

Kitchen Remodeling

By **BRUCE BARKER, ACI**

ONCE AGAIN, The Word invites you to travel into the dark realm of subjects that are sometimes misunderstood by home inspectors. The Word hopes you will find this trip informative and maybe a little entertaining.

The Word's subject this month is **kitchen remodeling**. The Word finds this subject interesting because remodeling provides so many of the creative deficiencies that we find every day during our inspections and because kitchen remodeling is so popular.

Remember when reading all The Word columns that we're discussing general principles. Something you see in the field isn't always wrong just because it doesn't comply with a general principle. Local building codes and their interpretations, manufacturer's instructions and engineered designs trump general principles.

New standards, old homes

Knowing when to apply new standards in old homes is a challenge. Here are some general guidelines, provided with the previous caveat that local rules and interpretations will vary.

One usually does not need to upgrade existing systems and components (referred to as work) to current standards, but there are exceptions. The existing work must be legal. Existing work that fails to comply with previous standards or with manufacturer's installation instructions is not legal work, is not grandfathered, and therefore is deficient. Exceptions also exist that require upgrading smoke and carbon monoxide alarms to current standards when remodeling requires a permit. A permit is usually required for any structural work and for work involving electrical, HVAC

and plumbing systems except for minor repairs. Interpretation and enforcement of the alarm upgrade provision varies widely.

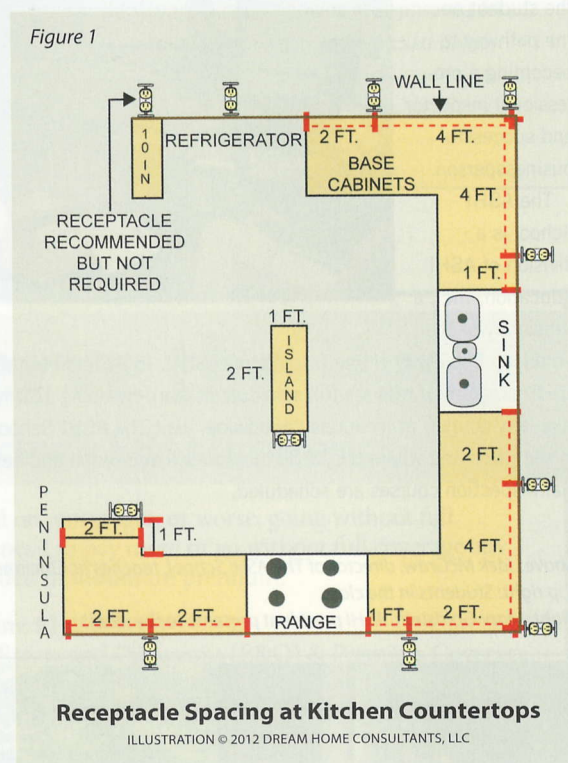
New work should comply with the (current) standards in effect when the work was performed, regardless of the age of any affected existing work and regardless of whether or not a permit was issued. Alterations to, extensions of, and repair of existing work also should comply with current standards. This new work provision is important and often is ignored.

One usually does not need to upgrade any existing work affected by the new work, alterations or repairs unless the existing work is unsafe or unless the building's performance is degraded. This unsafe provision also is important and may provide the rationale for recommending compliance with current standards.

The challenges with these guidelines are to determine where the existing work ends and the new or modified work begins, and to make a judgment call about when and if the existing work is unsafe. This makes for some interesting situations as we'll see in some of the following examples.

Kitchen remodeling electrical issues

A new island or peninsula countertop is added to a kitchen. Should a receptacle be installed



to serve the new island or peninsula? The answer is yes, perhaps more than one. See *Figures 1 and 2*. Do these receptacles need GFCI protection? The answer is again yes. This is new work and it should comply with the current standards.

The remodel entails new countertops and perhaps new doors and drawer fronts. Should additional receptacles be installed to comply with current kitchen countertop receptacle spacing standards? The Word believes that adding receptacles is the smart move, but

adding receptacles may not be required because the receptacles are existing work and because the lack of a few receptacles may not rise to the level where the receptacles are unsafe. One could easily come to a different conclusion on this question.

If the existing countertop receptacles are not GFCI-protected, should they be? The Word believes that, again, adding GFCI protection is the smart move. In this case, safety concerns might require GFCI protection for the existing receptacles. New receptacles, if any, should be GFCI-protected, so it would make sense to do it for the other countertop receptacles as well.

Here are a couple more kitchen electrical issues you might look for. It's very bad practice

exterior receptacle and a kitchen GFCI trips, there's a reportable deficiency.

That new microwave

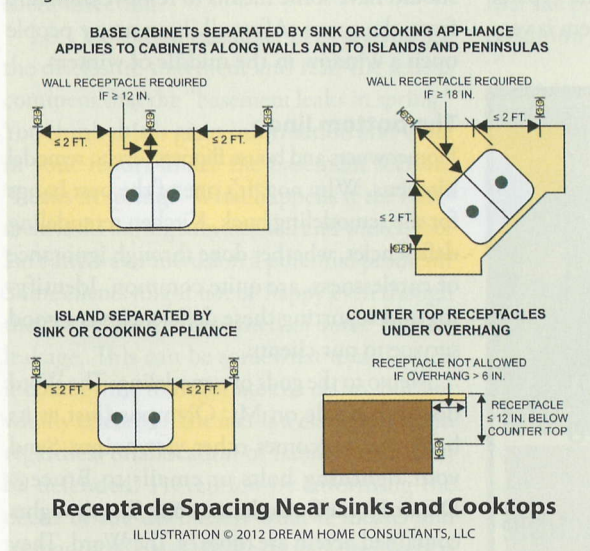
Here's a common situation. The cooking unit exhaust hood is replaced with a microwave oven. Most older exhaust hoods are not on a dedicated electrical circuit. Should a dedicated circuit be installed for the microwave? The answer is yes. Not only is a dedicated circuit effectively required by current standards, it's also required by most manufacturer's instructions. A full-size microwave usually needs a dedicated 20-amp circuit. A smaller microwave may get by with a 15-amp circuit. So, if you test the kitchen receptacle GFCI and the microwave goes out, there's a reportable deficiency.

Another common situation is improper installation of the external exhaust duct. Amateur and careless professional installers often use corrugated flexible material because it's easier to install. *See Photo 1.* It's even worse when they use non-metallic material. *See Photo 2.* (Note: The Word had to look behind the metallic shroud to find this one.) Use of corrugated flexible material is a fire safety hazard because grease can collect in the duct material grooves. This grease is flammable and can ignite. It's also a sanitation issue. Then there's the situation shown in Photo 3. Let's be nice and say this installer needs more training.

Kitchen exhaust systems have minimum installation standards that appear in general standards and in manufacturer's installation instructions. All above-ground kitchen exhaust ducts should be smooth-wall metal, usually galvanized steel, but stainless steel and copper also are acceptable. The minimum round-duct diameter usually is 6 inches and the minimum rectangular duct dimensions usually are 3½ inches by 10 inches. Beware of duct size reduction at the exterior termination cap.

The exhaust system should be airtight from the microwave exhaust outlet to the ►►

Figure 2



to place any refrigerator or freezer on a GFCI circuit (although this bad practice is allowed). The client could lose the appliance contents if the GFCI trips and the problem isn't detected for a while. So, if you test a GFCI receptacle and the refrigerator shuts off, that's a problem you may want to report to your client. The kitchen small-appliance receptacle circuits may not serve receptacles other than receptacles in the kitchen, breakfast area and dining room. Lights and added exterior receptacles are common violators of this standard. So, if you test an



Photo 1: Metal corrugated exhaust duct is a fire hazard.



Photo 2: Plastic corrugated exhaust duct really is a fire hazard.



Photo 3: Sure, this will work — when pigs fly.

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exterior termination point. The exhaust system also should be equipped with a damper. Most externally exhausted microwaves come with a damper module. This damper module frequently is omitted or improperly installed.

When you test the exhaust fan, check for airflow between the top of the microwave and the wall cabinet, at the recirculation exhaust opening and at the hole where the power cord penetrates the wall cabinet floor. If it seems as though there's an excessive amount of air flowing, there may be a problem. The damper module or the damper at the exterior termination cap may be stuck shut causing the air to flow back into the kitchen. The damper module may have been removed during installation causing part of the exhaust to blow into the space between the microwave and the cabinet bottom. Over time, grease could collect on the wood cabinet and ignite.

Here's one more potential problem when installing a microwave where a range hood used to be. The distance between the cooking

surface and the microwave can get quite small, sometimes 14 inches or less. A low-hanging microwave makes it difficult to see the back of the cooking unit and to see the controls. This small space makes cooking inconvenient at best and possibly dangerous at worst. The Word likes to cook and would find this situation very annoying, so he likes to make clients aware of low-hanging microwaves. The Word also recommends confirming that the microwave has been installed according to manufacturer's instructions. Most standard microwave installation instructions require at least 30 inches between the cooking surface and the cabinet.

More about kitchen exhaust systems

You may be surprised to learn, as The Word was, that one might be permitted to install a surface-cooking appliance without any type of range hood, downdraft system or other form of exhaust fan. The absence of some type of range hood or kitchen exhaust system is very

poor practice and is not recommended by some current standards. It's also contrary to client expectations, so The Word points out this absence. Absence of an externally ducted kitchen exhaust system is particularly important to Asian and Middle Eastern clients who cook using curry and other pungent spices.

Now, if a range hood is installed, it should be exhausted outdoors, not to the attic or the crawlspace. The exception allows for a recirculating range hood if natural or mechanical ventilation is provided. Natural ventilation means a window in or near the kitchen. Mechanical ventilation means a whole-house ventilation system such as an Energy Recovery Ventilation system, a Heat Recovery Ventilation system or a duct that supplies outside air to the HVAC return. Given these exceptions, a recirculating range hood almost always is permitted; however, best practice says that all kitchens (and bathrooms for that matter) should have some means to remove moisture from the room. After all, how many people open a window in the middle of winter?

The bottom line

Homeowners and house flippers love to remodel kitchens. Why not? It's one of the best bangs for the remodeling buck. Kitchen remodeling deficiencies, whether done through ignorance or carelessness, are quite common. Identifying and reporting these deficiencies is a good service to our clients.

Memo to the gods of remodeling: The Word does not reside on Mt. Olympus (just at its base) and welcomes other viewpoints. Send your lightning bolts or emails to Bruce@DreamHomeConsultants.com. The thoughts contained herein are those of The Word. They are not ASHI standards or policies. ■



Bruce Barker operates Dream Home Consultants. He has been building and inspecting homes since 1987. He is the

author of "Everybody's Building Code" and currently serves as chair of the ASHI Standards Committee. Bruce will be presenting a session called "Code Quiz" at InspectionWorld Las Vegas, in which the audience will be encouraged to actively participate and have some fun. To read more of Barker's articles, go to www.dreamhomeconsultants.com.

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