frame in which members and connections are designed for ductile behavior. Special concentrically braced frames shall conform to Sec. 8.2.1 or NEHRP'97.

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. Where the diagonal braces are below the beam, the system also is referred to as an "inverted V-brace frame," or "chevron bracing."

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

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

Brittle: Systems, members, materials, and connections that do not exhibit significant energy dissipation capacity in the inelastic range.

Building: Any structure whose use could include shelter of human occupants.

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

Capacity: The permissible strength or deformation for a component action.

Component: A part or element of an architectural, electrical, mechanical, or structural system.

Component, Equipment: A mechanical or electrical component or element that is part of a mechanical and/or electrical system within or without a building system.

Component, Flexible: Component, including its attachments, having a fundamental period greater than 0.06 sec.

Component, Rigid: Component, including its attachments, having a fundamental period less than or equal to 0.06 sec.

Concrete:

Plain Concrete: Concrete that is either unreinforced or contains less reinforcement than the minimum amount specified in ACI-318 for reinforced concrete.

Reinforced Concrete: Concrete reinforced with no less than the minimum amount required by ACI-318, prestressed or nonprestressed, and designed on the assumption that the two materials act together in resisting forces.

Confined Region: That portion of a reinforced concrete component in which the concrete is confined by closely spaced special transverse reinforcement restraining the concrete in directions perpendicular to the applied stress.

Construction Documents: The written, graphic, electronic, and pictorial documents describing the design, locations, and physical characteristics of the project.

Control Node: The node in the mathematical model of a building used to characterize mass and earthquake displacement.

Coupling Beam: A beam that is used to connect adjacent concrete wall piers to make them act together as a unit to resist lateral loads.

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

Damping: The exponential decay of the free vibration of an elastic single-degree-of-freedom system due to internal energy dissipation. Usually expressed as a percentage of critical damping.

Critical Damping: The amount of energy dissipation required to restrain a displaced elastic single-degree-of-freedom system from vibration beyond the initial “at rest” position.

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

Design Earthquake Ground Motion: The earthquake effects that buildings and structures are specifically proportioned to resist as defined in Sec. 4.1 of NEHRP’97.

Design Earthquake: The earthquake for use with Chapter 10 that is two-thirds the maximum considered earthquake.

Diaphragm: A horizontal or nearly horizontal system acting to transfer lateral forces to the vertical resisting elements. Diaphragms are classified as either flexible or rigid according to the requirement of Sec. 12.3.4.2 of NEHRP’97.

Diaphragm, Blocked: A diaphragm in which all sheathing edges not occurring on a framing member are supported on a fastened to blocking.

Diaphragm Boundary: A location where shear is transferred into or out of the diaphragm sheathing. Transfer is either to a boundary element or to another force-resisting element.

Diaphragm Chord: A diaphragm boundary element perpendicular to the applied load that is assumed to take axial stresses due to the diaphragm moment in a manner analogous to the flanges of a beam. Also applies to shear walls.

Diaphragm Collector: A diaphragm component provided to transfer lateral force from the diaphragm to vertical elements of the later-force-resisting system or to other portions of the diaphragm.

Displacement:

Design Displacement: The design earthquake lateral displacement, excluding additional displacement due

to actual and accidental torsion, required for design of the isolation system.

Total Design Displacement: The design earthquake lateral displacement, including additional displacement

Displacement continued:

due to actual and accidental torsion, required for design of the isolation system or an element thereof.

Total Maximum Displacement: The maximum capable earthquake lateral displacement, including additional displacement due to actual and accidental torsion, required for verification of the stability of the isolation system or elements thereof, design of building separations, and vertical load testing of isolator unit prototypes.

Displacement Restraint System: A collection of structural elements that limits lateral displacement of seismically isolated structures due to the maximum considered earthquake.

Drag Strut (Collector, Tie, Diaphragm Strut): A diaphragm or shear wall boundary element parallel to the applied load that collects and transfers diaphragm shear forces to the vertical-force-resisting elements or distributes forces within the diaphragm or shear wall. A drag strut often is an extension of a boundary element that transfers forces into the diaphragm or shear wall.

Effective Damping: The value of equivalent viscous damping corresponding to energy dissipated during cyclic response of the isolation system.

Effective Stiffness: The value of the lateral forces in the isolation system, or an element thereof, divided by the corresponding lateral displacement.

Element:

Ductile Element: An element capable of sustaining large cyclic deformations beyond the attainment of its nominal strength without any significant loss of strength.

Limited Ductile Element: An element that is capable of sustaining moderate cyclic deformations beyond the attainment of nominal strength without significant loss of strength.

Nonductile Element: An element having a mode of failure that results in an abrupt loss of resistance

when the element is deformed beyond the deformation corresponding to the development of its nominal strength. Nonductile elements cannot reliably sustain significant deformation beyond that attained at their nominal strength.

Equipment Support: Those structural members or assemblies of members or manufactured elements, including braces, frames, legs, lugs, snuggers, hangers or saddles, that transmit gravity load and operating load between the equipment and the structure.

Essential Facility: A facility or structure required for post-earthquake recovery.

Factored Resistance ($\lambda\phi D$): Reference resistance multiplied by the time effect and resistance factors. This value must be adjusted for other factors such as size effects, moisture conditions, and other end-use factors.

Flexible Diaphragm: A diaphragm with stiffness characteristics indicated in paragraph 5-9b(1).

Flexible Equipment Connections: Those connections between equipment components that permit rotational and/or translational movement without degradation of performance. Examples include universal joints, bellows expansion joints, and flexible metal hose.

Foundations:

Allowable Bearing Capacity: Foundation load or stress commonly used in working-stress design (often controlled by long-term settlement rather than soil strength).

Deep Foundation: Piles or piers.

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

Footing: A structural component transferring the weight of a building to the foundation soils and resisting lateral loads.

Foundation Soils: Soils supporting the foundation system and resisting vertical and lateral loads.

Foundation Springs: Method of modeling to incorporate load-deformation characteristics of foundation soils.

Foundation System: Structural components (footings, piles).

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

Liquefaction: An earthquake-induced process in which saturated, loose, granular soils lose a substantial amount of shear strength as a result of increase in porewater pressure during earthquake shaking.

Foundations continued:

Pier: Similar to pile; usually constructed of concrete and cast in place.

Pile: A deep structural component transferring the weight of a building to the foundation soils and resisting vertical and lateral loads; constructed of concrete, steel, or wood; usually driven into soft or loose soils.

Retaining Wall: A free-standing wall that has soil on one side.

Shallow Foundation: Isolated or continuous spread footings or mats.

SPT N-Values: Using a standard penetration test (ASTM Test D1586), the number of blows of a 140-pound (623N) hammer falling 30 inches (0.76m) required to drive a standard 2-inch-(50mm) diameter sampler a distance of 12 inches (0.30m).

Ultimate Bearing Capacity: Maximum possible foundation load or stress (strength); increase in deformation or strain results in no increase in load or stress.

Frame Systems:

Building Frame System: A structural system with an essentially complete space frame system providing support for vertical loads. Seismic-force resistance is provided by shear walls or braced frames.

Dual Frame System: A structural system with an essentially complete space frame system providing support for vertical loads. Seismic force resistance is provided by moment resisting frames and shear walls or braced frames as prescribed in Sec. 5.2.2.1 of NEHRP'97.

Moment Frame System: A structural system with an essentially complete space frame system providing support for vertical loads, with restrained connections

between the beams and columns to permit the frames to resist lateral forces through the flexural rigidity and strength of its members.

Fundamental Period: The first mode period of the building in the direction under consideration.

Grade Plane: A reference plane representing the average of finished ground level adjoining the building at all exterior walls. Where the finished ground level slopes away from the exterior walls, the reference plane shall be established by the lowest point within the area between the buildings and the lot line or, where the lot line is more than 6 ft. (1829mm) from the building, between the building and a point 6 ft. (1829mm) from the building.

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.

High Temperature Energy Source: A fluid, gas, or vapor whose temperature exceeds 220 degrees F (378 K).

Inspection, Special: The observation of the work by the special inspector to determine compliance with the approved construction documents.

Continuous Special Inspection: The full-time observation of the work by an approved special inspector who is present in the area where work is being performed.

Periodic Special Inspection: The part-time or intermittent observation of the work by an approved special inspector who is present in the area where work has been or is being performed.

Inspector, Special (who shall be identified as the Owner's Inspector): A person approved by the regulatory agency as being qualified to perform special inspection required by the approved quality assurance plan. The quality assurance personnel of a fabricator may be approved by the regulatory agency as a special inspector.

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

Inverted Pendulum Type Structure: Structures that have a large portion of their mass concentrated near the top and, thus, have essentially one degree of freedom in horizontal translation. The structures are usually T-shaped with a single column supporting the beams or framing at the top.

Joint: That portion of a column bounded by the highest and lowest surfaces of the other members framing into it.

Lateral-Force-Resisting System: Those elements of the structure that provide its basic lateral strength and stiffness, and without which the structure would be laterally unstable.

Load:

Dead Load: The gravity load due to the weight of all permanent structural and nonstructural components of

Load continued:

a building such as walls, floors, roofs, and the operating weight of fixed service equipment.

Gravity Load (W): The total dead load and applicable portions of other loads as defined in Sec. 5.3.2 of NEHRP'97.

Live Load: The load superimposed by the use and occupancy of the building not including the wind load, earthquake load, or dead load; see Sec. 5.3.2 of NEHRP'97.

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

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

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

Cavity Wall: A masonry wall with an air space between wythes. Wythes are usually joined by wire reinforcement, or steel ties. Also known as a noncomposite wall.

Clay-Unit Masonry: Masonry constructed with solid, cored, or hollow units made of clay. Hollow clay units may be ungrouted, or grouted.

Clay Tile Masonry: Masonry constructed with hollow units made of clay tile. Typically, units are laid with cells running horizontally, and are thus

ungrouted. In some cases, units are placed with cells running vertically, and may or may not be grouted.

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

Composite Masonry Wall: Multiwythe masonry wall acting with composite action.

Concrete Masonry: Masonry constructed with solid or hollow units made of concrete. Hollow concrete units may be ungrouted, or grouted.

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

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

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 tight contact with a frame around its full perimeter are termed "shear infills."

In-plane Wall: See shear wall.

Nonbearing Wall: A wall that is designed and detailed so as not to participate in providing support for gravity loads.

Noncomposite Masonry Wall: Multiwythe masonry wall acting without composite action.

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

Parapet: Portions of a wall extending above the roof diaphragm. Parapets can be considered as flanges to roof diaphragms if adequate connections exist or are provided.

Partially Grouted Masonry Wall: A masonry wall containing grout in some of the cells.

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

Pier: A vertical portion of masonry wall between two horizontally adjacent openings. Piers resist axial

stresses from gravity forces, and bending moments from combined gravity and lateral forces.

Reinforced Masonry (RM) Walls: A masonry wall that is reinforced in both the vertical and horizontal directions. Reinforced walls are assumed to resist loads through resistance of the masonry in compression and the reinforcing steel in tension or compression. Reinforced masonry is partially grouted or fully grouted.

Intermediate Reinforced Masonry Walls Shear Walls: To be designed in accordance with Section 11.11.4 of FEMA 302.

Masonry continued:

Special Reinforced Masonry Shear Walls: To be designed in accordance with Section 11.11.5 of FEMA 302.

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.

Solid Masonry Unit: A masonry unit whose net cross-sectional area in every plane parallel to the bearing surface is 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.

Stack Bond: In contrast to running bond, usually a placement of units such that the head joints in successive courses are aligned vertically.

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

Unreinforced Masonry (URM) Wall: A masonry wall containing less than the minimum amounts of reinforcement as defined for reinforced masonry (RM) walls. An unreinforced wall is assumed to resist

gravity and lateral loads solely through resistance of the masonry materials.

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

Maximum Considered Earthquake Ground Motion: The most severe earthquake effects considered by this document as defined in Chapter 3.

Moment Frames:

Intermediate Moment Frames (IMF): Moment frames of reinforced concrete or structural steel conforming to detailing requirements that provide capability for moderate inelastic rotation of the beam/column joint.

Ordinary Moment Frames (OMF): Moment frames of reinforced concrete or structural steel conforming to limited detailing requirements that provide capability for nominal inelastic rotation of the beam column joint.

Special Moment Frames (SMF): Moment Frames of reinforced concrete or structural steel conforming to detailing requirements that provide capability for significant inelastic rotation of the beam/column joint.

Eccentric Braced Frame (EBF): A diagonal braced frame in which at least one end of each diagonal bracing member connects to a beam a short distance from either a beam-to-column connection or another brace end.

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

Partition: A nonstructural interior wall that spans from floor to ceiling, to the floor or roof structure immediately above, or to subsidiary structural members attached to the structure above. A partition may receive lateral support from the floor above, but shall be designed and detailed so as not to provide lateral or vertical support for that floor.

P-Delta Effect: The secondary effect on shears and moments of frame members due to the action of the vertical loads induced by displacement of the building frame resulting from the design loads.

Primary Component: Those components that are required as part of the building's lateral-force-resisting system (as contrasted to secondary components).

Primary Element: An element that is essential to the ability of the structure to resist earthquake-induced deformations.

Quality Assurance Plan: A detailed written procedure that establishes the systems and components subject to special inspection and testing.

Reference Resistance (D): The resistance (force or moment as appropriate) of a member or connection computed at the reference end use conditions.

Registered Design Professional: An architect or engineer, registered or licensed to practice professional architecture or engineering, as defined by the statutory requirements of the professional registrations laws of the state in which the project is to be constructed.

Required Strength: The load effect (force, moment, stress, as appropriate) acting on a component or connection, determined by structural analysis from the factored loads (using the most appropriate critical load combinations).

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 that meets requirements of paragraph 5-9b (1).

Secondary Component: Those components that are not required for lateral force resistance (contrasted to primary components). They may or may not actually resist some lateral forces.

Secondary Element: An element that does not affect the ability of the structure to resist earthquake-induced deformations.

Seismic Demand: Seismic hazard level commonly expressed in the form of a ground shaking response spectrum. It may also include an estimate of permanent ground deformation.

Seismic Design Category: A classification assigned to a structure based on its Seismic Use Group and the severity of the design earthquake ground motion at the site.

Seismic-Force-Resisting System: That part of the structural system that has been considered in the design to provide the required resistance to the shear wall prescribed herein.

Seismic Forces: The assumed forces prescribed herein, related to the response of the structure to earthquake motions, to be used in the design of the structure and its components.

Seismic Isolation and Energy Dissipation:

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 3.

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 maximum considered earthquake.

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

Energy Dissipation Device (EDD): Non-gravity-load-supporting element designed to dissipate energy in a stable manner during repeated cycles of earthquake demand.

Energy Dissipation System (EDS): Complete collection of all energy dissipation devices, their supporting framing, and connections.

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 may be used either as part of or in addition to the weight-supporting system of the building.

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.

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

Total Design Displacement: The design displacement of an isolation or energy dissipation

Seismic Isolation and Energy Dissipation continued:

system, or elements thereof, including additional displacement due to actual and accidental torsion.

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.

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.

Seismic Response Coefficient: Coefficient C_s as determined from Sec. 5.3.2.1 of NEHRP'97.

Seismic Use Group: A classification assigned to a building based on its use as defined in Sec. 1.3 of NEHRP'97.

Shear Panel: A floor, roof, or wall component sheathed to act as a shear wall or diaphragm.

Site Class: A classification assigned to a site based on the types of soils present and their engineering properties as defined in Sec. 4.1.2 of NEHRP'97.

Site Coefficients: The values of F_a and F_v , indicated in Tables 1.4.2.3a and 1.4.2.3b, respectively.

Special Transverse Reinforcement: Reinforcement composed of spirals, closed stirrups, or hoops and supplementary cross-ties provided to restrain the concrete

and qualify the portion of the component, where used, as a confined region.

Steel Frame Elements:

Connection: A link between components or elements that transmits actions from one component or element to another component or element. Categorized by type of action (moment, shear, or axial), connection links are frequently nonductile.

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

Diagonal Bracing: Inclined structural members carrying primarily axial load, employed to enable a structural frame to act as a truss to resist lateral loads.

Dual System: A structural system included in building with the following features:

- An essentially complete space frame provides support for gravity loads.
- Resistance to lateral load is provided by concrete or steel shear walls, steel eccentrically braced frames (EBF), or concentrically braced frames (CBF) along with moment-resisting frames (Special Moment Frames, or Ordinary Moment Frames) that are capable of resisting at least 25% of the lateral loads.

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

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

Link: In an EBF, the segment of a beam that extends from column to brace, located between the end of a diagonal brace and a column, or between the ends of two diagonal braces of the EBF. The length of the link is defined as the clear distance between the diagonal brace and the column face, or between the ends of two diagonal braces.

Link Intermediate Web Stiffeners: Vertical web stiffeners placed within the link.

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

Panel Zone: The area of a column at the beam-to-column connection delineated by beam and column flanges.

Storage Racks: Include 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 racks, portable racks, or racks made of materials other than steel.

Story: The vertical distance from the top to top of two successive tiers of beams or finished floor surfaces; and, for the topmost story, from the top of the floor finish to the top of the ceiling joists or, where there is not a ceiling, to the top of the roof rafters.

Story Above Grade: Any story having its finished floor surface entirely above grade, except that a basement shall be considered as a story above grade where the finished floor surface of the floor above the basement is:

1. More than 6 feet (1829mm) above the grade plane,
2. More than 6 feet (1829mm) above the finished ground level for more than 40 percent of the total building perimeter, or
3. More than 12 feet (3658mm) above the finished ground level at any point.

Story Drift Ratio: The story drift, as determined in Sec. 5.3.7 of NEHRP'97, divided by the story height.

Story Shear: The summation of design lateral forces at levels above the story under consideration.

Strength:

Design Strength: Nominal strength multiplied by a strength reduction factor, ϕ .

Effective Strength: Nominal strength multiplied by a strength increase factor to represent the expected mean strength at the expected deformation value. Includes variability in material strength and such phenomena as strain hardening and plastic section development.

Nominal Strength: Strength of a member or cross section calculated in accordance with the requirements and assumptions of the strength design methods of NEHRP'97 (or the referenced standards) before application of any strength reduction factors.

Required Strength: Strength of a member, cross section, or connection required to resist factored loads or related internal moments and forces in such combinations as stipulated by NEHRP'97.

Structure: That which is built or constructed and limited to buildings or no building structures as defined herein.

Structural Observations: The visual observations performed by the registered design professional in responsible charge (or another registered design professional) to determine that the seismic-force-resisting system is constructed in general conformance with the construction documents.

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

Structural Use Panel: A wood-based panel product that meets the requirements of NEHRP'97 and is bonded with a waterproof adhesive. Included under this designation are plywood, oriented strand board, and composite panels.

Subdiaphragm: A portion of a diaphragm used to transfer wall anchorage forces to diaphragm cross ties.

Target Displacement: An estimate of the likely building roof displacement in the design earthquake.

Testing Agency: A company or corporation that provides testing and/or inspection services. The person in responsible charge of the special inspector(s) and the testing services shall be an engineer licensed by the state to practice as such in the applicable discipline.

Tie-Down (Hold-down): A device used to resist uplift of the chords of shear walls. These devices are intended to resist load without significant slip between the device and the shear wall chord or be shown with cyclic testing to not reduce the wall capacity or ductility.

Time Effect Factor (λ): A factor applied to the adjusted resistance to account for effects of duration of load.

Torsional Force Distribution: The distribution of horizontal shear wall through a rigid diaphragm when the center of mass of the structure at the level under consideration does not coincide with the center of rigidity (sometimes referred to as diaphragm rotation).

Toughness: The ability of a material to absorb energy without losing significant strength.

Utility or Service Interface: The connection of the building's mechanical and electrical distribution systems to the utility or service company's distribution system.

Veneers: Facings or ornamentation of brick, concrete, stone, tile, or similar materials attached to a backing.

Wall: A component that has a slope of 60 degrees or greater with the horizontal plane used to enclose or divide space

Bearing Wall: An exterior or interior wall providing support for vertical loads.

Cripple Wall: A framed stud wall, less than 8 feet (2400mm) in height, extending from the top of the foundation to the underside of the lowest floor framing. Cripple walls occur in both engineered structures and conventional construction.

Light-Framed Wall: A wall with wood or steel studs.

Light-Framed Wood Shear Wall: A wall constructed with wood studs and sheathed with material rated for shear resistance.

Wall continued:

Nonbearing Wall: An exterior or interior wall that does not provide support for vertical loads, other than its own weight or as permitted by the building code administered by the regulatory agency.

Nonstructural Wall: All walls other than bearing walls or shear walls.

Shear Wall (Vertical Diaphragm): A wall designed to resist lateral forces parallel to the plane of the wall (sometimes referred to as a vertical diaphragm).

Wall System, Bearing: A structural system with bearing walls providing support for all or major portions of the vertical loads. Shear walls or braced frames provide seismic-force resistance.

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 and Light Metal Framing:

Aspect Ratio: Ratio of height to width for vertical diaphragms, and width of depth for horizontal diaphragms.

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

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

Cripple Studs: Short studs between header and top plate at opening in wall framing or studs between base sill and sill of opening.

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

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

Dressed Size: The dimensions of lumber after surfacing with a planing machine. Usually 1/2 to 3/4 inch (13 to 19mm) less than nominal size.

Edge Distance: The distance from the edge of the member to the center of the nearest fastener. When a member is loaded perpendicular to the grain, the loaded edge shall be defined as the edge in the direction toward which the fastener is acting.

Gypsum Wallboard or Drywall: An interior wall surface sheathing material sometimes considered for resisting lateral forces.

Hold-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.

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

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 the nominal. Reference to standards or grade rules is required to determine nominal to actual finished size relationships, which have changed over time.

Oriented Strandboard: A structural panel comprising thin elongated wood strands with surface layers arranged in the long panel direction and core layers arranged in the cross panel direction.

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.

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.

Plywood: A structural panel comprising plies of wood veneer arranged in cross-aligned layers. The plies are bonded with an adhesive that cures upon application of heat and pressure.

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

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

Wood and Light Metal Framing continued:

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

Structural-Use Panel: A wood-based panel product bonded with an exterior adhesive, generally 4' x 8' (1.2 x 2.4m) or larger in size. Included under this designation are plywood, oriented strand board, waferboard, and composite panels. These panel products meet the requirements of PS 1-95 (NIST, 1995) or PS 2-92 (NIST, 1992) and are intended for structural use in residential, commercial, and industrial applications.

Stud: Wood member used as vertical framing member in interior or exterior walls of a building, usually 2" x 4" or 2" x 6" (50mm x 100mm or 50mm x 150mm) sizes, and precision end-trimmed.

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.

Time Effect Factor: A factor applied to adjusted resistance to account for effects of duration of load.