Lighting the Kitchen

by Michael De Luca, CKD

Let's face it: Kitchens are expensive, and most people can afford only one kitchen renovation in a lifetime. It's up to us as contractors to guide the homeowner in making the most of his investment. But one subject that's often overlooked in kitchen remodeling is lighting. Too often the choice and placement of light fixtures is based upon what happened to be on sale that week at the local home center.

A well-lit kitchen, on the other hand, provides adequate illumination to the general kitchen area and to specific work, or task, areas and renders the colors of the kitchen's components accurately.

Lighting can be a complex subject, replete with mathematical formulas and unfamiliar words. And there are many variables that affect the results of any lighting scheme, such as wall colors, the reflective quality of surfaces, the amount of sunlight entering the room, and so forth. While it is beyond the scope of this column to cover lighting in depth, there are some concepts you should be familiar with so that you can talk intelligently to your lighting consultant or electrician on your next kitchen rehab.

General and Task Lighting

Two types of lighting are critical to any kitchen: general and task. General lighting provides enough illumination to walk about the room, while task lighting furnishes much brighter illumination to working surfaces, such as countertops. Both types should afford even coverage, leaving no dark or bright spots between lamps. This effect is achieved through the proper spacing of lamps. ("Lamp," as used here, refers to any manmade light source, while "fixture" is the housing or assembly that holds the lamp.)

General lighting. A lamp produces a cone-shaped beam of light that is measured by its beam spread, or width. Different kinds of lamps — such as pin spot, halogen, flood, or fluorescent — produce a beam of light specific to that lamp. For example, this beam may range from a low of 7 degrees for a pin spot to a beam spread of 85 degrees for a flood. It's the width of this beam that determines the spacing of fixtures.

Half-cone method. Figure 1 represents a kitchen cross-section with two ceiling light fixtures. The new kitchen will have work surfaces at 36 inches — which I want my general lighting to illuminate.

Since the room is 120 inches across, to provide uninterrupted illumination at 36 inches, each light cone must be 60 inches wide at counter height (120 inches divided by two fixtures). A half cone is 30 inches wide. Therefore, the first fixture would be 30 inches from the wall and the spacing between fixtures 60 inches. The same result is obtained by dividing the number of half cones (4) into the width of the room (120 inches).

It doesn't matter how many fixtures are used, the half-cone method will always yield even spacing. But if the cones overlap too much, there will be a bright spot; if they don't meet, there will be a dark area. For example, using three fixtures spaced 40 inches apart would produce overlapping bright

Calculating Beam Spread of Recessed Light Fixtures

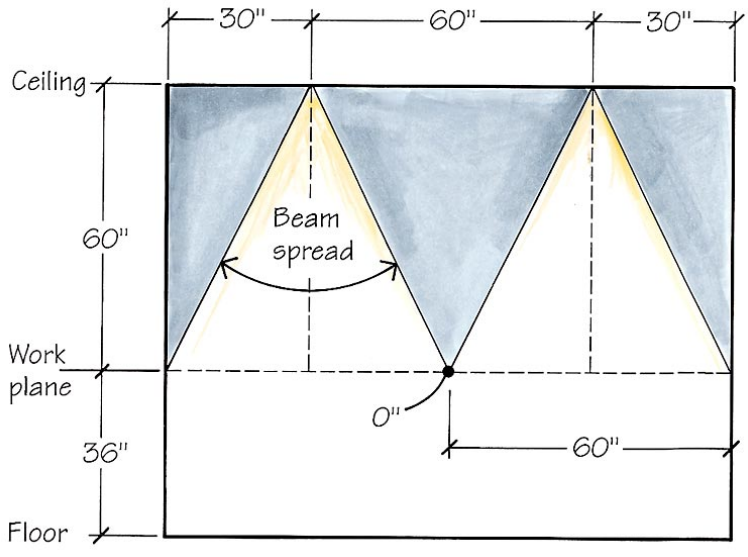

Figure 1. The objective in lighting a kitchen is to have continuous light coverage at 36 inches above the floor, normal countertop height. Since the room is 120 inches wide, each of the two lamps must cover 60 inches of countertop. Here, the first fixture is 30 inches from the wall.

spots 20 inches across, while a single fixture would leave a large dark area.

Figure 2 shows another kitchen elevation. In this example, I've chosen a lamp with a 55-degree beam angle, which is commonly used in the kitchen. In a typical 8-foot ceiling, the lamp has a beam spread of 62 inches 36 inches from the floor (this information was provided by the lamp manufacturer). The beams intersect 6 inches above the counter, ensuring good coverage with minimal bright spots. The lamps have been shifted to the right from those shown in Figure 1; the left fixture is now 39 inches from the wall. By making this move, the edge of the cone does not create scallops on the face of the wall cabinets. Undercabinet lighting furnishes the counter with brighter task lighting.

Recessed trim. Too often, recessed fixtures are outfitted with black step baffle trim, which absorbs 50% of the light generated by the lamps, greatly reducing their efficiency. Black trim also contrasts with the typical white kitchen ceiling, which breaks up the ceiling and draws the eye upward.

Instead, use white trims. Or even better, use mirrored Alzak or clear specular reflectors. White trims still absorb about 30% of the light, while the Alzak allows virtually all the light to exit the can. Also, the mirrored surface reflects the color of the ceiling, causing it to "disappear" better than white trim. While Alzak fixtures are more expensive, fewer of them are needed because they reflect light more efficiently.

Counter lighting. Good task lighting provides adequate, even illumination to the counter surface as well as the backsplash, which contributes a lot to the kitchen's aesthetics, particularly if the backsplash is tile or wallpaper.

Counter lighting is usually installed behind a light valance attached to the front edge of wall cabinets. I like undercabinet light fixtures that space the lamps 2 inches on-center. Using this spacing allows complete coverage across the bottom of the wall cabinets, distributing light evenly on the counter and the backsplash. Look for fixtures that use xenon-gas-filled festoon lamps; they look like "fat" automotive fuses. These install quickly in lengths up to 12 feet that can be trimmed every 2 inches. The resulting even field of light reduces visual "chop" and creates the illusion of a larger room.

In contrast, undercabinet fluorescent fixtures using "pencil" lamps are available only in limited sizes and leave gaps between fixtures, rendering dark areas on the counter and backsplash. They also yield very poor color, giving an unnatural look to food.

Where there are no wall cabinets, such as over islands or above window sinks, use cans or hanging lamps.

Color

Lamps must reproduce the colors in the room properly. Without a lengthy discussion as to how it all works, keep these guidelines in mind when talking with your electrician or lighting consultant. Lamp specifications are available from lighting supply houses.

Task, accent, and art lighting. Use halogen lamps. PAR halogen or MR16 lamps (small low-voltage lamps) do an excellent job. For art, MR16 lamps are preferred because they throw their heat back and away from the art.

General lighting. Use PAR halogen lamps or compact fluorescents. Compact fluorescent lamps should be about 3,500 Kelvin (they range from 2,700 to 6,500 Kelvin) to approximate the color of halogen lighting that may be used elsewhere in the room. Doing this ensures that all like-colored objects will look the same.

When using other types of fluorescents, remember to use lamps that are over 80 CRI (color rendition index) and between 3,000 and 3,500 Kelvin. CRI rates the a lamp's ability to reproduce an object's color accurately. All compact fluorescent lamps are over 80 CRI.

Placing Recessed Fixtures

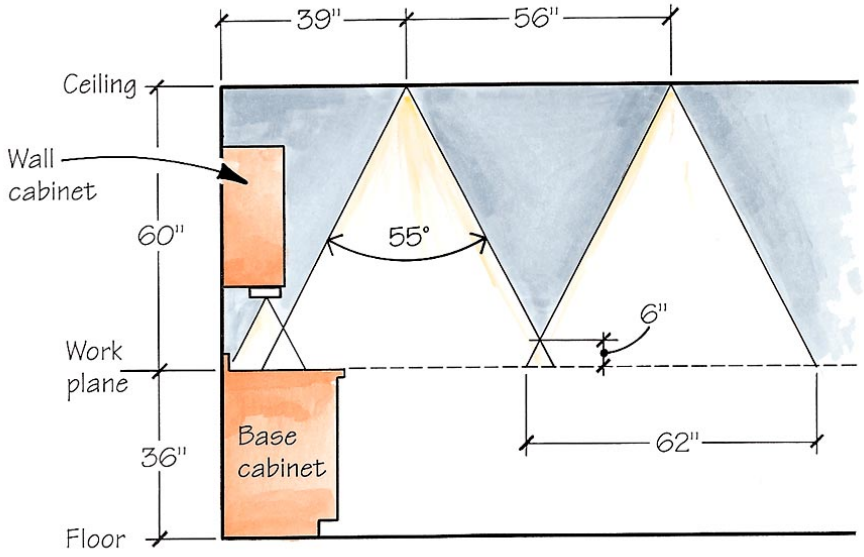

Figure 2. In this kitchen scenario, the lamps have a beam spread of 55 degrees, which provides 62 inches of coverage at countertop height. The fixtures are installed 56 inches apart, producing a 6-inch overlap on the countertop. The first fixture has been shifted to the right to eliminate "scallops" on the wall cabinets, placing it 39 inches from the wall. Undercabinet lighting has been installed for task lighting.

Michael De Luca *is a lighting specialist and the publisher of LightCalc Lighting Design Software (*www.lightcalc.com*; 619/596-0047).*