



Rock-Solid Outdoor Kitchen

Wood framing clad with light manufactured stone veneer provides a solid base for stone countertops

by Clemens Jellema

When I began building decks more than 20 years ago, a project that included an outdoor kitchen was a rarity. Now, over half of our deck designs call for a kitchen, often combined with a roof structure like a pergola or pavilion. It's easy to understand why: Like its indoor counterpart, an outdoor kitchen is a welcoming place that brings people together to talk, eat, drink, and socialize while food is being prepared. An outdoor kitchen is also a great investment that is easy to upsell to clients because it will add value to their home (in my area, ROI can be up to 100%).

Design

We work directly with clients to design their kitchen. Most have a hard time visu-

alizing what they are trying to achieve, so the 3D renderings we create using Real-time Landscaping Architect (reviewed in the November/December 2021 issue of *JLC*) are invaluable during the process.

We start with basic requirements—location, size, privacy concerns, sun exposure, view—and then move to appliances. The main components in most of our designs are a built-in grill with storage below, a fridge, and additional storage. Sometimes, clients think they want an outdoor sink too, but after a conversation about the advantages and disadvantages, often they decide that the added convenience is not worth the extra cost. In fact, most of our outdoor kitchens don't include a sink; instead, we install a built-in ice bin.

Once we've settled on a rough layout, I

create a preliminary 3D rendering with views from different angles, together with an overhead view showing the dimensions. When the plan has been approved, I fine-tune the rendering by adding outlets and light fixtures and adjusting the stone and granite selection.

After we agree on the cost of the project and the contract is signed, I complete the construction drawings and submit the plans to the county permit office for approval.

Framing Requirements

Sometimes the kitchen will be located at grade over a concrete patio, in which case the enclosure walls can be built with 6-inch CMUs. But when the kitchen will be installed on an elevated deck, we frame

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the kitchen with pressure-treated or galvanized steel studs. Even so, the standard 50-pound-per-square-foot design load for an outdoor deck is not sufficient to also support the weight of an outdoor kitchen. Not only do the framing, finishes, and equipment add weight, people tend to gather around this area more.

As a rule of thumb, we double the design loads for the tributary area where the kitchen is going to be installed, so that the dead loads are 20 pounds (instead of 10) per square foot and the live loads are 80 pounds (instead of 40) per square foot. As a result, joist and beam spans are reduced, while the size of footings is increased. To make sure the deck will be strong enough, I have the final plans reviewed by an engineer for approval (see floor plan, right).

Before construction of a kitchen can begin, we make sure all appliances that will require a rough opening are on site. This includes things like storage drawers and ice and trash bins, as well. That way, we can lay out the walls confidently, using cardboard templates cut to the rough-opening requirements of each appliance instead of relying on printed specs.

Prior to installing the decking where this kitchen would be located, we covered any doubled joists with 4-inch-wide G-tape acrylic flashing tape to prevent water from pooling between members. We also installed horizontal blocking between the joists where the perimeter walls for the cabinetry would be located.

We framed the kitchen's perimeter walls with pressure treated 2x4 studs 16 inches on-center, and the bar wall with PT 2x6 studs 16 inches on-center, joining the framing together with 3-inch ring-shank galvanized nails and 3-inch structural exterior screws.

We framed the counter walls so that the finished height after the stone countertop was added would be 38 inches, rather than the standard 36 inches (I like to think bigger when designing and building outdoor kitchens, both in height

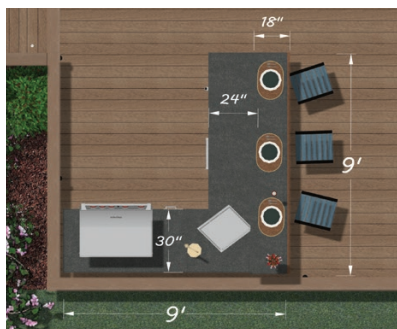
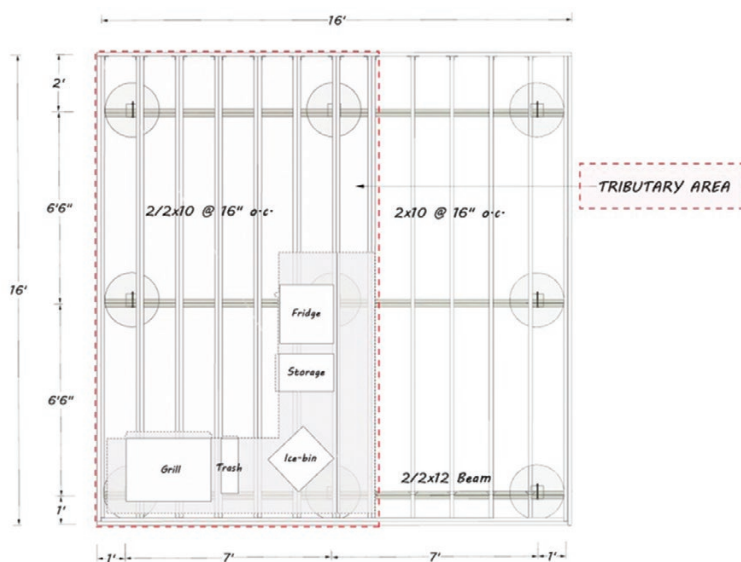


Figure 1. To help his clients visualize the design of their new kitchen, the author used a CAD program to create 3D renderings, including an overhead view with dimensions (left). As shown in the framing plan (below), joists were doubled in the tributary area where the kitchen is located to accommodate the added weight of the kitchen appliances and cabinetry.



and in square footage, to provide extra room for seating, grilling, and dining). We framed the bar wall at 46 inches so that it would be 8 inches higher. We always slope the framing for drainage so that there won't be any standing water on the countertops after a rain shower.

After we framed the walls on the deck, we set them in place and made sure they were level and plumb. Then we used 4-inch exterior structural screws to fasten them to the horizontal blocking installed beneath the decking. As we built the walls, we used cardboard templates cut to the rough-opening requirements of each appliance and accessory to make sure everything would fit, making adjustments as needed. This can be done either before or after the perimeter walls are built.

Clearances for appliances are usually

specified by the manufacturer, but in general, we plan on at least 1/4 inch of space on each side of an appliance. For refrigerators, we leave a clearance of at least 1/2 inch on each side and 1 inch in the back to maximize ventilation.

Utilities. After all the framing was completed, we scheduled the electrician to do the wiring. We like to include at least one or two outlets at the raised bar and one under the cabinet for a transformer for low-voltage lighting. All the wiring is UF-B outdoor-rated cable, which we secured with stainless steel staples where we didn't run it through conduit.

On this project, we included three low-voltage LED light fixtures under the bar, and six recessed floor lights in the work area. All are connected to the transformer that is plugged into an outlet inside one of the cabinets.

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Figure 2. Using cardboard templates sized to fit the appliances (A), workers framed the kitchen's perimeter walls on the deck (B) with pressure-treated 2x4s and 2x6s, then screwed them together and through the decking into blocking installed between the joists (C). The cabinet walls are clad with cement board over a vapor retarder (D).



Figure 3. Masons troweled on a mortar scratch coat over galvanized diamond lath fastened to the cement board (A), then allowed the mortar to cure overnight. When applying the manufactured stone veneer, they started at the corners (B) and worked in sections (C), back-buttering each stone and pressing it into the scratch coat.

Gas grills are typically connected to the main gas line serving the house and need to be installed by a plumber. Fortunately, running the utilities for an outdoor kitchen is pretty straightforward.

Stone-Veneer Finish

To create a substrate for the manufactured-stone-veneer cladding used on this

project, we wrapped the framing with $\frac{1}{2}$ -inch Durock cement board secured with $1\frac{1}{2}$ -inch screws 8 inches on-center. When cement board is used over treated framing lumber or plywood, we install a Class III (medium permeability) vapor retarder underneath the cement board, since it will retain moisture if it gets wet. Without the vapor retarder, any lumber

next to the cement board will always be damp, especially when a kitchen is not covered by some sort of roofing.

After completing the cement-board installation but prior to installation of the stone veneer, we dry-fit the appliances to make sure they would go in smoothly. Then we removed them and put them in a safe area where we knew they wouldn't

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Figure 4. Workers checked the top of the cabinet surface with straightedges (A) and used a grinder to remove high spots (B) to make sure it was flat prior to installing the granite countertop (C). Ipe trim on the bar overhang (D) offers a warm contrast to the stone veneer cladding (E).

get damaged and called the granite company to schedule a measuring for the stone countertop. On this project, the client chose BoraBora granite, a material that is cost effective (between \$35 to \$60 per square foot) and available in our area.

Our client chose Eldorado Shadow Rock manufactured stone veneer (in the color Chesapeake) for the cladding, and ipe for the bar top. We installed the stone veneer over a mortar scratch coat and galvanized wire lath, using stainless-steel roofing nails every 6 inches vertically and every 16 inches horizontally to secure the lath to the cement board.

We mixed up the scratch coat using three parts masonry sand, one part Type S mortar, and water. We let the scratch coat dry a full day before starting installation of the veneer stone.

While stone veneer can have mortared joints, on this project the stone was dry stacked, with no mortar between the

joints. Starting at the corners, the masons worked in 3-foot-by-3-foot sections, first arranging the stone for each section on a piece of plywood to find an aesthetically pleasing look. They used an angle grinder fitted with a diamond blade wherever a stone needed to be cut to fit or to give it a straight edge around an opening.

To set the stones, they used the same mortar mix as the scratch coat, back-buttering each one and pressing it into the scratch coat until a little bit of the mortar squeezed out.

Countertops

Prior to installing the granite countertop, the installation crew carefully checked the top of the cabinet surface with straightedges to make sure it was completely flat. Where necessary, a grinder was used to remove bumps and high spots to prep for installation.

Granite is heavy and needs to be handled with care, so we rounded up as many workers as we could to help out on the day of delivery. Before lowering the countertop into place, we applied an ASTM C920 silicone sealant around the perimeter.

Finally, we covered the bar overhang with a 1x8 ipe board directly secured through the cement-board substrate into the framing with plugged screws and a dab of PL Premium exterior glue. We drilled $\frac{3}{8}$ -inch-diameter holes about $\frac{1}{4}$ inch deep, followed by $\frac{5}{32}$ -inch-diameter holes the rest of the way through the wood. After driving the 2-inch exterior screws into the framing, we placed drops of exterior glue into the holes and filled them with $\frac{3}{8}$ -inch-diameter ipe plugs to give the bar top a finished look. ♦

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