

CONSTRUCTION DOCUMENTS - What Are They and Who Can Prepare Them?

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Areas we will discuss:

- ◆ What are Construction Documents?
- ◆ Who can (*or are required to*) prepare them?
- ◆ What should you expect to provide in them?
- ◆ Electronic submissions
- ◆ Requirements per:
 - 2005 CT State Bldg Code (and anticipated 2016 CSBC)
 - ◆ 2003 IBC (and anticipated 2012 IBC)
 - ◆ 2009 IRC (and anticipated 2012 IRC)
 - ◆ CT Amendments

Terms Used in the Codes

- ◆ CONSTRUCTION DOCUMENTS
- ◆ DESIGN (or *designed*)
- ◆ SHOP DRAWINGS
- ◆ DESIGN PROFESSIONAL
- ◆ ENGINEERING

These terms should alert you to expect to provide written or graphic information

Construction Documents

◆ Definition:

Written, graphic and pictorial documents prepared or assembled for describing the design, location and physical characteristics of the elements of a project **necessary** for obtaining a building permit.

– 2003/2012 IBC Sect. 202.0 Definitions

- ◆ Should a plan reviewer have to guess or figure out whether a project complies with code?

Design

◆ Term not defined in code:

To plan by making a preliminary sketch, outline or drawing...To create or execute in an artistic or highly skilled manner

– Webster's Dictionary

Design

◆ Example of usage:

1607.7.1 Handrails and guards. Handrail assemblies and guards shall be designed to resist a load of 50 plf (0.73 kN/m) applied in any direction at the top and to transfer this load through the supports to the structure.

Shop Drawings

◆ Term not defined in code:

Shop Drawings are drawings, diagrams, schedules and other data specially prepared for the Work by the Contractor or a Subcontractor, Sub-subcontractor, manufacturer, supplier or distributor to illustrate some portion of the work.

– AIA General Conditions

Shop Drawings

◆ Commonly used for:

- Prefabricated wood or metal framing (*trusses*)
- Sprinkler systems (106.1.1.1)
- Concrete reinforcement
- Structural steel fabrication & erection (*framing, stairs, etc.*)
- Guardrail systems

Design Professional

◆ Definition of "Registered Design Professional":

*An **architect, engineer or interior designer**, registered or licensed to practice professional architecture, engineering or interior design, as defined by the statutory requirements of the professional registration laws of the State of Connecticut, and acting within the scope of his or her practice.*

– 202.0 Definitions (CT amend.)

Engineering

◆ Term not defined in codes.

◆ Paragraph 1614.3:

*"...provided that an **engineering** analysis is submitted indicating the following..."*

[EB] 1614.3 Alterations. Alterations are permitted to be made to any structure without requiring the structure to comply with Sections 1613 through 1623 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 Sections 1613 through 1623 for a new structure.

Who can prepare construction documents?

- ◆ Building owner, homeowner?
- ◆ Contractor, builder?
- ◆ Drafting service, unlicensed designer?
- ◆ Licensed architect?
- ◆ Professional Engineer?
- ◆ Registered Interior Designer?

Any unlicensed person can prepare construction documents when...

- ◆ Under 5,000 SF (*exterior dimensions*)
 - New construction (*with exceptions*)
 - Additions (*with exceptions*)
 - Alterations
- ◆ 1 & 2 Family Dwellings (*IRC*)
- ◆ Agricultural Building

Reference: CGS 20-298

An architect or engineer is required when...

- ◆ Project 5,000 SF or more (*exterior dimensions*)
CGS Section 20-298
- ◆ New construction or additions of Use Groups A, E, I, H or R-1, regardless of size
 - Includes shop dwgs review & construction observation
CGS 29-276c & SBC Section 106.1.4
- ◆ 3 stories or more or over 30,000 SF total gross area of Use Groups B, F, M & S
 - Includes shop dwgs review & construction observation
SBC Section 106.1.4
- ◆ Nontransient dwellings units, more than 16 units or 24,000 SF total gross area
 - Includes shop dwgs review & construction observation
CSBC Section 106.1.4

What can an architect do?

◆ **“Practice of architecture”** defined:

...rendering or offering to render service by consultation, investigation, evaluations, preliminary studies, plans, specifications and coordination of structural factors concerning the aesthetic or structural design and contract administration of building construction or any other service in connection with the designing or contract administration of building construction...

-CGS Section 20-288

What can an engineer do?

◆ **Engineering** is defined as:

...rendering or offering to render to clients any professional service such as consultation, investigation, evaluation, planning, design or responsible supervision of construction, in connection with any public or privately-owned structures, buildings, machines, equipment, processes, works or projects in which the public welfare or the safeguarding of life, public health or property is concerned or involved... -CGS 20-299

◆ Can perform minor architectural work:

The practice of engineering by a professional engineer licensed under the provisions of chapter 391, and the performance by such professional engineer of architectural work for which such professional engineer is qualified by education and experience and which is incidental to such professional engineer's engineering work -CGS 20-298

-Attorney General's Opinion 08/02/1991

What can an engineer do?

Attorney General's Opinion - August 2, 1991

To: Board of Examiners for Professional Engineers and Land Surveyors

In your letter, dated February 5, 1991, you requested our opinion concerning whether there are any limitations on a licensed professional engineer's authority to design buildings. You have noted the overlap of practices between architecture and professional engineering with regard to design of buildings and have asked us to review this matter.

The answer to your inquiry is that state regulations and statutes limit an engineer's authority to design buildings.

What can an engineer do?

Under the State's licensing mechanism, the issuance by the Board of examiners of a professional engineer's license does not automatically limit the use of that license to a particular discipline within professional engineering. At present, the Board offers examinations in fourteen such disciplines.

The Board's Code of Ethics restricts the nature of projects a licensee may undertake. The professional engineer may undertake assignments "only when qualified by education or experience in the specific technical field of professional engineering" involved. Reg. Conn. Agencies, D.C.P., § 20-300-12(a)(2). Whereas a structural engineer may be familiar with many aspects of building design and construction, this may not be true of an electrical engineer. Licensees have an ethical responsibility to limit their practice to those professional services for which they are qualified by education or experience.

What can an engineer do?

While we recognize the overlap in the practice of architecture and engineering, we also recognize the limitations on engineers set forth in the architect's chapter. Conn. Gen. Stat. § 20-298 of the architectural chapter exempts "the practice of engineering by a professional engineer licensed under the provisions of chapter 391, and the performance by such professional engineer of architectural work for which he is qualified by education and experience and which is incidental to his engineering work." (Emphasis added). This exemption section specifically limits such cross practice to situations where the practice of architecture is "incidental" to work being performed by the engineer. Therefore, for example, to be permitted to perform architectural design, an engineer must first be working on an engineering project. See Conn. Op. Atty. Gen. 382 (1987) (Letter to Anthony Masciarelli), dated October 20, 1987.

What can an engineer do?

Ultimately, it is the local building official who is empowered to "accept or approve" only those plans or specifications that are sealed by a licensed architect or a licensed professional engineer. Conn. Gen. Stat. § 20-293. Under Section 110.1 of the Connecticut State Building Code, it is the responsibility of the building official to "pass upon any question relative to the mode, manner of construction or materials to be used in" building construction. Reg. Conn.. Agencies, Public Safety, § 29-252-1a(110.1). Applying these statutory and regulatory guidelines, the building official may determine, for example, that the engineer lacks the education and experience to perform that architecture or that the architectural design work is not "incidental" to engineering work being performed by the engineer.

What can an engineer do?

In conclusion, a professional engineer's authority to design buildings may be limited by: 1) his lack of education or experience in that particular phase of engineering; 2) the fact that the design work being performed is not incidental to engineering work; or 3) the determination of a local building official that an architect's seal is required on the plans.

Very truly yours,

RICHARD BLUMENTHAL
ATTORNEY GENERAL

Neil G. Fishman
Assistant Attorney General

What can a registered interior designer do?

- ◆ CGS 20-377k (I.D. title law):

...prepares plans and specifications for non-load-bearing interior construction, materials, finishes, space planning, reflected ceiling plans, furnishings, fixtures and equipment relative to the design of interior spaces in order to enhance and protect the health, safety and welfare of the public.

- ◆ Certificate of Registration

- *No Seal*

- ◆ Doesn't qualify where codes or statutes specify Licensed Architect or Engineer

What can a registered interior designer do?

- ◆ They are "Registered Design Professionals" per code

- ◆ Attorney General's Opinions

- *01/24/1994*
- *05/19/1998*

Why BO's must look for the seal...

◆ CGS Section 20-293 (Architect's seal):

Except for plans for buildings or structures under the provisions of section 20-298, no official of this state or of any city, town or borough therein, charged with the enforcement of laws, ordinances or regulations relating to the construction or alteration of buildings or structures, shall accept or approve any plans or specifications that are not stamped with the seal of a licensed architect or a licensed professional engineer.

Construction Documents for 1 & 2 Family Dwellings

◆ 2009 IRC Section R106 – Construction Documents

R106.1 Submittal documents. Submittal documents consisting of construction documents, and other data shall be submitted in two or more sets with each application for a permit. The construction documents shall be prepared by a registered design professional where required by the statutes of the jurisdiction in which the project is to be constructed. Where special conditions exist, the building official is authorized to require additional construction documents to be prepared by a registered design professional.

Exception: The building official is authorized to waive the submission of construction documents and other data not required to be prepared by a registered design professional if it is found that the nature of the work applied for is such that reviewing of construction documents is not necessary to obtain compliance with this code.

Construction Documents for 1 & 2 Family Dwellings

◆ 2009 IRC Section R106 – Construction Documents

R106.1.1 Information on construction documents.

Construction documents shall be drawn upon suitable material. Electronic media documents are permitted to be submitted when approved by the building official. Construction documents shall be of sufficient clarity to indicate the location, nature and extent of the work proposed and show in detail that it will conform to the provisions of this code and relevant laws, ordinances, rules and regulations, as determined by the building official. Where required by the building official, all braced wall lines, shall be identified on the construction documents and all pertinent information including, but not limited to, bracing methods, location and length of braced wall panels, foundation requirements of braced wall panels at top and bottom shall be provided.

What is an acceptable set of construction documents for a residential project?

◆ “Builder’s Set”? What is that anyway?

◆ IRC breakdown:

- 40% is M/P/E.
- 35% is structural.
- 25% is general planning.

◆ What do your construction documents show?

Construction Documents for Commercial-type Projects (*IBC buildings*)

◆ Definition (202.0):

Written, graphic and pictorial documents prepared or assembled for describing the design, location and physical characteristics of the elements of a project necessary for obtaining a building permit...

Construction Documents (2012 *IBC*)

◆ Section 107 – Submittal Documents

107.1 General.

Submittal documents consisting of construction documents, statement of special inspections, geotechnical report and other data shall be submitted in two or more sets with each permit application. The construction documents shall be prepared by a registered design professional where required by the statutes of the jurisdiction in which the project is to be constructed. Where special conditions exist, the building official is authorized to require additional construction documents to be prepared by a registered design professional.

Exception: The building official is authorized to waive the submission of construction documents and other data not required to be prepared by a registered design professional if it is found that the nature of the work applied for is such that review of construction documents is not necessary to obtain compliance with this code.

Construction Documents (2012 *IBC*)

107.2 Construction documents.

107.2.1 Information on construction documents.

Construction documents shall be dimensioned and drawn upon suitable material. Electronic media documents are permitted to be submitted when approved by the building official. Construction documents shall be of sufficient clarity to indicate the location, nature and extent of the work proposed and show in detail that it will conform to the provisions of this code and relevant laws, ordinances, rules and regulations, as determined by the building official.

107.2.2 Fire protection system shop drawings.

Shop drawings for the fire protection system(s) shall be submitted to indicate conformance to this code and the construction documents and shall be approved prior to the start of system installation. Shop drawings shall contain all information as required by the referenced installation standards in Chapter 9.

Construction Documents (2012 *IBC*)

107.2.3 Means of egress.

The construction documents shall show in sufficient detail the location, construction, size and character of all portions of the means of egress including the path of the exit discharge to the public way in compliance with the provisions of this code. In other than occupancies in Groups R-2, R-3, and I-1, the construction documents shall designate the number of occupants to be accommodated on every floor, and in all rooms and spaces.

Construction Documents (2012 IBC)

107.2.4 Exterior wall envelope.

Construction documents for all buildings shall describe the exterior wall envelope in sufficient detail to determine compliance with this code. The construction documents shall provide details of the exterior wall envelope as required, including flashing, intersections with dissimilar materials, corners, end details, control joints, intersections at roof, eaves or parapets, means of drainage, water-resistive membrane and details around openings.

The construction documents shall include manufacturer's installation instructions that provide supporting documentation that the proposed penetration and opening details described in the construction documents maintain the weather resistance of the exterior wall envelope. The supporting documentation shall fully describe the exterior wall system which was tested, where applicable, as well as the test procedure used.

Construction Documents (2012 IBC)

107.2.5 Site plan.

The construction documents submitted with the application for permit shall be accompanied by a site plan showing to scale the size and location of new construction and existing structures on the site, distances from lot lines, the established street grades and the proposed finished grades and, as applicable, flood hazard areas, floodways, and design flood elevations; and it shall be drawn in accordance with an accurate boundary line survey. In the case of demolition, the site plan shall show construction to be demolished and the location and size of existing structures and construction that are to remain on the site or plot. The building official is authorized to waive or modify the requirement for a site plan when the application for permit is for alteration or repair or when otherwise warranted.

107.2.5.1 Design flood elevations.

Where design flood elevations are not specified, they shall be established in accordance with Section 1612.3.1.

Written documents

◆ Specifications

Examples:

- 07840 – Firestopping
- 09511 – Suspended Acoustical Ceilings
- 15072 – Vibration Isolation and Seismic Restraint

◆ Notes on Drawings

- Code compliance table
- Outline specifications
- Soils report

Graphic Documents

◆ Construction Drawings

- ◆ Site
- ◆ Structural
- ◆ Architectural
- ◆ Mechanical
- ◆ Plumbing
- ◆ Electrical
- ◆ Special Systems

◆ Shop Drawings

- ◆ Prefabricated structural
- ◆ Fire protection
- ◆ Seismic restraint
- ◆ Ductwork

Pictorial Documents

◆ Product technical literature

- ◆ Fire alarm system devices
- ◆ Door hardware
- ◆ Tested assemblies literature
- ◆ Sprinkler system devices
- ◆ Proprietary fire resistance rated barriers

NEXT:

2009 IBC Plan Review Record

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