

Connecticut Code Chronicle

An occasional publication by Harwood Wallace Loomis, Consulting Architect,
for the use and information of the design and code enforcement communities

VOLUME XIII • NUMBER 10

OCTOBER 2026

USING THE IEBC PERFORMANCE METHOD

I'm certain I have commented previously that the IEBC portion of the Connecticut State Building Code is one of the most misunderstood and misused documents in the entire ICC family of model codes. When Connecticut first adopted the IEBC, then-State Building Inspector Chris Laux used to say in OEDM continuing education classes that architects would have to be crazy to use the IEBC. As a licensed architect before I became a licensed building official, I disagreed with Chris. Especially in a state such as Connecticut, with a stock of *very* old buildings that are still in use, there needs to be a way to maintain old and historical buildings in use without forcing owners to break the bank trying to bring everything into compliance with IBC requirements for new construction.

I like to summarize the fundamental principle of the IEBC as “Don’t make it less safe than it is now.” To better understand this concept, it’s helpful to refer to the statement of purpose that precedes Chapter 1 in the IBC Commentary:

A large number of existing buildings and structures do not comply with the current building code requirements for new construction. Although many of these buildings are potentially salvageable, rehabilitation is often cost prohibitive because they may not be able to comply with all the requirements for new construction. At the same time, it is necessary to regulate construction in existing buildings that undergo additions, alterations, renovations, extensive repairs or change of occupancy. **Such activity represents an opportunity to ensure that new construction complies with the current building codes and that existing conditions are maintained, at a minimum, to their current level of compliance or are improved as required. To accomplish this objective, and to make the rehabilitation process easier, this chapter allows for a controlled departure from full compliance with the technical codes, without compromising the minimum standards for the fire prevention and life safety features of the rehabilitated building.**

To paraphrase: “Keep it safe, but don’t go nuts.”

The IEBC can be confusing because it offers three distinct paths for compliance. The choice of which path, or “method” as they are called in the IEBC, to follow is up to the owner and the design professional. We can’t demand that they follow a particular method because that’s the one we know best and are most comfortable looking at when performing a plan review. BUT ... the construction documents have to spell out which IEBC compliance method is being followed. Once the applicant has selected a method, they have to follow that method; they can’t mix and match provisions from different methods in the same project.

The three methods are:

- The Prescriptive Method;
- The Work Area Method; and
- The Performance Compliance Method.

Greatly simplified, the Prescriptive Method essentially comes down to just using the IBC for alterations as well as for additions. What gets submitted in other jurisdictions may vary but my experience has been that the majority of IEBC projects I have reviewed have used the Work Area Method. It is under the Work Area Method that we encounter the classifications of Level 1, Level 2, and Level 3 alterations. By now, most design professionals around the state seem to have a fairly adequate understanding of both of these methods.

We typically receive permit applications based on the Performance Compliance Method much less often than the other two. Many design professionals don’t understand it, and many plans examiners and building officials don’t understand it. Over the course of five years in Middlebury I reviewed two projects that used the Performance Compliance Method. In four years in Southington, I think I reviewed just three, all submitted by the same architecture firm.

Under the 2005 CSBC (2003 IBC) this approach was in Chapter 34 of the IBC, as a section entitled “Compliance Alternatives.” It stayed there through the 2012 I-Codes. It wasn’t until the 2015 ICC code cycle that it was moved from the IBC into the IEBC, in a chapter entitled “Performance Compliance Methods.” Despite the move from the end of the IBC into the IEBC, the methodology hasn’t changed. The building has to be evaluated for a number of different categories of life safety hazard, with point scores assigned based on parameters spelled out in the code. Point scores in each area are assigned for Fire safety, Means of Egress, and General safety. The points in each category get added up, and the totals in all three categories must equal or exceed minimum mandatory scores. If all three meet the minimum mandatory scores, the project is considered to be compliant and we can issue a permit. If the total in one or more categories doesn’t at least equal the minimum mandatory score, the project is not compliant and a permit should not be issued.

It sounds simple enough—until we realize that there are 23 different criteria, each of which has to be rated for Fire Safety, Means of Egress, and General Safety. For *each* criterion, the code provides a table of possible numeric values, followed by a narrative explanation of how to assign the value for that criterion.

Preparing the score sheet represents a lot of work for the design professional. Good for them; they’re (hopefully) getting paid to prepare it. The bad news is that when we receive a permit application based on the Performance Compliance Method, somebody in the office has to review it. We can’t tell the applicant they can’t use that method because we don’t know how to review it. It’s in the code, so they can use it—as long as the building achieves a satisfactory score when reviewed honestly and objectively. The only way to review it is to open the code book, open the plans, conduct your own assessment (based on the explanations and tables in the IEBC) of the numeric values for *each*

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criterion, and see if your numbers agree with the numbers the design professional entered on the score sheet.

More likely than not, one or more of your scores will be different from what the design professional entered. How you choose to proceed if that happens is something each department has to decide. If the scores are different but your numbers still result in a passing score, in my opinion you could just red mark it, stamp it approved, and issue the permit. If the discrepancies are few and small—just a couple of points here and there—it might be possible to resolve the differences with a telephone call.

If there's a big difference, it gets more sensitive. The design professional probably has a lot of time invested in his/her numbers, and won't be happy to learn that what he or she submitted as passing by 5 points you determined is failing by 10 points. In such cases, the options are probably:

- a. Spend a bunch of time writing up a detailed analysis to document how you arrived at your point scores; or
- b. Invite the design professional to come in, and spend a bunch of time going through the plans and the code to see if you can arrive at a score that you both agree is correct (whether that's passing or failing).

Neither approach is likely to make either the owner or the design professional happy. The second is probably the more efficient, because a written denial is almost certain to result in phone calls, arguments, and will most likely end up in a meeting before it gets resolved anyway. Moving directly to inviting the design professional and the owner in so you can explain where you believe their analysis was wrong and discuss other potential options for achieving a passing score shows most proactively that your goal isn't to be an obstruction, but to enforce the code and to end up with a building that's safe (as determined by the IEBC score sheet).

It's important for building officials and design professionals alike to remember that the IEBC Performance Compliance Method is a pass-fail system. The code establishes minimum mandatory scores in three categories, by occupancy classification (Table 1301.8).

Once the score sheet has been added up, the mandatory scores in each category are subtracted and if the result is a positive number or zero, the design passes. Think of it like a 'D' on a course in high school. A 'D' isn't a great grade, but it's not a fail. In the IEBC Performance Compliance Method, a zero is passing, and there is no 'A' or 'A+' for results greater than zero.

1301.9 Evaluation of building safety. The mandatory safety score in Table 1301.8 shall be subtracted from the building score in Table 1301.7 for each category in accordance with the evaluation formulas in Table 1301.9. Where the final score for any category equals zero or more, the building is in compliance with the requirements of this section for that category. Where the final score for any category is less than zero, the building is not in compliance with the requirements of this section.

**TABLE 1301.8
MANDATORY SAFETY SCORES^a**

OCCUPANCY	FIRE SAFETY(MFS)	MEANS OF EGRESS (MME)	GENERAL SAFETY (MGS)
A-1	20	31	31
A-2	21	32	32
A-3	22	33	33
A-4, E	29	40	40
B	30	40	40
F	24	34	34
I-2	19	34	34
M	23	40	40
R	21	38	38
S-1	19	29	29
S-2	29	39	39

- a. MFS = Mandatory Fire Safety.
MME = Mandatory Means of Egress.
MGS = Mandatory General Safety.

In a way, it's also somewhat like a COMcheck report for energy code compliance. Under the IECC, if a designer wants to use more glass in some areas than the prescriptive provisions of the IECC allow, they can add insulation somewhere else to compensate and the COMcheck calculation may determine that the result is equal to or better than a straight prescriptive design. A zero result on the IEBC score sheet is the same as a Pass on a COMcheck report.

The score sheet (Table 1301.7) is attached at the end of this newsletter. If you haven't ever looked at it, this is as good a time as any to do so. Just remember that for each item of building safety, the item has to be evaluated independently for Fire Safety, Means of Egress, and General Safety. For any cell that has four asterisks (****) in it, that item is not scored in that column.

It is also important to expect some resistance by fire marshals. There is no Chapter 13 in the IFC; chapters 13–19 are reserved. Existing buildings are discussed in Chapter 11 of the IFC, and there aren't a lot of general building provisions. The IEBC Performance Compliance Method takes fire safety into account. If your fire marshal isn't happy with that, it becomes his or her battle to justify refusing to sign off on issuing a permit. If you have a passing score (and remember, zero is passing) and you have satisfied yourself that each evaluation on the score sheet is defensible, don't get into an argument with your fire marshal. You will have done your job; let the fire marshal worry about the fire marshal's job.

It's not a bad idea to ask your fire marshal if he/she wants a member of his/her staff to consult on reviewing the fire safety scores on the score sheet. Interdepartmental cooperation is always something worth pursuing.

UPCOMING CODE CHANGES

The 2024 I-Codes added a number of new provisions within Section 104: Duties and Powers of the Code Official. As of the December 12, 2025 draft of the proposed Connecticut Amendment, as with previous editions of the Connecticut State Building Code, all of this material is deleted from the IMC, the IPC, and the IEBC. Instead, in all of those other codes we are referred to the IBC. Some of these new provisions give building officials more flexibility in enforcing the intent of the codes.

From the 2024 ICC model codes:

104.2 Determination of compliance.

The *building official* shall have the authority to determine compliance with this code, to render interpretations of this code and to adopt policies and procedures in order to clarify the application of its provisions. Such interpretations, policies and procedures:

1. Shall be in compliance with the intent and purpose of this code.
2. Shall not have the effect of waiving requirements specifically provided for in this code.

As has been the case with previous editions of the codes, the proposed Connecticut Amendments delete the phrase “to render interpretations of this code” in order to bring the code into compliance with statutes, which establish that only the State Building Inspector is authorized to make interpretations of the building codes.

In the Connecticut Amendments, all of Section 104.2 from the IMC, IPC, and IEBC is referred back to Section 104.2 of the IBC. The IBC language is the same as the above, but the proposed Connecticut Amendment adds a third condition:

3. Shall not have the effect of establishing requirements in excess of those set forth in this code.

This third criterion for determining compliance with the code is important for the purpose of ensuring that we have one, *uniform* state building code in Connecticut. If each building official were allowed to add his or her own requirements, we would not have a uniform code and no architect or contractor would know what to expect when taking on a project in a different municipality.

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104.2.1 Listed compliance.

Where this code or a referenced standard requires equipment, materials, products or services to be listed and a listing standard is specified, the listing shall be based on the specified standard. Where a listing standard is not specified, the listing shall be based on an *approved* listing criteria. Listings shall be germane to the provision requiring the listing. Installation shall be in accordance with the listing and the manufacturer’s instructions, and where required to verify compliance, the listing standard

and manufacturer’s instructions shall be made available to the *building official*.

It has always been required that materials and equipment be installed in accordance with any applicable listings and manufacturers’ instructions. In the course of plan reviews, when I have questioned whether or not a product or material is allowed where it is shown, I have often been provided with a listing that doesn’t include the proposed use in the product listing. This new provision gives us a more solid basis for rejecting such products, or for asking for a listing that applies specifically to the proposed use. A listing that certifies a product is suitable for something different from the way it is proposed to be used means nothing. This codifies that fundamental concept.

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The IBC added a new section, 104.2.2 Technical assistance, with several subsections. The proposed Connecticut Amendments delete the new section 104.2.2 and all its subsections in their entirety.

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104.2.3 Alternative materials, design and methods of construction and equipment.

The provisions of this code are not intended to prevent the installation of any material or to prohibit any design or method of construction not specifically prescribed by this code, provided **that** any such alternative is not specifically prohibited by this code and has been *approved*.

Exception: Performance-based alternative materials, designs or methods of construction and equipment complying with the International Code Council Performance Code. This exception shall not apply to alternative structural materials or to alternative structural designs.

The proposed Connecticut Amendment removes the word “that” (highlighted above) from the ICC language. The reason for this change is unclear; the deletion does not affect the meaning of the sentence or of the section.

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New subsections 104.2.3.1 through 104.2.3.4 are not changed by the proposed Connecticut Amendments. These new subsections read as follow:

104.2.3.1 Approval authority.

An alternative material, design or method of construction shall be approved where the building official finds that the proposed alternative is satisfactory and complies with Sections 104.2.3 through 104.2.3.7, as applicable.

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104.2.3.2 Application and disposition.

Where required, a request to use an alternative material, design or method of construction shall be submitted in writing to the building official for approval. Where the alternative material, design or method of construction is not approved, the building official shall respond in writing, stating the reasons the alternative was not approved.

104.2.3.3 Compliance with code intent.

An alternative material, design or method of construction shall comply with the intent of the provisions of this code.

104.2.3.4 Equivalency criteria.

An alternative material, design or method of construction shall, for the purpose intended, be not less than the equivalent of that prescribed in this code with respect to all of the following, as applicable:

1. Quality.
2. Strength.
3. Effectiveness.
4. Durability.
5. Safety, other than fire safety.
6. Fire safety.

The provision for approval of new and alternate materials or designs was found in section 104.11 of the 2022 CSBC. The fundamental language has not been substantially revised, but the entire section has been reorganized and restructured. In addition, the six criteria for evaluating equivalency have been revised and re-ordered. In the 2022 CSBC, the six criteria were:

- 2.1. Quality.
- 2.2. Strength.
- 2.3. Effectiveness.
- 2.4. Fire resistance.
- 2.5. Durability.
- 2.6. Safety.

These changes don't give building officials any new authority they didn't have before, and they don't take away any authority we had before. The corresponding provisions in the 2022 CSBC were unchanged from the 2021 IBC, and represented a revision from the 2018 IBC. Although the authority of building officials to approve alternate materials and methods has been with us for a long time, obviously the authors of the I-Codes have not been happy with the language and they continue to tweak it. We should be aware of this and read it carefully to ensure that we follow the language based on the code currently in effect.

The codes require the building official to state in writing the reasons for denial if a proposed alternate material or method is not accepted. The codes do *not* require that a building official put any reasons in writing when they approve or accept an alternate material or method. Considering that any action by a building official might become the basis for a lawsuit years in the future, it would be wise (in this author's opinion) for any building official who

accepts an alternate material or method to draft a memo to the project file that spells out how the proposed alternate meets the six enumerated criteria for acceptance.

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104.2.3.5 Tests.

Tests conducted to demonstrate equivalency in support of an alternative material, design or method of construction application shall be of a scale **that is** sufficient to predict performance of the end use configuration. Tests shall be performed by **a party acceptable** to the *building official*.

The language above is the ICC language. The proposed Connecticut Amendments delete "that is" (highlighted), and substitute "an approved agency" for "a party acceptable." The proposed changes do not change the fundamental meaning of the subsection: Tests need to be big enough to provide a valid basis for determining equivalency for the intended purpose, and the agency performing the testing has to be acceptable to the building official.

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104.2.3.5.1 Fire tests.

Tests conducted to demonstrate equivalent fire safety in support of an alternative material, design or method of construction application shall be of a scale that is sufficient to predict fire safety performance of the end use configuration. Tests shall be performed by **a party acceptable** to the *building official*.

The proposed draft of the 2026 Connecticut Amendments revises the words "a party acceptable" to read "an approved agency." The meaning remains the same. If a proposed alternative material, design, or method of construction affects fire safety, any test used to demonstrate that the proposed alternative provides fire safety equivalent to materials or methods explicitly required or allowed by the code have to be tested by an testing agency acceptable to the building official, and the size/scale of the test has to be large enough to constitute an effective demonstration of the material's equivalent fire safety.

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104.2.3.6 Reports.

Supporting data, where necessary to assist in the approval of materials or assemblies not specifically provided for in this code, shall comply with Sections 104.2.3.6.1 and 104.2.3.6.2.

104.2.3.6.1 Evaluation reports.

Evaluation reports shall be issued by an *approved agency* and use of the evaluation report shall require approval by the *building official* for the installation. The alternate material, design or method of construction and product evaluated shall be within the scope of the building official's recognition of the *approved agency*. Criteria used for the evaluation shall be identified within

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the report and, where required, provided to the *building official*.

These two subsections establish that the building official is authorized to require supporting data to back up claims of equivalent safety for proposed alternative materials, designs, or construction methods. Subsection 104.2.3.6.1 establishes that evaluation reports must be produced by an approved agency, and that the building official has the power to review the approved agency's qualifications to conduct the test under review. In other words, XYZ Testing Laboratory, LLC, may be an approved agency for performing concrete testing. If XYZ Testing Laboratory, LLC, submits a report purporting to demonstrate that some new wonder material provides a 2-hour fire resistance rating, the building official has the power to decide whether or not XYZ Testing Laboratory, LLC, is qualified to perform that kind of fire testing.

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The ICC 2024 IBC includes another subsection under 104.2.3.6. That section discusses "Other reports." The proposed draft of the Connecticut Amendments deletes subsection 104.2.3.6.2 in its entirety.

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104.2.3.7 Peer review.

The *building official* is authorized to require submittal of a peer review report in conjunction with a request to use an alternative material, design or method of construction, prepared by a peer reviewer that is *approved* by the building official.

This is an important new subsection. Approving (or "accepting") an alternative material, design, or construction method that isn't addressed by the codes is a power that has to be used with caution. Building officials need this tool to allow for advances in construction technology that the codes haven't caught up with yet, but approving a new material, design, or method of construction is also a tremendous responsibility. As responsible building officials, we don't want to arbitrarily stand in the way of progress, but we also don't want to give away the store.

On large projects where the potential impact of denying or approving a proposed alternate can carry significant consequences, this new subsection gives the building official the authority to require that the materials submitted to support the request for an alternative be reviewed by a peer reviewer approved by the building official.

When exercising the power to approve alternative materials, designs, or methods of construction, the best protection against future lawsuits is documentation. Don't accept or approve alternatives without putting documentation in the file to explain why you decided to approve it.

As our codes and our buildings become more complicated, we often encounter conditions or situations that don't seem to neatly fit into the explicit language of the codes. We can get some help through networking at CBOA meetings, but those are held only once per month, and we usually only talk to the people seated at our table. There's an Internet forum that provides access to experienced building officials, architects, and engineers from all across the United States, and internationally. It's a great resource, and most of it can be accessed for free. A "sawhorse" membership unlocks access to additional features and discussions. I encourage all code officials to check it out and support it by taking out a sawhorse membership.

<https://www.thebuildingcodeforum.com/forum/>

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The editor is a licensed architect and a licensed building official, with more than 40 years of experience. I offer non-structural plan review services for projects of any size, with special rates for municipal building departments.

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What topics would you like to see discussed in future issues? It helps all of us if we can all be on the same page, to avoid those "But I never have to do that in [jurisdiction]" complaints.

Send me an e-mail if you think of any issues that affect all building officials, everywhere.

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TABLE 1301.7
SUMMARY SHEET—BUILDING CODE

Existing occupancy: _____		Proposed occupancy: _____	
Year building was constructed: _____		Number of stories: _____ Height in feet: _____	
Type of construction: _____		Area per floor: _____	
Percentage of open perimeter increase: _____ %			
Completely suppressed:	Yes _____ No _____	Corridor wall rating: _____	
		Type: _____	
Compartmentation:	Yes _____ No _____	Required door closers:	Yes _____ No _____
Fire-resistance rating of vertical opening enclosures: _____			
Type of HVAC system: _____, serving number of floors: _____			
Automatic fire detection:	Yes _____ No _____	Type and location: _____	
Fire alarm system:	Yes _____ No _____	Type: _____	
Smoke control:	Yes _____ No _____	Type: _____	
Adequate exit routes:	Yes _____ No _____	Dead ends:	Yes _____ No _____
Maximum exit access travel distance: _____		Elevator controls:	Yes _____ No _____
Means of egress emergency lighting:	Yes _____ No _____	Mixed occupancies:	Yes _____ No _____
Standpipes:	Yes _____ No _____	Care recipients ability for self-preservation: _____	
Incidental use:	Yes _____ No _____	Care recipients concentration: _____	
Smoke compartmentation less than 22,500 sq. feet (2092 m ²):	Yes _____ No _____	Attendant-to-care recipients ratio: _____	
SAFETY PARAMETERS	FIRE SAFETY (FS)	MEANS OF EGRESS (ME)	GENERAL SAFETY (GS)
1301.6.1 Building height			
1301.6.2 Building area			
1301.6.3 Compartmentation			
1301.6.4 Tenant and dwelling unit separations			
1301.6.5 Corridor walls			
1301.6.6 Vertical openings			
1301.6.7 HVAC systems			
1301.6.8 Automatic fire detection			
1301.6.9 Fire alarm system			
1301.6.10 Smoke control	****		
1301.6.11 Means of egress	****		
1301.6.12 Dead ends	****		
1301.6.13 Maximum exit access travel distance	****		
1301.6.14 Elevator control			
1301.6.15 Means of egress emergency lighting	****		
1301.6.16 Mixed occupancies		****	
1301.6.17 Automatic sprinklers		÷ 2 =	
1301.6.18 Standpipes			
1301.6.19 Incidental use			
1301.6.20 Smoke compartmentation			
1301.6.21.1 Care recipients ability for self-preservation ^a	****		
1301.6.21.2 Care recipients concentration ^a	****		
1301.6.21.3 Attendant-to-care recipients ratio ^a	****		
Building score—total value			

*** No applicable value to be inserted.

a. Only applicable to Group I-2 occupancies.