

Home Inspections
And
Building Code Compliance

Or

When Did That Become a Requirement?

By George P. Wells, CMI

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Introduction

As home inspectors, we do not inspect for compliance with construction codes. To do so would require memorizing dozens of building codes spanning a hundred years or more. Furthermore, we would need to know exactly when specific codes were being enforced in specific geographic areas. However, though we do not inspect for building code compliance and while we do not need to know all the codes throughout construction history, it can be helpful to know some of the history behind construction practices. Knowing why things are as they are helps us to better understand and distinguish between that which is acceptable and that which is not acceptable.

Historical questions come up often, usually in the form of “When did **xxx** become a requirement?” It is OK to ask the question. However, a word of caution is in order. There is very rarely one correct answer to historical questions of the type “when did **xxx** become a requirement”. The answer always depends on the location. Over the years, various building codes have come and gone. Some codes have been combined with others. States, provinces, counties and cities often have building codes that may override other building codes or they adopt certain portions of one code and certain portions of another code. Out of necessity, they also may define an order of precedence among building codes.

Migration of Construction Standards and Practices

Certain practices become standard in one region but do not spread to other regions for many years. The building code I have worked with most is the National Electrical Code published by the National Fire Protection Association. Even the National Electrical Code is not adopted at the same time in all locations or in its entirety. Overall, the NEC is more likely today to be adopted sooner and in its entirety today than in the past.

I have been teaching NEC update classes for electrical license holders in both Ohio and Michigan since 1992. Here in Michigan the majority of electricians assumed for years that the state intentionally stayed one full NEC cycle behind. It caused some confusion when Michigan recognized a recent NEC edition for only about one year.

Across the border in Ohio, things really got confusing when the state adopted the 2008 NEC then later decided to use the 2005 NEC for some installations and the 2008 NEC for others. To complicate matters further, counties and cities in Ohio can have codes that amend, modify, or conflict with the NEC. Some Ohio counties have no building code enforcement at all. Consequently, buildings are built every day with many building code violations. Contractors and residents in counties where building codes are not enforced believe that lack of enforcement means that they have no building codes. That is not true. The fact that they have no one to enforce the building codes does not mean that the codes do not exist.

In the 1970s and 1980s, I spent a lot of time working on projects in different states. Sometimes the differences from one locale to another were so great you would not even have thought that there was such a thing as a **National** Electrical Code. What is acceptable or not acceptable often comes down to a single inspector's authority and opinion.

Such was the case when in 1984 the City of Toledo began requiring a second made electrode, typically an eight-foot driven round rod. Installing a ground rod was not a big deal. What was a big deal was that the ground rod was required in some areas of the city but not in others. That is still not the worst of it. If a city electrical inspector worked in a different part of the city to cover for an inspector who was off, he would require things to be done his way, not the way the inspector normally working the area required. Twenty-something years later, I am inspecting homes in the same neighborhoods where I once wired houses. I see these inconsistencies and it brings back memories – some good and some not so good. One thing is for sure. There is no way I can say that an installation was done right or wrong in any particular house at any particular time. At least in the city of Toledo, it depended on which inspector was on duty the day the original installation was inspected.

A Trend Toward Greater Standardization

Construction standards were almost nonexistent in North America before 1900 and not as uniform across North America throughout most of the 1900s as they are today. The big change came in the United States in the 1990's when BOCA, ICBO, and SBCCI merged. We have been on a fast track toward coast-to-coast standardization since then. The NEC has been the standard for the electrical trades for decades but there are fewer regional differences now than there were not all that long ago.

The recent trend has been toward greater standardization but there are still regional and local differences. The differences are not limited to construction practices. Differences can also include different terminology. Components are commonly referred to by brand names as in the case of calling NM cable "Romex" or grounding bushings "OZ bushings".

In the electrical trades, color codes also differ. In some areas, electricians use blue wires exclusively for travelers on three-way and four-way switches. In other areas, electricians use blue wires exclusively for Direct Current circuits. Some electricians call the center-tap of center-tapped grounded Delta connection the "high leg", some call it the "wild leg", and still others call it the "red leg". The center-tapped conductors are orange in some regions, red in others, and brown in some places. To some electricians, yellow insulation means that the conductor can be energized when the main power is off. To other electricians, yellow has no special significance. In some areas, brown wire is used exclusively for low Voltage wiring such as for doorbells and thermostats. In other areas, brown is commonly used for power wiring.

A Hot Topic

One of the hot topics in residential wiring is the practice of terminating two wires under a single screw. The practice is commonly called “double-tapping”. With practices such as the two wires under a screw rule, it is not always a matter of a particular jurisdiction specifically excluding NEC requirements from the local building codes.

There have been provisions in various codes, including the NEC, for many decades that require components to be used as they were designed to be used. Since most grounding terminal strips have always been designed for only a single conductor under a screw, that effectively made a rule regarding combining a grounding conductor and a grounded conductor under a single screw a moot point. However, not everyone agrees with the general termination rule. It has been common in many areas not to enforce the single conductor rule. Worse still, many electricians, including electrical inspectors, have been largely unaware of the fire risk caused by loss of the ground.

Inspectors in a particular area may have been well aware of the one-wire-on-a-terminal rule but did not agree with it and did not enforce it. The fact that certain inspectors do not choose to enforce certain requirements does not mean that the requirements do not exist. Sometimes it is that they just do not enforce certain provisions. Conversely, sometimes a practice can be common for many years before anyone thinks to codify the practice. That is why it is so hard to pin down specific requirement dates.

Residential split-phase systems are always solidly grounded. It is imperative that the integrity of the ground be maintained. Loss of ground (neutral) in split phase systems is a leading cause of electrical fires and one of the easiest to prevent. The NEC has been moving in the direction of trying to prevent these types of fires by adding language and specific provisions that address the problem more

directly than in the past. If two grounded conductors were terminated under a single screw and the connection were to become loose, it would be possible to have a Voltage anywhere from 120V to 240V impressed on 120V circuits and appliances.

This is a classic example of how awareness and enforcement have changed but the basic principles and rules have been with us for many years. A long standing practice with fire department investigators was to cite the cause of a fire as being electrical if they had ruled everything else out. If it wasn't anything else, it had to be electrical, right? Well, maybe. Further, investigators assumed that if the cause of the fire was electrical then it must have been either an overloaded circuit or a "short circuit". "Short circuit" was, and still is, a catchall term that people outside the electrical trades apply to a wide variety of conditions.

As fire investigations become more sophisticated, investigators are identifying causes of fires more precisely and the overall body of knowledge continues to grow. Organizations such as the National Fire Protection Association and the Consumer Product Safety Commission are in turn better able to disseminate that information to building inspectors and other building professionals. As building inspectors gain a better understanding of the causes of electrical fires, they naturally shift their enforcement toward prevention of electrical fires. Here again, we can see why it can be very difficult to identify exactly when the practices such as one-wire-on-a-terminal became a requirement.

Conclusion

Learn what you can about building codes. The knowledge is not going to hurt you. Do yourself a favor though. Do not attempt to memorize many codes. You will benefit more by understanding the history of the development building codes and the reasons behind current code requirements. Once you understand what it is that a rule is designed to accomplish, you will be better able to make good judgment calls in a wider variety of situations. As the old adage goes, “A little knowledge is dangerous”. That is certainly true when it comes to building codes. Knowing the rule without knowing the logic and reasons behind the rule can lead to disaster.

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