

General Comments

This chapter contains the commentary for the following structural topics: definitions of structural terms, construction document requirements, load combinations, dead loads, live loads, snow loads, wind loads, soil lateral loads, rain loads, flood loads and earthquake loads. This chapter provides minimum design requirements so that all buildings and structures are proportioned to resist the loads and forces that are likely to be encountered. The loads specified herein have been established through research and service performance of buildings and structures. The application of these loads and adherence to the serviceability criteria will enhance the protection of life and property. The earthquake loads, wind loads, tornado loads and snow loads in this chapter are based on the 2022 edition of ASCE 7.

Purpose

The purpose of this chapter is to prescribe minimum structural loading requirements for use in the design and construction of buildings and structures with the intent to minimize hazard to life and improve the occupancy capability of essential facilities after a design level event or occurrence.

SECTION 1601—GENERAL

1601.1 Scope. The provisions of this chapter shall govern the structural design of *buildings, structures* and portions thereof.

C While a significant portion of Chapter 16 is dedicated to the determination of minimum design loads, it also includes other important criteria that impact the design of structures, such as the permitted design methodologies, as well as the combinations of design loads used to establish the required minimum strength of structural members. Unless stated otherwise, the criteria found in this chapter are applicable to all buildings and structures. See Chapter 34 for application of these requirements to alterations, additions or repairs to existing structures.

SECTION 1602—NOTATIONS

1602.1 Notations. The following notations are used in this chapter:

- D = Dead load.
- D_i = Weight of ice in accordance with Chapter 10 of ASCE 7.
- E = Combined effect of horizontal and vertical earthquake induced forces as defined in Section 12.4 of ASCE 7.
- F = Load due to fluids with well-defined pressures and maximum heights.
- F_a = Flood load in accordance with Chapter 5 of ASCE 7.
- H = Load due to lateral earth pressures, ground water pressure or pressure of bulk materials.
- L = Live load.
- L_r = Roof live load.
- $p_{g(asd)}$ = Allowable stress design ground snow load.
- p_g = Ground snow load determined from Figures 1608.2(1) through 1608.2(4) and Table 1608.2.
- R = Rain load.
- S = Snow load.
- T = Cumulative effects of self-straining load forces and effects.
- V_{asd} = Allowable stress design wind speed, mph (m/s) where applicable.
- V = Basic wind speed, mph (m/s) determined from Figures 1609.3(1) through 1609.3(4) or ASCE 7.
- V_T = Tornado speed, mph (m/s) determined from Chapter 32 of ASCE 7.
- W = Load due to wind pressure.
- W_i = Wind-on-ice in accordance with Chapter 10 of ASCE 7.

C These notations are used to refer to specific nominal loads that are determined in this chapter for use in the load combinations in Section 1605:

- D is the nominal dead load determined in Section 1606. Also see the definition of “Dead load.”
- D_i is the weight of ice. See Chapter 10 of ASCE 7.

- Earthquake load effect, E , in ASCE 7 includes the effects of the horizontal load, E_h , as well as a vertical component, E_v .
Earthquake design criteria are provided in Section 1613, which, in turn, references the relevant ASCE 7 provisions for computation of the earthquake load effects. While these loads are necessary for establishing the required strength, the computed forces approximate the expected deformations under the design earthquake ground motions and are not applied to a structure in an actual earthquake.
- F refers to the nominal load due to fluids having “well-defined pressures and maximum heights.” Unlike most other nominal loads, there is no code section governing the determination of fluid loads. Also note that F includes a vertical component (fluid weight), as well as a horizontal component (lateral pressure).
- F_a is used to refer to the flood load that is determined under Chapter 5 of ASCE 7 and ASCE 24.
- H is used to refer to the nominal load resulting from lateral soil pressure, lateral pressure of ground water or the lateral pressure of bulk materials. Section 1610 specifies minimum requirements for lateral soil loads. Note that there are no specific provisions for the determination of loads resulting from the lateral pressure of bulk materials.
- L is the nominal live load determined in accordance with Section 1607 (also see the definition of “Live load”).
- L_r represents nominal roof live loads.
- $p_{g(asd)}$ is the allowable stress design ground snow load determined in accordance with Section 1608.2.1.
- p_g is the reliability-targeted strength-based ground snow load determined in accordance with Section 1608.2.
- R is the nominal rain load determined in accordance with Section 1611.
- S is the nominal snow load determined in accordance with Section 1608.
- T is used to refer to self-straining forces resulting from contraction or expansion caused by temperature change, shrinkage, moisture change or creep, as well as movement caused by differential settlement. A thermal gradient at an exterior wall is an example of a structural element where these self-straining forces can affect the design. Unlike most other nominal loads, there is no code section governing the determination of self-straining forces.
- V_{asd} refers to allowable stress design wind speeds that are determined in Section 1609.3.1.
- V refers to mapped basic wind speeds in order to differentiate them from the allowable stress design wind speeds.
- V_t is the tornado speed determined from Chapter 32 of ASCE 7.
- W is the strength-level wind load determined in accordance with Section 1609.
- W_i is the wind-on-ice loading. See the ASCE 7 provisions referenced in Section 1614.

SECTION 1603—CONSTRUCTION DOCUMENTS

1603.1 General. *Construction documents* shall show the material, size, section and relative locations of structural members with floor levels, column centers and offsets dimensioned. The design loads and other information pertinent to the structural design required by Sections 1603.1.1 through 1603.1.9 shall be indicated on the *construction documents*.

Exception: *Construction documents* for buildings constructed in accordance with the *conventional light-frame construction* provisions of Section 2308 shall indicate the following structural design information:

1. Floor and roof dead and live loads.
2. Ground snow load, p_g , and allowable stress design ground snow load, $p_{g(asd)}$.
3. Basic wind speed, V , mph (m/s), and allowable stress design wind speed, V_{asd} , as determined in accordance with Section 1609.3.1 and wind exposure.
4. Seismic design category and site class.
5. Flood design data, if located in flood hazard areas established in Section 1612.3.
6. Design load-bearing values of soils.
7. Rain load data.

C The term “construction documents” is defined in Chapter 2. It is commonly used to refer to calculations, drawings, and specifications, but it includes other data that is required to indicate compliance with the code as described in Section 107. This section requires the design professional to identify the material of construction for each of the structural members and provide the building official with the appropriate structural details, criteria and design load data for verifying compliance with the provisions of this chapter.

Note that additional structural information and specific submittal documents may also be required to be incorporated by Chapters 17 through 23.

Construction documents are required to contain sufficient detail for the building official to perform plan review and field inspection, as well as for construction activity. Dimensions indicated on architectural drawings are not required to be duplicated on structural drawings and vice versa. The design loads, to be indicated by the design professional on the construction documents, are to be consistent with the loads used in the structural calculations. While the loads are not required to be on the construction drawings, they must be included within the construction documents in a manner such

that the design loads are clear. It is good practice, however, to include the design loads on the construction drawings, as these are often the only documents retained by the owner and the building official after construction is completed. The building official is to compare the loads on the construction documents with the applicable minimum required loads as specified by this chapter. The inclusion of the load design information is an indication that the structure has been designed for the loads required by the code. It should be emphasized that these requirements for construction documents are applicable regardless of the involvement of a registered design professional, which is regulated by the applicable state's licensing laws. The exception provides a less-extensive list of structural data to be included for buildings constructed in accordance with the conventional wood light-frame provisions of Section 2308. This is appropriate in view of the prescriptive nature of these requirements.

1603.1.1 Floor live load. The uniformly distributed, concentrated and impact floor *live load* used in the design shall be indicated for floor areas. Use of *live load* reduction in accordance with Section 1607.13 shall be indicated for each type of *live load* used in the design.

C This section provides information for the building official to facilitate the plan review process. The floor live loads, which are indicated on the construction documents by the design professional, are required to meet or exceed the loads in Section 1607. Any live load reductions taken are also to be indicated.

1603.1.2 Roof live load. The *roof live load* used in the design shall be indicated for roof areas.

C This section provides information to facilitate the plan review process. The roof live loads, indicated on the construction documents by the design professional, are required to meet or exceed the roof live loads in Section 1607.

1603.1.3 Roof snow load data. The ground snow *load*, p_g , shall be indicated. In areas where the ground snow *load*, p_g , exceeds 15 pounds per square foot (psf) (0.72 kN/m²), the following additional information shall also be provided, regardless of whether snow loads govern the design of the roof:

1. Flat-roof snow *load*, p_f .
2. Snow exposure factor, C_e .
3. *Risk category*.
4. Thermal factor, C_t .
5. Slope factor(s), C_s .
6. Drift surcharge *load*(s), p_d , where the sum of p_d and p_f exceeds 30 psf (1.44 kN/m²).
7. Width of snow drift(s), w .
8. Winter wind parameter for snow drift, W_2 .

C Providing the roof snow load design basis on the construction documents facilitates the plan review process.

1603.1.4 Wind and tornado design data. The following information related to wind *loads* and, where required by Section 1609.5, tornado loads shall be shown, regardless of whether wind or tornado *loads* govern the design of the lateral force-resisting system of the *structure*:

1. Basic *wind speed*, V , mph (m/s), tornado speed, V_T , mph (m/s), and *allowable stress design wind speed*, V_{asd} , mph (m/s), as determined in accordance with Section 1609.3.1.
2. *Risk category*.
3. Effective plan area, A_e , for tornado design in accordance with Chapter 32 of ASCE 7.
4. Wind exposure. Applicable wind direction if more than one wind exposure is utilized.
5. Applicable internal pressure coefficients, and applicable tornado internal pressure coefficients.
6. Design wind pressures and their applicable zones with dimensions to be used for exterior component and cladding materials not specifically designed by the *registered design professional* responsible for the design of the *structure*, pounds per square foot (kN/m²). Where design for tornado loads is required, the design pressures shown shall be the maximum of wind or tornado pressures.

C Providing the wind and, where required by Section 1609.5, tornado design basis on the construction documents facilitates the plan review process. All six of the indicated items are to be on the submitted construction documents. Each of the indicated items is an important parameter in the determination of the wind and tornado resistance that is required in the building framework. The building official should verify that the information is on the construction documents during the plan review process.

1603.1.5 Earthquake design data. The following information related to seismic *loads* shall be shown, regardless of whether seismic *loads* govern the design of the lateral force-resisting system of the *structure*:

1. *Risk category*.
2. Seismic importance factor, I_e .
3. Spectral response acceleration parameters, S_s and S_1 .
4. *Site class*.

5. Design spectral response acceleration parameters, S_{DS} and S_{D1} .
6. *Seismic design category*.
7. Basic seismic force-resisting system(s).
8. Design base shear(s).
9. Seismic response coefficient(s), C_S .
10. Response modification coefficient(s), R .
11. Analysis procedure used.

C Providing the earthquake load design basis on the construction documents facilitates the plan review process. All buildings, except those indicated in the exceptions to Section 1613.1, are to be designed for earthquake effects. The earthquake design data for a specific building are required to meet or exceed the minimum requirements established by Section 1613.

1603.1.6 Geotechnical information. The design load-bearing values of soils shall be shown on the *construction documents*.

C Load-bearing values for soils must be documented so that the foundation design can be verified.

1603.1.7 Flood design data. For *buildings* located in whole or in part in *flood hazard areas* as established in Section 1612.3, the documentation pertaining to design, if required in Section 1612.4, shall be included and the following information, referenced to the datum on the community's *Flood Insurance Rate Map (FIRM)*, shall be shown, regardless of whether *flood loads* govern the design of the *building*:

1. *Flood design class* assigned according to ASCE 24.
2. In *flood hazard areas* other than *coastal high hazard areas* or *coastal A zones*, the elevation of the proposed *lowest floor*, including the basement.
3. In *flood hazard areas* other than *coastal high hazard areas* or *coastal A zones*, the elevation to which any nonresidential *building* will be dry floodproofed.
4. In *coastal high hazard areas* and *coastal A zones*, the proposed elevation of the bottom of the lowest horizontal structural member of the *lowest floor*, including the basement.

C ASCE 24 requires each building and structure to be assigned to a "Flood Design Class," which is then used throughout the standard to specify elevation requirements and floodproofing limitations. The flood hazard elevation information to be shown on the construction documents by the registered design professional provides information that allows the building official to facilitate the plan review process. By providing the design documentation required in Section 1612.4 and by citing the specified flood information, the registered design professional is indicating that the building was designed in accordance with the flood hazard requirements of Section 1612. If any portion of a building is in a flood hazard area, then the building must meet the corresponding flood requirements.

Depending on the nature of the flood hazard area (flood zone), certain elevation requirements are to be met. In flood hazard areas other than coastal high hazard areas and coastal A zones, the lowest floor of all buildings and structures or the elevation to which nonresidential buildings are dry floodproofed must be located at or above the elevation specified in Section 1612.2, which references ASCE 24.

In coastal high-hazard areas (commonly called V or VE zones) and coastal A zones, the bottom of the lowest horizontal structural member must be located at or above the elevation specified in Section 1612.

1603.1.8 Special loads. Special *loads* that are applicable to the design of the *building*, *structure* or portions thereof, including but not limited to the *loads* of machinery or equipment, and that are greater than specified floor and roof *loads* shall be specified by their descriptions and locations.

C Indication of special loads on the construction documents facilitates the plan review process. The design professional is expected to identify any special loads that the occupancy will impose on the structure. These could include the operating weight of specialty equipment. There are also instances outside of Chapter 16 where the code specifies loading criteria that the structural design must address. For example, Section 415.9.2 requires that liquid petroleum gas facilities be in accordance with NFPA 58. In that document, a room housing a liquefied petroleum gas distribution facility must be separated from an adjacent use with ceilings and walls that are designed for a static pressure of 100 psf (4.79 kN/m²).

1603.1.8.1 Photovoltaic panel systems. The *dead load* of rooftop-mounted *photovoltaic panel systems*, including rack support systems, shall be indicated on the *construction documents*.

C Providing the loads caused by photovoltaic panel systems facilitates the plan review process. Although dead loads are not generally provided on the construction documents, the dead loads from photovoltaic panel systems can affect large areas of a structure's roof and should be provided, including the weight of rack supports and any ballast.

1603.1.9 Roof rain load data. Design rainfall intensity, i (in/hr) (cm/hr), and roof drain, *scupper* and overflow locations shall be shown regardless of whether rain *loads* govern the design.

C Indicating the design rainfall intensity on the design documents facilitates the plan review process.

SPECIAL INSPECTIONS AND TESTS

General Comments

In this chapter, the code sets minimum quality standards for the acceptance of materials used in building construction. It also establishes requirements for special inspections, structural observations and load testing.

Section 1701 contains the scope statement, while Section 1702 contains the general statement for testing of new materials.

Section 1703 addresses the approval process and labeling by approved agencies. Special inspections, contractor responsibility and structural observation are specified in Section 1704.

Section 1704 also includes detailed requirements pertaining to the statement of special inspections.

Section 1705 contains detailed special inspection and verification requirements for various building elements based on the type of construction involved. Included are special inspection and verification requirements for steel, concrete, masonry, wood, soils, deep foundations, wind, seismic, fire resistance, Exterior Insulation and Finish Systems (EIFS) and smoke control, and mass timber. Structural testing and qualification for seismic resistance is also addressed in Section 1705.

The general requirements for determining the design strengths of materials are in Section 1706.

Section 1707 provides for an alternative test procedure in the absence of approved standards.

Section 1708 includes requirements for field load testing of a structure.

Section 1709 includes requirements for preconstruction load testing of materials and methods of construction that are not capable of being designed by an approved analysis.

Chapter 17 provides information regarding the evaluation, inspection and approval process for any material or system proposed for use as a component of a structure. These are general requirements that expand on the requirements of Chapter 1 relating to the roles and responsibilities of the building official regarding approval of building components. Additionally, the chapter includes general requirements relating to the roles and responsibilities of the owner, contractor, special inspectors and architects or engineers.

Purpose

This chapter provides procedures and criteria for: testing materials or assemblies; labeling materials; systems and assemblies; and special inspection and verification of structural assemblies.

SECTION 1701—GENERAL

1701.1 Scope. The provisions of this chapter shall govern the quality, workmanship and requirements for materials covered. Materials of construction and tests shall conform to the applicable standards listed in this code.

C This chapter gives provisions for quality, workmanship, testing and labeling of all materials covered within. In general, all construction materials and tests must conform to the standards, or portions thereof, that are referenced in the code. This chapter provides requirements for materials and tests when there are no applicable standards. Specific tests and standards are referenced in other chapters of the code. Additionally, this chapter provides basic requirements for labeling construction materials and assemblies, and for special inspection and verification of structural systems and components.

SECTION 1702—NEW MATERIALS

1702.1 General. New *building* materials, equipment, appliances, systems or methods of construction not provided for in this code, and any material of questioned suitability proposed for use in the construction of a *building* or *structure*, shall be subjected to the tests prescribed in this chapter and in the *approved* rules to determine character, quality and limitations of use.

C Testing is required to be performed on materials that are not specifically provided for in the code. For example, suppose a manufacturer of a sandwich panel consisting of aluminum skins and a foam plastic core wishes to use this panel as an exterior weather covering. The material does not conform to any of the standards referenced in Chapter 14, so an appropriate test protocol must be developed. The same provision for acceptance of alternative materials is already given in Section 104.2.3. That section provides a strong, definitive statement for performance requirements for alternative materials, requiring the proposed alternative to be equivalent to that prescribed by the code in quality, strength, effectiveness, durability and safety. Section 1701.2 simply reasserts that alternative materials (new materials) may be used, as long as the performance characteristics and quality can be established.

SECTION 1703—APPROVALS

1703.1 Approved agency. An *approved agency* shall provide all information as necessary for the *building official* to determine that the agency meets the applicable requirements specified in Sections 1703.1.1 through 1703.1.3.

C This section specifies the information that an approved agency must provide to the building official to enable him or her to determine whether the agency and its personnel have the requisite qualifications to provide adequate quality control.

1703.1.1 Independence. An *approved agency* shall be objective, competent and independent from the contractor responsible for the work being inspected. The agency shall disclose to the *building official* and the *registered design professional in responsible charge* possible conflicts of interest so that objectivity can be confirmed.

C As part of the basis for a building official's approval of a particular inspection agency, the agency must demonstrate its competence and objectivity. The competence of the agency is judged by its experience and organization, and the experience of its personnel. To avoid conflicts of interest, the inspection agency must be independent from the contractor performing the work. In cases where the contractor hires and coordinates the special inspector, the conflict of interest can be mitigated if the owner pays for the special inspector. In some instances, the contractor is also the owner. In those cases, care should be exercised to verify that the special inspector is not influenced by the conflict of interest.

For example, suppose that ACME Agency is the inspection agency employed by Builders, Inc. for factory-built fireplaces. During an investigation of the agency, it is discovered that ACME and Builders are subsidiaries of the same parent company, Conglomerate, Inc. The inspection agency and manufacturer clearly have a relationship that is undesirable from the standpoint of independence. Similarly, suppose that a general contractor hires an inspection agency to perform inspection services. This could also create a conflict of interest situation if the inspection agency needs to reject the work of the firm that is paying them.

1703.1.2 Equipment. An *approved agency* shall have adequate equipment to perform required tests. The equipment shall be periodically calibrated.

C As part of judging the ability of a testing or inspection agency, the building official should assess whether the agency has the proper equipment to perform the required tests or inspections.

1703.1.3 Personnel. An *approved agency* shall employ experienced personnel educated in conducting, supervising and evaluating tests and *special inspections*.

C The competence of an inspection or testing agency is also based on the experience and training of its personnel. If the personnel lack the requisite experience, they are less likely to catch critical errors.

If the services being provided by the inspection or test agency come within the purview of the professional registration laws of the state in which the building is being constructed, the building official should request evidence that the personnel are qualified to perform the work in accordance with this professional registration law.

1703.2 Written approval. Any material, appliance, equipment, system or method of construction meeting the requirements of this code shall be *approved* in writing after satisfactory completion of the required tests and submission of required test reports.

C So that there is a documented record of the approval and basis for it, including any conditions or limitations, the building official must approve the submission in writing. The code also requires the approval to be granted within a reasonable period of time, after all documentation has been satisfactorily developed and submitted, so as to avoid any unnecessary delay in completion of construction.

1703.3 Record of approval. For any material, appliance, equipment, system or method of construction that has been *approved*, a record of such approval, including the conditions and limitations of the approval, shall be kept on file in the *building official's* office and shall be available for public review at appropriate times.

C Written approvals must be kept on file by the building official and be available and open to the public. This provides reasonable access to the records on approvals of materials and systems should there be any subsequent investigation or further evaluation.

1703.4 Performance. Specific information consisting of test reports conducted by an *approved agency* in accordance with the appropriate referenced standards, or other such information as necessary, shall be provided for the *building official* to determine that the product, material or assembly meets the applicable code requirements.

C Where conformance to the code is predicated on the performance and quality of products, materials or assemblies, the building official must require the submittal of testing reports from an approved agency.

1703.4.1 Research and investigation. Sufficient technical data shall be submitted to the *building official* to substantiate the proposed use of any product, material or assembly. If it is determined that the evidence submitted is satisfactory proof of performance for the use intended, the *building official* shall approve the use of the product, material or assembly subject to the

requirements of this code. The costs, reports and investigations required under these provisions shall be paid by the *owner* or the *owner's* authorized agent.

C This section is usually used in conjunction with Section 104.2.3 when analysis of any construction material, including new and innovative materials, is required to determine code compliance. The analysis is based entirely on technical data. All costs of testing and investigations must be paid by the applicant.

1703.4.2 Research reports. Supporting data, where necessary to assist in the approval of products, materials or assemblies not specifically provided for in this code, shall consist of valid research reports from *approved sources*.

C Reports prepared by approved agencies, such as those published by organizations affiliated with model code groups, may be accepted as part of the information needed by the building official to evaluate proposed construction and form the basis for approval. Such reports can supplement building department resources by eliminating the need for the building official to conduct a detailed analysis on each new product, material or system. It is important that such material be truly objective and credible, and not consist merely of the manufacturer's brochures or similar proprietary information. It is also important to note that when utilizing research reports issued by organizations affiliated with model code groups to evaluate code compliance, the building official is not mandated to approve these reports just because the code is the legally adopted building code in the jurisdiction. These reports are not code text. They are advisory only and intended for technical reference.

1703.5 Labeling. Products, materials or assemblies required to be *labeled* shall be *labeled* in accordance with the procedures set forth in Sections 1703.5.1 through 1703.5.4.

C This section provides requirements for third-party inspection of the manufacturer of a material or assembly that must be labeled. The materials or assemblies required to be labeled are given in other chapters of the code, the *International Mechanical Code*® (IMC®), the *International Fire Code*® (IFC®) and the *International Plumbing Code*® (IPC®). Labeling provides a readily available source of information that is useful for field inspection of installed products. The label identifies the product or material and provides other information that can be investigated further if there is any question as to its suitability for the specific installation.

Some examples are gas appliances, fire doors, prefabricated construction (when the building official does not inspect it), electrical appliances, glass, factory-built fireplaces, plywood and other wood members when used structurally, lumber and foam plastics.

1703.5.1 Testing. An *approved agency* shall test a representative sample of the product, material or assembly being *labeled* to the relevant standard or standards. The *approved agency* shall maintain a record of the tests performed. The record shall provide sufficient detail to verify compliance with the test standard.

C As a basis for the allowed use of an agency's label, the agency is required to perform testing on the material or product in accordance with the standard(s) referenced by the code. For example, Section 903.1 of the IMC requires that factory-built fireplaces be tested in accordance with the referenced standard UL 127 and states that factory-built fireplaces are required to be listed and labeled by an approved agency.

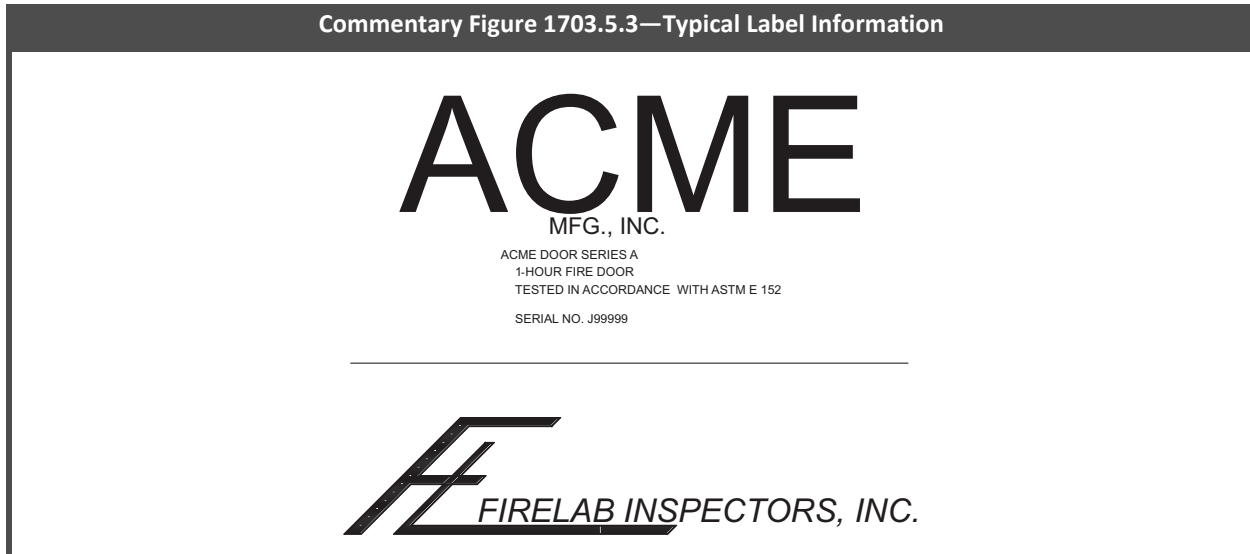
1703.5.2 Inspection and identification. The *approved agency* shall periodically perform an inspection, which shall be in-plant if necessary, of the product or material that is to be *labeled*. The inspection shall verify that the labeled product, material or assembly is representative of the product, material or assembly tested.

C The approved agency whose label is to be applied to a product must perform periodic inspections. The primary objective of these inspections is to determine that the manufacturer is, indeed, making the same product that was tested. For example, using the factory-built fireplace discussed in the commentary to Section 1703.5.1, if the fire chamber wall in the test was 3/8-inch-thick (9.5 mm) steel, the inspection agency must check to see that this thickness is being used. If the manufacturer has decided to use 1/4-inch (6.4 mm) steel, then the inspection agency would be required to withdraw the use of its label and listing.

1703.5.3 Label information. The *label* shall contain the manufacturer's identification, model number, serial number or definitive information describing the performance characteristics of the product, material or assembly and the *approved agency's* identification.

C This section lists the information that is required on a label (see Commentary Figure 1703.5.3). The purpose is to provide sufficient information for the inspector to verify that the installed product is consistent with what was approved during the plan review process.

Commentary Figure 1703.5.3—Typical Label Information



1703.5.4 Method of labeling. Information required to be permanently identified on the product, material or assembly shall be acid etched, sand blasted, ceramic fired, laser etched, embossed or of a type that, once applied, cannot be removed without being destroyed.

C The section requires that permanent labeling be of a nature that cannot be removed and specifies acceptable methods of permanent labeling.

1703.6 Evaluation and follow-up inspection services. Where structural components or other items regulated by this code are not visible for inspection after completion of a prefabricated assembly, the *owner* or the *owner's* authorized agent shall submit a report of each prefabricated assembly. The report shall indicate the complete details of the assembly, including a description of the assembly and its components, the basis upon which the assembly is being evaluated, test results and similar information and other data as necessary for the *building official* to determine conformance to this code. Such a report shall be *approved* by the *building official*.

C As an alternative to physical inspection by the building official in the plant or location where prefabricated components such as modular homes, trusses, etc., are manufactured, the building official has the option of accepting an evaluation report from an approved agency detailing such inspections.

1703.6.1 Follow-up inspection. The *owner* or the *owner's* authorized agent shall provide for *special inspections* of fabricated items in accordance with Section 1704.2.5.

C The owner is required to provide special inspections of fabricated assemblies at the fabrication plant in accordance with Section 1704.2.5. Special inspections are intended to verify that the assemblies are constructed properly, with particular attention paid to those elements that cannot be easily observed after fabrication.

1703.6.2 Test and inspection records. Copies of necessary test and *special inspection* records shall be filed with the *building official*.

C All testing and inspection records related to a fabricated assembly must be filed with the building official so as to maintain a complete and legal record of the assembly and erection of the building components.

SECTION 1704—SPECIAL INSPECTIONS AND TESTS, CONTRACTOR RESPONSIBILITY AND STRUCTURAL OBSERVATION

1704.1 General. *Special inspections* and tests, statements of *special inspections*, responsibilities of contractors, submittals to the *building official* and *structural observations* shall meet the applicable requirements of this section.

C Section 1704 provides minimum requirements for special inspections and tests, including what is required to be included in the statement of special inspections, the conditions that would require structural observation as well as contractor responsibility requirements related to construction of the lateral force-resisting systems for wind and seismic loads.

1704.2 Special inspections and tests. Where application is made to the *building official* for construction as specified in Section 105, the *owner* or the *owner's* authorized agent, other than the contractor, shall employ one or more *approved agencies* to provide *special inspections* and tests during construction on the types of work specified in Section 1705 and identify the *approved agencies* to the *building official*. These *special inspections* and tests are in addition to the inspections by the *building official* that are identified in Section 110.

Exceptions:

1. *Special inspections* and tests are not required for construction of a minor nature or as warranted by conditions in the *jurisdiction* as *approved* by the *building official*.