Connecticut Code Chronicle

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LET'S TALK ABOUT THE IEBC

It's a rare jurisdiction that never sees permit applications to alter, renovate, or repair an existing building. The issue of what code regulates those activities seems to confuse both code officials and applicants. This issue will attempt to clarify that question.

The IRC is a stand-alone code in this regard. All these activities are covered by the IRC when they affect the construction, alteration, movement, enlargement, replacement, repair, equipment, use and occupancy, location, removal and demolition of detached one- and two-family dwellings and townhouses not more than three stories above grade plane in height with a separate means of egress and their accessory structures not more than three stories above grade plane in height. There are, naturally, some exceptions that kick a project out of the IRC but, overall, the IRC is fairly broad in the scope of what it covers.

For everything that is *not* covered by the IRC, however, it appears that most architects basically don't have a clue. If you mention the *Existing Building Code* to them, either their eyes glaze over or you are met with a classic "deer in headlights" look. For some of us, too, the IEBC seems to be somewhat of a mystery. For those of us who were around when Chris Laux was State Building Inspector, you may remember that Chris hated the IEBC. I remember many of his classes in which he told us that an architect or an owner would have to be crazy to use the IEBC. Chris was an architect as well as a building official, so (unfortunately, in my opinion) that attitude spilled over to the architecture profession.

The IEBC is part of the Connecticut State Building Code, so it's important for code officials to become conversant with it. Here's why—from the scoping in the IEBC:

> **[A] 101.2 Scope.** The provisions of this code shall apply to the *repair, alteration, change of occupancy, addition* to and relocation of *existing buildings.*

However, there initially appears to be significant overlap, because the scoping of the IBC portion of the State Building Code seems to include much of the same work:

> **[A] 101.2 Scope.** The provisions of this code shall apply to the construction, *alteration*, movement, enlargement, replacement, *repair*, equipment, use and occupancy, location, maintenance, removal and demolition of every *building* or structure or any appurtenances connected or attached to such *buildings* or structures.

How can two codes cover the same scope? There's no question that it's confusing. If we start to dig, we find that the only references to additions, alterations, and changes of occupancy listed in the IBC index refer to Appendix D—which was not adopted by Connecticut. If we read a bit farther in Chapter 1 of the IBC under Scoping, we find the following:

> **[A] 101.4.7 Existing buildings.** The provisions of the *International Existing Building Code* shall apply to matters governing the *repair, alteration, change of occupancy, addition* to and relocation of *existing* buildings.

What this tells us is that for everything except residential work and new buildings, the IEBC is the starting point for virtually all projects. For any existing building other than one- and two-family house and townhouses, the IEBC governs. If an addition, alteration, or repair project comes in for a permit and the list of codes doesn't include the IEBC, that should automatically be a red flag that whoever did the drawings didn't know what he or she was doing.

"But if I know the IEBC governs, can't I just review to the IEBC?"

Unfortunately, it's not that easy. Way back in time, before the creation of the International Code Council, the Connecticut State Building Code was based on the model codes published by BOCA (Building Officials and Code Administrators International). There was no existing building code under BOCA. Additions, alterations, and repairs were all covered by the *BOCA National Building Code*, right along with new construction. BOCA took a pragmatic approach that was much simpler than the IEBC (but which also didn't allow property owners as much flexibility in their approach): the 25% / 50% rule.

WHAT IS AN EXISTING BUILDING?

Before jumping into the IEBC, since it applies to existing buildings, we need to understand what constitutes an existing building. The IBC (as amended by Connecticut) defines "Existing Building" as follows:

> **EXISTING BUILDING.** A *building* or structure, or portion thereof, erected in whole or in part, for which a legal building *permit* and a certificate of occupancy has been issued. *Buildings* or structures or portions thereof erected prior to October 1, 1970 shall be deemed *existing buildings* regardless of the existence of a legal *permit* or a certificate of occupancy.

The IEBC definition, also amended by Connecticut, mirrors the IBC definition:

> **EXISTING BUILDING.** A *building* or structure, or portion thereof, erected in whole or in part, for which a legal building *permit* and a certificate of occupancy has been issued. *Buildings* or structures or portions thereof erected prior to October 1, 1970 shall be deemed *existing buildings* regardless of the existence of a legal *permit* or a certificate of occupancy.

It is interesting to note that the ICC versions of both the IBC and the IEBC have a definition of "Existing Structure" in addition to the definition of "Existing Building." In modifying the language to use October 1,1970, (the effective date of the first statewide,

mandatory Connecticut State Building Code), Connecticut has combined the two definitions into a single paragraph.

By including all buildings and structures erected prior to October 1, 1970, the code recognizes all buildings and structures in the state that may likely not have been designed or constructed in accordance with any recognized building code, and which probably won't have a certificate of occupancy.

We know that once a building permit has been issued, the codes in effect as of the date the building permit was issued are the codes that apply to construction of the building—even if a new code is adopted before they even put a shovel in the ground. Does that make a permitted but not-yet-constructed building an existing building? The definition says ". . . for which a legal building *permit* and a certificate of occupancy has been issued," so my answer is that a building under construction is not yet an "existing building" for purposes of applying the existing building code. This would also apply to an empty shell building. A shell building typically doesn't have any occupancy declared, because the future tenant(s) are unknown. So we issue a certificate of approval upon completion of the shell, not a certificate of occupancy. If a structure has never had a certificate of occupancy issued, by the Connecticut definition it is not (yet) an existing building. The first tenant fit-out would therefore have to follow the IBC for new construction, whereas subsequent tenant fit-outs would be alterations (and possibly changes of occupancy) under the IEBC.

WHAT NOW?

Once it has been determined that the IEBC is the applicable code, the applicant then has to inform the Building Official (usually by notes on the construction documents) which of three alternate methods of compliance the design follows. This is a choice that is up to the applicant. The Building Official cannot require an applicant to use one method or another, but we *should* require that the construction documents clearly tell us which method is being followed. This requirement is based in IEBC section 301.3:

> **301.3 Alteration, Addition, or Change of Occupancy.** The alteration, addition or change of occupancy of all existing buildings shall comply with one of the methods listed in Section 301.3.1, 301.3.2 or 301.3.3 as selected by the applicant. Sections 301.3.1 through 301.3.3 shall not be applied in combination with each other.
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> **301.3.1 Prescriptive Compliance Method.** Alterations, additions and changes of occupancy complying with Chapter 5 of this code in buildings complying with the International Fire Code shall be considered in compliance with the provisions of this code.
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> **301.3.2 Work Area Compliance Method.** Alterations, additions and changes of occupancy complying with the applicable requirements of Chapters 6 through 12 of this code shall be considered in compliance with the provisions of this code.
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> **301.3.3 Performance Compliance Method.** Alterations, additions and changes of occupancy complying with Chapter 13 of this code shall be considered in compliance with the provisions of this code.

PRESCRIPTIVE COMPLIANCE METHOD

The purpose of the IEBC is to make it possible for owners to continue to use and occupy existing buildings when a strict application of the IBC as if for new construction would not be possible, or would be too expensive. The underlying philosophy is "Don't make it less safe than it is today." This is stated in Chapter 1 of the IEBC:

> **[A] 101.3 Purpose.** The intent of this code is to provide flexibility to permit the use of alternative approaches to achieve compliance with minimum requirements to provide a reasonable level of safety, health, property protection and general welfare insofar as they are affected by the *repair, alteration, change of occupancy, addition* and relocation of *existing buildings*.

Additions under the IEBC have to comply with the IBC for new construction. The confusion typically centers on alterations. Getting down to the basics of the Prescriptive Compliance Method, it calls for compliance with Chapter 5 of the IEBC. Chapter 5, in turn, essentially requires new work to comply with the IBC while allowing existing conditions (with some specific requirements) to remain even if they don't comply with the current code.

WORK AREA COMPLIANCE METHOD

The Work Area Compliance Method seems to be the method that most applicants try to follow, and it is also the method that nobody seems to understand. This method breaks down into three levels of alteration. These are described in IEBC Chapter 6, Classification of Work.

Level 1 is limited to simply replacing or restoring finishes, with NO physical reconfiguration allowed. Basically, think of it as paint and wallpaper, although it can be argued that gypsum wallboard is a finish material as long as the studs are not changed or reconfigured. The work area doesn't make any difference in a Level 1 alteration. Level 1 alterations must comply with Chapter 7 of the IEBC.

Level 2 alterations include the addition or elimination of any door or window, the reconfiguration or extension of any system, or the installation of any additional equipment, and shall apply where the work area is equal to or less than 50 percent of the building area. Level 2 alterations must comply with Chapter 7 and Chapter 8 of the IEBC.

Level 3 alterations apply where the work area exceeds 50 percent of the building area. Level 3 alterations have to comply with Chapters 7, Chapter 8, and Chapter 9 of the IEBC.

Obviously, as the level of alteration increases, the requirements expand to encompass more chapters of the IEBC. Adding or removing even one door or window immediately bumps a project from Level 1 to Level 2. When an alteration passes the 50 percent of the building threshold, it is then effectively into the same realm is the old 50 percent rule under the BOCA code, requiring the entire building to be brought into substantial conformity with requirements for new construction. But under the IEBC Work Area

Method, the 50 percent is the percentage of the work area compared to the total building area; in the BOCA world, it was 50 percent of the building value. Because the 50 percent threshold can have a significant impact on the project scope and cost, it's important to understand what the "work area" includes. The term is defined in Chapter 2 of the IEBC:

> **WORK AREA.** That portion or portions of a building consisting of all reconfigured spaces as indicated on the construction documents. Work area excludes other portions of the building where incidental work entailed by the intended work must be performed and portions of the building where work not initially intended by the owner is specifically required by this code.

Unfortunately, neither the IEBC nor the IBC defines either "reconfigured" or "space," so we are left on our own as to what this definition means. From a pragmatic perspective, my approach is that when a door, window, or wall is added or removed, or when any system is altered, extended, or removed, the room or rooms affected by the addition or removal is/are the reconfigured spaces. This approach is supported by the IEBC Commentary on the definition:

> This section specifically defines the area of all reconfigured spaces where work is expected to occur within the scope of a project. These areas are to be shown clearly on the construction documents. "Incidental" work areas are not required to be shown as work areas. Note that care needs to be taken in designating the work are. For instance, when a voluntary seismic upgrade (Level 2 alteration) is being made throughout a building, it would be reasonable to simply designate only the actual area of seismic upgrade to avoid placing the alteration in a Level 3 inappropriately. Since the work is voluntary, it seems inappropriate for such an upgrade to trigger Level 3 alteration requirements, such as those for automatic sprinkler systems. In this example, only the actual floor area occupied by the columns, beams or walls that are being modified by the seismic upgrade would be included in the "work area." It would be inappropriate to include the floor area of an entire room simply because a wall or other structural element within that room is being altered. The key is that the definition states that the work area consists of "reconfigured spaces." Installing sprinklers or upgrading a structural element typically does not reconfigure a space.

Everyone seems to be confused about when the levels of alteration apply. I recently reviewed a set of construction documents that declared they were using the prescriptive method—and then stated it was a Level 2 alteration. I also saw a 2014 interpretation issued by the Massachusetts BBRS that must have contributed to confusion in our neighboring state. The question was: if the work area method is used for a change of occupancy, did [___] trigger a requirement for sprinklers. The official interpretation was, "Yes" — completely missing the basic point that Level 1, Level 2, and Level 3 apply to alterations, NOT to changes of occupancy. There is no such thing as a work area for a change of occupancy. Likewise, since Level 1 work by definition does not involve any reconfiguration, there is no work area for Level 1 work.

PERFORMANCE COMPLIANCE METHOD

The third method—or path—available to applicants regarding existing buildings is the Performance Compliance Method, which is currently found in Chapter 13 of the IEBC. Those who have been around for a while may recall this this was previously found in Chapter 34 of the IBC portion of the 2005 CSBC, under section 3410, Compliance Alternatives.

Under this method someone—preferably an experienced architect or code consultant—analyzes a number of features and elements of the building on the basis of what's existing and what improvements are intended to be made. For each item evaluated, a score is recorded on the worksheet. At the end, the scores are added up and compared to minimum mandatory scores in three categories. If the building score is equal to or higher than the mandatory minimum in all three categories, the proposed design is considered to be safe and a permit can be issued. A failing score in even one category is a failure, and that means the permit cannot be issued.

Very few architects know how to prepare a performance compliance evaluation, and very few code officials know how to review it. The evaluations take time to prepare, which is probably why we don't see them more often, and they take a lot of time to review properly. That said, it IS an applicant's option to follow this approach, so if someone submits a set of construction documents accompanied by a performance compliance evaluation worksheet, we have to accept it and review it. Do NOT just look at the score at the bottom and issue the permit. A proper review means sitting down with the worksheet, the IEBC open to Chapter 13, and the construction drawings. Be sure to review each item the applicant claims positive point scores for. We have to allow applicants to use this method *if they can demonstrate a passing score,* but we don't have to accept their score without checking it. In fact, we have a duty and a responsibility to check it.

If the applicant's worksheet shows a passing score and your review disagrees, you can (and should) reject the worksheet and ask for changes to the design to improve the scores. If an applicant can't generate a passing score that stands up under a careful review—you can't issue the permit. At that point, the applicant has the option of choosing one of the other methods of compliance under the IEBC, or abandoning the project.

Be careful not to get drawn into becoming the applicant's design professional. Answering questions to clarify the code is one thing. Suggesting possible ways to comply is a different matter. The problems can arise if you "suggest" something, the applicant decides to incorporate that suggestion into the design, and then the design fails for some reason. The applicant may then complain that "I did exactly what the building official told me to do, and then he failed me anyway." The line between being helpful and potentially entrapping yourself by being TOO helpful is not clear, so do your best to stay as far away from it as possible. (It's worse for me, since I am also an architect. I have to remind applicants that I am *an* architect, but I am not *their* architect..

CHANGE OF OCCUPANCY

In the IEBC, change of occupancy has its own chapter, Chapter 10. Chapter 10 distinguishes between changes of use (which are not defined by the code) and changes of occupancy (which are defined

by the code). There is nothing in Chapter 10 about levels of changes occupancy. The confusion may arise because Chapter 10 says that any work undertaken in connection with a change of occupancy must comply with the requirements for the work as classified in Chapter 6. The levels are assigned to the physical work to be done; the change of occupancy does not have levels.

A major consideration in changes of occupancy in existing buildings is sprinklers. A change of occupancy may trigger a requirement to install automatic sprinklers in the portion of the building undergoing a change of occupancy, or even the entire building.

> **1011.2.1 Fire sprinkler system.** Where a change in occupancy classification occurs or where there is a *change of occupancy* within a space where there is a different fire protection system threshold requirement in Chapter 9 of the *International Building Code* that requires an automatic fire sprinkler system to be provided based on the new occupancy in accordance with Chapter 9 of the *International Building Code.* The installation of the automatic sprinkler system shall be required within the area of the *change of occupancy* and areas of the building not separated horizontally and vertically from the change of occupancy by one of the following:
>
> 1. Nonrated permanent partition and horizontal assemblies.
> 2. Fire partition.
> 3. Smoke partition.
> 4. Smoke barrier.
> 5. Fire barrier.
> 6. Fire wall.

It's important to note that this section allows **portions** of a building to be protected by automatic sprinklers. Under the IBC, the general rule is that a building is not considered to be sprinklered unless the entire building is sprinklered. Here, the IEBC opens to door to providing sprinkler protection only to area that undergo a change of occupancy, and then only if the change is to an occupancy that's in a higher hazard category in Chapter 9 of the IBC.

In keeping with the underlying philosophy of "Don't make it less safe," the IEBC in general does not require upgrades to means of egress unless a change of occupancy is to a higher hazard classification in the following table:

TABLE 1011.5
MEANS OF EGRESS HAZARD CATEGORIES

RELATIVE HAZARD	OCCUPANCY CLASSIFICATION
1 (Highest Hazard)	H
2	I-2, I-3, I-4
3	A; E; I-1; M; R-1; R-2; R-4, Condition 2
4	B; F-1; R-3; R-4, Condition 1; S-1
5 (Lowest Hazard)	F-2, S-2, U

Where a change of occupancy classification is made to an equal or lesser-hazard category (higher number) as shown in Table 1011.5, existing elements of the means of egress shall comply with the requirements of Section 905 [of the IEBC, not the IBC] for the new occupancy classification. Newly constructed or configured means of egress shall comply with the requirements of Chapter 10 of the *International Building Code*.

CONCLUSIONS

The IEBC is a part of our State Building Code. Except for one- and two-family dwellings and townhouses, it's the starting point for any project involving an existing building. The underlying philosophy is "Don't make it less safe." Once we understand that, and remain aware of the proper classification of the work in an existing building, the IEBC offers applicants a lot of flexibility, and it can make the building official's life easier, as well, by grandfathering many pre-existing conditions that might otherwise have to be addressed as violations under the IBC.

Harwood W. Loomis, RA, NCARB
Licensed Architect / Licensed Building Official
203-393-3470
e-mail: harwood.w.loomis@att.net

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 [town]" complaints.

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