

Chapter 1

GENERAL PROVISIONS

1.1 PURPOSE: The *NEHRP Recommended Provisions for Seismic Regulations for New Buildings and Other Structures* (referred to hereinafter as the *Provisions*) present criteria for the design and construction of *structures* to resist earthquake ground motions. The purposes of the *Provisions* are as follows:

1. To provide minimum design criteria for *structures* appropriate to their primary function and use considering the need to protect the health, safety, and welfare of the general public by minimizing the earthquake-related risk to life and
2. To improve the capability of *essential facilities* and *structures* containing substantial quantities of hazardous materials to function during and after *design earthquakes*.

The *design earthquake ground motion* levels specified herein could result in both structural and nonstructural damage. For most *structures* designed and constructed according to the *Provisions*, structural damage from the *design earthquake ground motion* would be repairable although perhaps not economically so. For *essential facilities*, it is expected that the damage from the *design earthquake ground motion* would not be so severe as to preclude continued occupancy and function of the facility. The actual ability to accomplish these goals depends upon a number of factors including the structural framing type, configuration, materials, and as-built details of construction. For ground motions larger than the design levels, the intent of the *Provisions* is that there be a low likelihood of structural collapse.

1.2 SCOPE AND APPLICATION:

1.2.1 Scope: The *Provisions* shall apply to the design and construction of *structures* including *additions*, change of use, and *alterations* to resist the effects of earthquake motions. Every *structure*, and portion thereof, shall be designed and constructed to resist the effects of earthquake motions as prescribed by the *Provisions*.

Exceptions:

1. Detached one- and two-family dwellings in *Seismic Design Categories* A, B, and C are exempt from all requirements of the *Provisions*.
2. Detached one- and two-family wood frame dwellings that are designed and constructed in accordance with the conventional light frame construction requirements in Sec. 12.5 are exempt from all other requirements of the *Provisions*.
3. Agricultural storage *structures* intended only for incidental human occupancy are exempt from all requirements of the *Provisions*.
4. *Structures* located where S_I is less than or equal to 0.04 and S_s is less than or equal to 0.15 shall only be required to comply with Sec. 5.2.5 and Sec. 5.2.6.1 and tanks in

Seismic Use Group III according to Table 14.5.1.2 also shall comply with the freeboard requirements of Sec. 14.7.3.6.1.2.

1.2.2 Additions: *Additions* shall be designed and constructed in accordance with Sec. 1.2.2.1 and 1.2.2.2:

1.2.2.1: An *addition* that is structurally independent from an existing *structure* shall be designed and constructed as required for a new *structure* in accordance with Sec. 1.2.1.

1.2.2.2: An *addition* that is not structurally independent from an existing *structure* shall be designed and constructed such that the entire *structure* conforms to the seismic-force-resistance requirements for new *structures* unless all of the following conditions are satisfied:

1. The *addition* conforms with the requirements for new *structures*, and
2. The *addition* does not increase the *seismic forces* in any structural element of the existing *structure* by more than 5 percent, unless the capacity of the element subject to the increased forces is still in compliance with the *Provisions*, and
3. The *addition* does not decrease the seismic resistance of any structural element of the existing *structure* to less than that required for a new *structure*.

1.2.3 Change of Use: When a change of use results in a *structure* being reclassified to a higher *Seismic Use Group*, the *structure* shall conform to the requirements of Section 1.2.1 for a new *structure*.

Exception: When a change of use results in a *structure* being reclassified from *Seismic Use Group I* to *Seismic Use Group II*, compliance with the *Provisions* is not required if the *structure* is located where S_{DS} is less than 0.3.

1.2.4 Alterations: *Alterations* are permitted to be made to any *structure* without requiring the *structure* to comply with the *Provisions* provided the *alterations* conform to the requirements for a new *structure*. *Alterations* that increase the *seismic force* in any existing structural element by more than 5 percent or decrease the design strength of any existing structural element to resist *seismic forces* by more than 5 percent shall not be permitted unless the entire *seismic-force-resisting system* is determined to conform to the *Provisions* for a new *structure*. All *alterations* shall conform to the *Provisions* for a new *structure*.

Exception: *Alterations* to existing structural elements or *additions* of new structural elements that are not required by these *Provisions* and are initiated for the purpose of increasing the strength or stiffness of the *seismic-force-resisting system* of an existing *structure* need not be designed for forces conforming to these *Provisions* provided that an engineering analysis is submitted indicating the following:

1. The design strengths of existing structural elements required to resist *seismic forces* is not reduced,
2. The *seismic force* on existing structural elements is not increased beyond their design strength,

3. New structural elements are detailed and connected to the existing structural elements as required by the *Provisions*, and
4. New or relocated nonstructural elements are detailed and connected to existing or new structural elements as required by the *Provisions*.

1.2.5 Alternate Materials and Alternate Means and Methods of Construction: Alternate materials and alternate means and methods of construction to those prescribed in the *Provisions* are permitted if approved by the authority having jurisdiction. Substantiating evidence shall be submitted demonstrating that the proposed alternate, for the purpose intended, will be at least equal in strength, durability, and seismic resistance.

1.3 SEISMIC USE GROUPS: All *structures* shall be assigned to one of the *Seismic Use Groups* described in Sec 1.3.1 through 1.3.3.

1.3.1 Seismic Use Group III: *Seismic Use Group III structures* are those having *essential facilities* that are required for post-earthquake recovery and those containing substantial quantities of hazardous substances including:

1. Fire, rescue, and police stations
2. Hospitals
3. Designated medical facilities having emergency treatment facilities
4. Designated emergency preparedness centers
5. Designated emergency operation centers
6. Designated emergency shelters
7. Power generating stations or other utilities required as emergency back-up facilities for *Seismic Use Group III* facilities
8. Emergency vehicle garages and emergency aircraft hangars
9. Designated communication centers
10. Aviation control towers and air traffic control centers
11. *Structures* containing sufficient quantities of toxic or explosive substances deemed to be hazardous to the public
12. Water treatment facilities required to maintain water pressure for fire suppression.

1.3.2 Seismic Use Group II: *Seismic Use Group II structures* are those that have a substantial public hazard due to occupancy or use including:

1. Covered *structures* whose primary occupancy is public assembly with a capacity greater than 300 persons
2. Educational *structures* through the 12th grade with a capacity greater than 250 persons
3. Day care centers with a capacity greater than 150 persons

4. Medical facilities with greater than 50 resident incapacitated patients not otherwise designated a *Seismic Use Group III structure*
5. Jails and detention facilities
6. All *structures* with a capacity greater than 5,000 persons
7. Power generating stations and other public utility facilities not included in *Seismic Use Group III* and required for continued operation
8. Water treatment facilities required for primary treatment and disinfection for potable water
9. Waste water treatment facilities required for primary treatment

1.3.3 Seismic Use Group I: *Seismic Use Group I structures* are those not assigned to *Seismic Use Groups III* or *II*.

1.3.4 Multiple Use: *Structures* having multiple uses shall be assigned the classification of the use having the highest *Seismic Use Group* except in *structures* having two or more portions that are structurally separated in accordance with Sec. 5.2.8, each portion shall be separately classified. Where a structurally separated portion of a *structure* provides access to, egress from, or shares life safety *components* with another portion having a higher *Seismic Use Group*, the lower portion shall be assigned the same rating as the higher.

1.3.5 Seismic Use Group III Structure Access Protection: Where operational access to a *Seismic Use Group III structure* is required through an adjacent *structure*, the adjacent *structure* shall conform to the requirements for *Seismic Use Group III structures*. Where operational access is less than 10 ft (3 m) from an interior lot line or less than 10 ft (3 m) from another *structure*, access protection from potential falling debris shall be provided by the *owner* of the *Seismic Use Group III structure*.

1.4 OCCUPANCY IMPORTANCE FACTOR: An *occupancy importance factor, I*, shall be assigned to each *structure* in accordance with Table 1.4.

TABLE 1.4 Occupancy Importance Factors

Seismic Use Group	<i>I</i>
I	1.0
II	1.25
III	1.5