CHAPTER 1: GENERAL REQUIREMENTS

Many people skip Chapter 1 of the *NEC* because they want something prescriptive—they want something that tells them what to do, cookbook style. But electricity isn't a simple topic you can jump right into. You cannot just follow a few simple steps to get a safe installation. You need a foundation from which you can apply the *NEC*.

Consider Ohm's law. Would Ohm's Law make sense to you if you did not know what an Ohm is? Similarly, you must become familiar with a few basic rules, concepts, definitions, and requirements that apply to the rest of the *NEC*, and you must maintain that familiarity as you continue to apply the *NEC*.

Chapter 1 consists of two main parts. Article 100 provides definitions so people can understand one other when trying to communicate on *Code*-related matters. Article 110 provides general requirements that you need to know so you can correctly apply the rest of the *NEC*.

Time spent learning this general material is a great investment. After understanding Chapter 1, some of the *NEC* requirements that seem confusing to other people—those who do not understand Chapter 1—will become increasingly intuitive to you. That is, they will strike you as being "common sense," because you'll have the foundation from which to understand and apply them. Because you'll understand the principles upon which many *NEC* requirements in later Chapters are based, you'll read those requirements and not be surprised at all. You'll read them and feel like you already knew them.

ARTICLE 100

DEFINITIONS

Have you ever had a conversation with someone, only to discover what you said and what he/she heard were completely different? This happens when one or more of the people in a conversation do not understand the definitions of the words being used, and that's why the definitions of key terms are located right up in the front of the *NEC*, in Article 100.

If we can all agree on important definitions, then we speak the same language and avoid misunderstandings. Because the *NEC* exists to protect people and property, we can agree it's very important to know the definitions presented in Article 100.

Now, here are a couple of things you may not know about Article 100:

- Article 100 contains the definitions of many, but not all, of the terms used throughout the *NEC*. In general, only those terms used in two or more articles are defined in Article 100.
- Part I of Article 100 contains the definitions of terms used throughout the *NEC*.
- Part II of Article 100 contains only terms that apply to systems that operate at over 600V.

How can you possibly learn all these definitions? There seem to be so many. Here are a few tips:

- Break the task down. Study a few words at time, rather than trying to learn them all at one sitting.
- Review the graphics in the textbook. These will help you see how a term is applied.
- Relate them to your work. As you read a word, think of how it applies to the work you're doing. This will provide a natural reinforcement of the learning process.

- A new term, "system bonding jumper," was added for use with separately derived systems. Previously the term "main bonding jumper" was used to describe the bonding jumper that was installed between the metal case of a derived system and one of the separately derived system conductors.

Bonding Jumper, System. The conductor, screw or strap that bonds the metal parts (equipment grounding (bonding) conductor) of a separately derived system to the grounded conductor (typically the XO terminal at a transformer). (Figure 100-1)

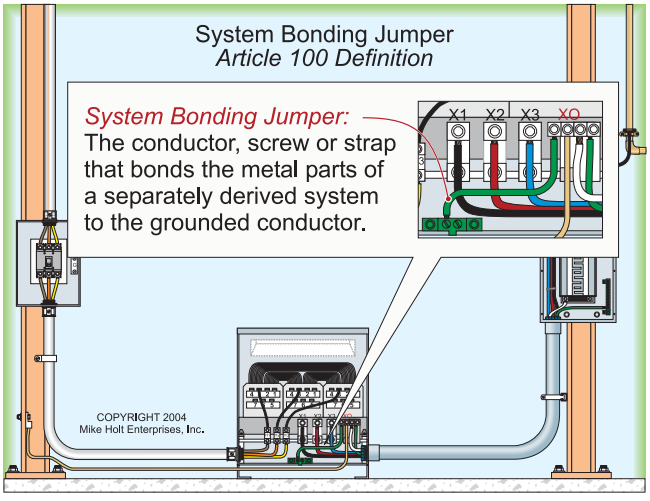

Figure 100-1

Author's Comment: *The system bonding jumper provides the low-impedance path to the source neutral for fault current to facilitate the clearing of the fault by opening the circuit protection device. For more information see 250.4(A)(5), 250.28 and 250.30(A)(1).*

• The definition "Selective Coordination" was revised to require selective coordination of overcurrent protection devices to be contingent on an *overcurrent condition (overload, short circuit or ground fault). In the 2002 NEC, [240.2], selective coordination was based on a fault condition* to restrict outages to the equipment affected.

Selective coordination is required for:

- Electrical System Coordination, 240.12
- Motors, 430.52(C)(3)
- Elevators, 620.62
- Fire Pumps, 695.5(C)(2)
- Emergency Power Systems, 700.27
- Legally Required Standby Power Systems, 701.18

The coordination part means the circuit protection scheme confines the interruption to a particular area rather than to the whole system. For example, if someone plugs in a space heater and raises total demand on a 20A circuit to 25A, or if a short circuit or ground fault occurs with selective coordination, the only breaker/fuse that will open is the one protecting just that branch circuit. Without selective coordination, perhaps an entire floor of a building would go dark!

Coordination (Selective). Localization of an overcurrent condition to restrict outages to the circuit or equipment affected, accomplished by the choice of overcurrent-protective devices.

• The definition of the term "device" was revised to clarify that electronic and electromechanical equipment used to control electric energy is considered a device.

Device. A component of an electrical installation that is intended to carry or control, but not consume electrical energy.

Author's Comment: *Devices include receptacles, switches, circuit breakers, fuses, time clocks, controllers, etc., but not locknuts or other mechanical fittings.* (Figure 100-2)

• The definition of a "dwelling unit" was revised to make it consistent with other NFPA standards, like NFPA 101, *Life Safety Code*, without impacting the meaning of the term in the *NEC*.

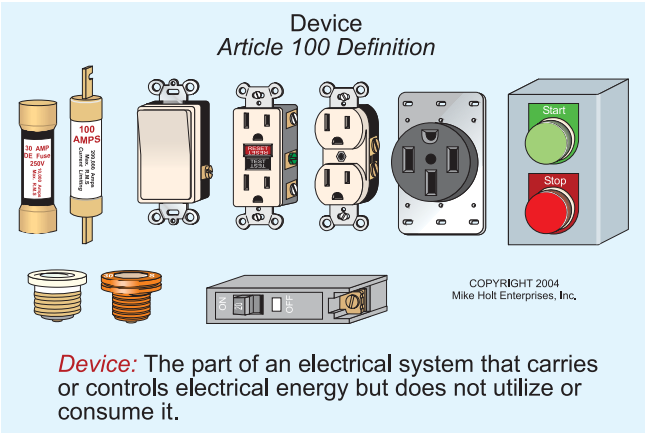

Figure 100-2

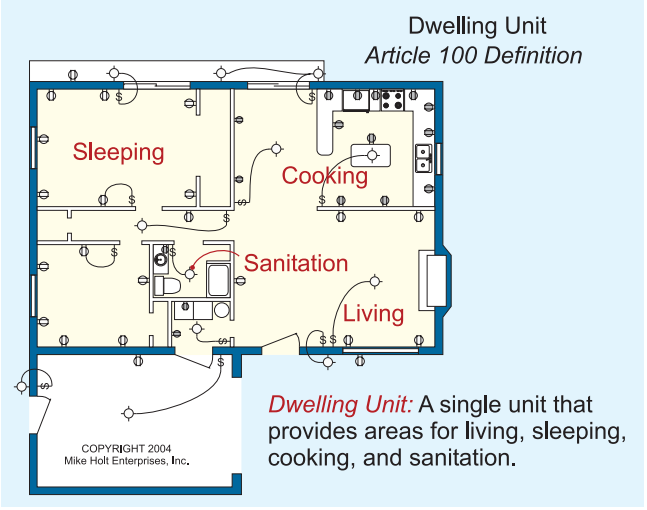

Figure 100-3

Dwelling Unit. A single unit, that provides independent living facilities for persons, including permanent provisions for living, sleeping, cooking, and sanitation. (Figure 100-3)

• The term "solidly grounded" was contained in 230.95, but it was relocated to Article 100 because it's used in at least eleven articles.

Grounded, Solidly. The intentional electrical connection of one system terminal to ground.

Author's Comment: *In reality, solidly grounded means the bonding of the system to the metal case of the derived system in accordance with 250.30(A)(1). (Figure 100-4)*

• A new term "grounding electrode" was added to Article 100 because it's used in twenty-three articles from Article 250 through Article 830.

Grounding Electrode. A device that establishes an