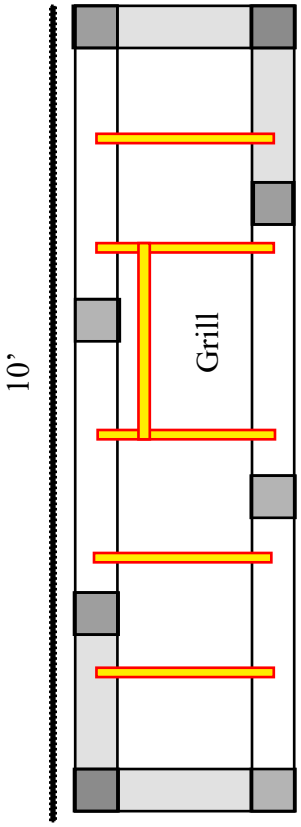
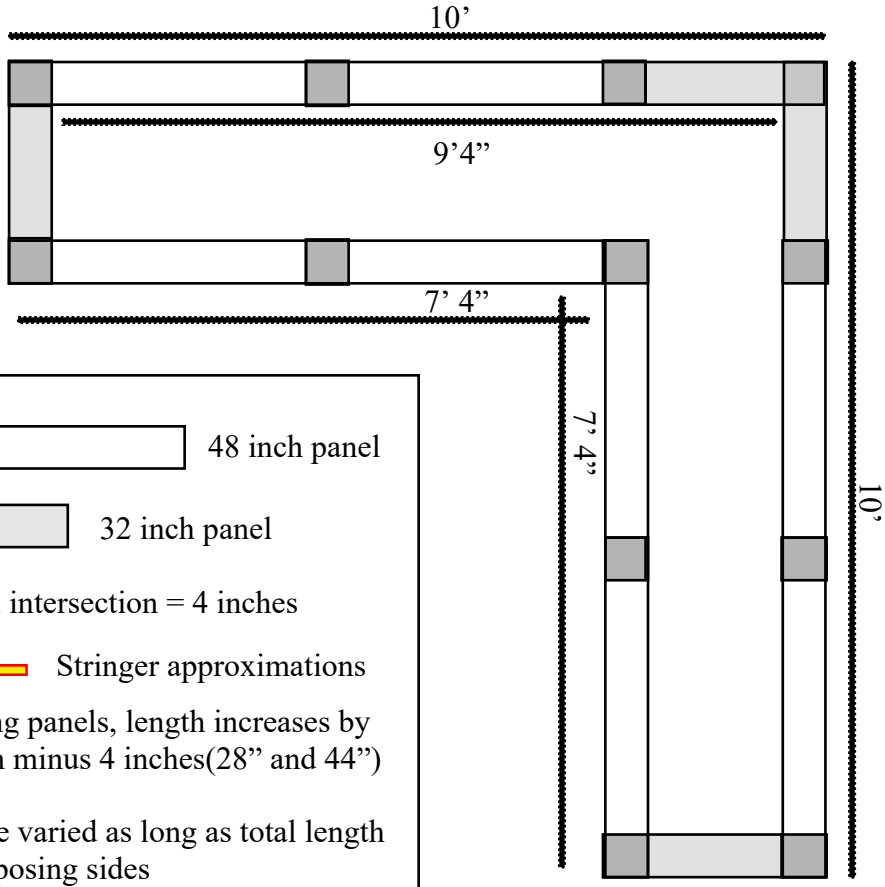
Typical Modular Panel Layouts



10 ft straight



10 ft L

48 inch panel

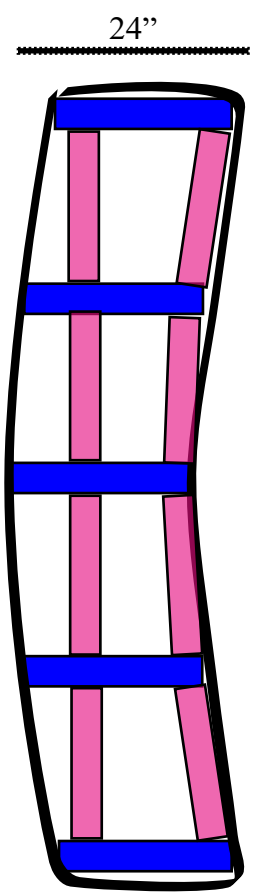
32 inch panel

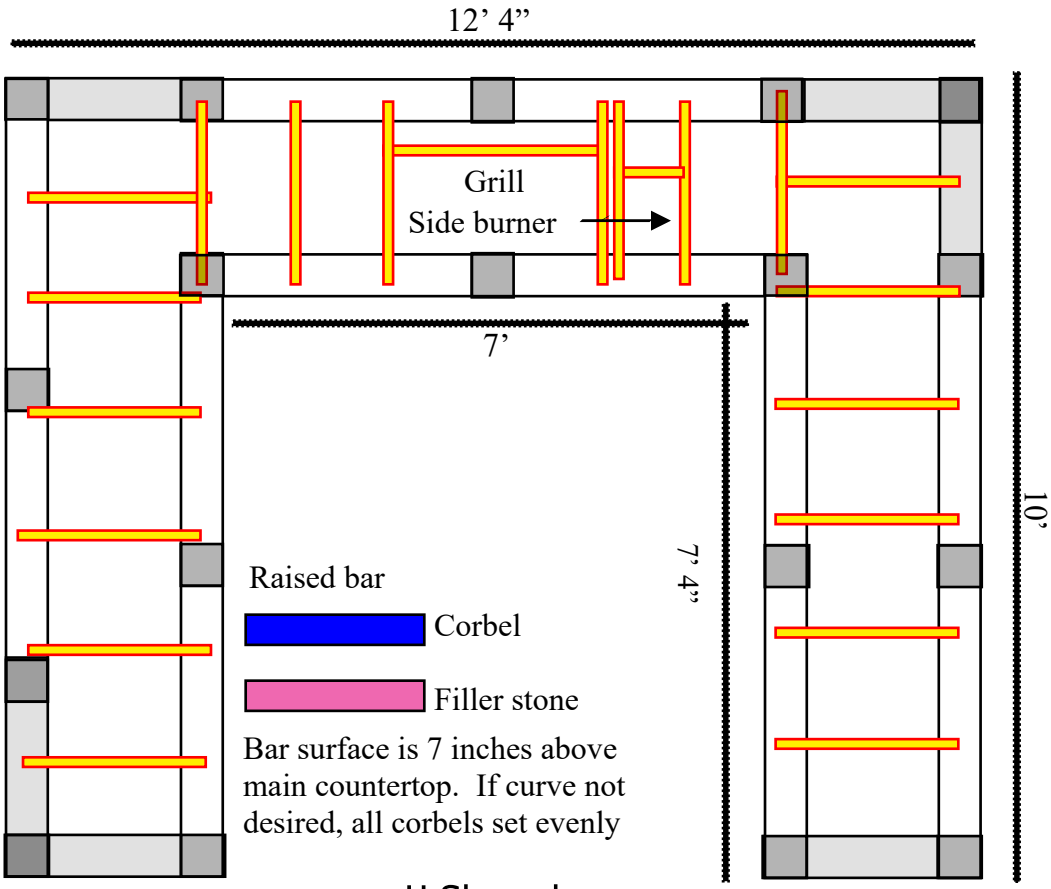
Panel intersection = 4 inches

Stringer approximations

When adding panels, length increases by panel length minus 4 inches(28” and 44”)

Panel can be varied as long as total length matches opposing sides





Raised bar

Corbel

Filler stone

Bar surface is 7 inches above main countertop. If curve not desired, all corbels set evenly

U Shaped

We would like to thank you for the purchase of the Walttools modular concrete panel kitchen system. The following is a comprehensive overview of the assembly of the system from Walttools. Instructions are relevant for all models. Exclusive information to one particular model/option will be marked accordingly. Please read all instructions and watch all Walttools videos related to the construction of these outdoor kitchens. Those videos can be found with the kitchen on www.walttools.com. Call 888-263-5895 with any questions.

Kitchen systems will usually arrive on two shipments. Panels and construction supplies arrive in one shipment and the appliances will arrive in a separate shipment. Upon arrival of both shipments, inspect the contents of both shipments and make sure you have all that you expected. A packing list should be included for each shipment for comparison. If you ordered the Z-Counterform products for the project, that should arrive with the panels system delivery, though the actual forms will be in a long separate box.

Tools needed for panel assembly
Half inch hammer drill
5/8" masonry bit
Circular saw with concrete cutting blade and wood blade
Several 1 inch by 36 inch long wood dowel rods
Rebar, 1 each ½ inch x 36" for each panel
Angle grinder with 4 inch concrete blade
Cordless driver(extra batteries)
Rubber mallet
4 ft level(or longer)
Utility knife
Tape measure
String line, line level
Reciprocating saw
Fast set grout(or regular)
3/8 tuck point trowel
Mortar tray
Tapcon concrete screws
Nails or screws for joist hangars
A pack of wood shims
Saw horses
Safety Glasses

For Z form system option
Miter saw
1/8" masonry bit
Duct tape
Silicone caulk
1/2" Dura rock
Cement board screws
Mixing tub
60 pound bags concrete(if using ad pac option)
Concrete finish tools, Screed, hand float, finish trowels, texture tools if wanted
Sanding block or rough sanding pads
Shop vac
Plastic sheeting

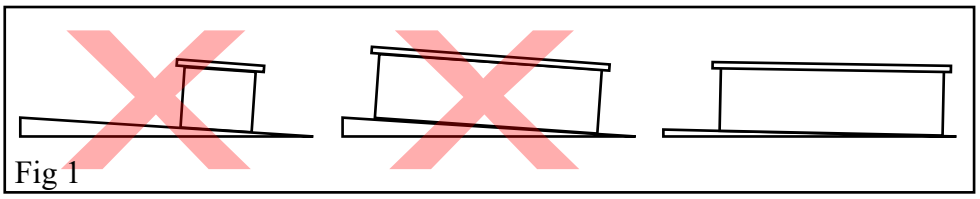


Fig 1

1) Getting started

Pre-installation preparation: This system is considered a lightweight building system but can still come in at considerable weight, especially with the concrete countertop option. These designs should be installed on a 4 inch reinforced concrete pad or patio, plain or textured. Paver or natural stone pads are not recommended unless they have been placed on a concrete bed. If required in your area, you may need to pier the pad below frost line. If using a setup consisting of scratch coat panels, remember to leave enough room on the pad to support your chosen outside finish material such as stone or carved concrete. On the chosen location it is advisable to mark out the footprint of the planned design to be sure everything fits according to plans, especially when choosing the larger u-shaped designs. Consider the grade of your pad. **Figure 1 above.** You want a flat pad to place your kitchen. Pads with steep grades(normal is 2 inch in 10 feet) can result in your outdoor kitchen showing that exaggerated grade. Consider repositioning the kitchen to minimize the effect. If you have no choice, you will need to cut the bottom panels to match the grade of the pad before installing the panels on the slab. You would do this when you are laying out the panels on a flat surface as described next. Find a large open flat surface where you can lay the panels flat and begin arranging and appliance marking/cutting. Lay out each wall of your kitchen(based on your plans), stone side up and slide together. **Figure 2.** It is important to check outer edge stones of any panel that will be used as a corner. Corners can possibly chip during shipment and if visible, it is best to use them on non-corner uses when possible.

For example in the 10 ft kitchen, the 32” end panels can be used as an end or on a long wall. If a corner is effected, you will likely want to use that on the wall so an effected edge will not be exposed.
Once you have your panels chosen, it is time to color and cut for appliances. Coloration will not be covered here, but the option to color with stains is covered in a Walttools video. The process is similar for all staining systems. It is recommended and easiest to color panels before assembly.

2) Cutting panels. If you purchased the Delta Heat appliances recommended for the kit, you will use the cut out dimensions specified in the documentation with those appliances. For grills you will likely have a separate heat shield that you will base your cut on. Specs are available on the Walttools.com website. As a last resort, Delta heat offers all specs on their website as well.
Due to the 4 inch thickness of the walls, you have to complete the cutouts in two stages. This is done best by having your wall ”assembled” flat on the ground. Mark your front openings. This is accomplished by measuring from the top, bottom and sides. With the larger opening cutouts it is quite likely that the opening will crossover onto an adjacent concrete panel therefore it is important that you are marking panels while they are positioned tightly together. **Figure 3 and 4**
For performing the cuts you can choose to do so now, while on the ground, or you may wait until the walls are assembled. Waiting does give you the option of changing appliance location. Once the lines are marked you can start the cuts carefully with a skill saw and diamond blade of a depth of at lease on inch or more. Cut corner to corner but do not cut past your corners. Remember, the cutout that are specified give you only about ½ inch to play with. Cut too far and the cut mark may be visible beyond the edge of your appliance frame. When the front cuts are made, it is easiest to finish by punching thru with a reciprocating saw. Once cut thru, you can simply knock out the cut out piece. You can test fit most of your stainless pieces at this time to see if you need to make any changes. If the appliance fits well, you can OPTIONALLY apply a very thin layer of Panel patch mix via putty spreader or even paint brush to cover the exposed foam that will be visible on the cutout edge. That can then be stained to match the rest of your scheme if you like. **Lastly, before you cut your opening for any appliance that has a top and front opening take note that you will need to account for the thickness of your top surface. For example, a one inch piece of granite will necessitate a different height of the front opening compared to a slab of stone that is two inches thick. For reference, the Z-Counterform system top surface provides and actual height of 1 5/8 inches.**
Now that your panels are cut, you are ready to place them on the site and begin alignment. Please read the section on optional pinning before proceeding so you can determine what steps you want to include.

Optional pinning. This is considered a light weight system and you may want to consider pinning it to the slab you are placing it on. To do so you will add this into the assembly procedure on the next page. This would be in place of using dowels. As you place your first panel in position(corner), you will mark the center of the pinning hole from the panel end onto the slab. You then will use the large masonry bit and drill into the concrete at least two inches. This hole must be straight up and down. Once drilled, you add the next panel then carefully hammer in a piece of precut rebar down thru the pin holes and into the slab. Continue this all the way around. **At a minimum corners are recommended to be fastened this way**. Once you have completed the remainder of assembly of the walls **steps 3, 4, 5,** you then mix up a batch of fast set grout and proceed to fill the rebar pinned holes at least half way to lock everything permanently into place.

Fig 2

Laying out

Fig 3

Cutting for appliances

Fig 4

Cut complete

3) Assembly. Start by attaching a 2x4 ledger board to the ground with a Tapcon or similar attachment. This should be positioned to run along the INSIDE edge of your wall which is 4 inches in from the outer edge. You may want to position a panel in your starting location so you have a justified starting position for the ledger board. For a 10 ft wall, this board should be 9 ft 3.5 inches long(**Figure 5).** One one end you can then join another ledger board that is 24 inches for the side wall. Use a carpenters square to assure you are installing properly. Now that you have a "L" brace secured to the ground you can place a panel upright against it. Next you want to place that adjacent corner panel and interlock them together so they will stand up by themselves here forward*(This is where the pinning option found in the previous section would be applied).* Now you continue on with your long wall placing the next panel into the first, sliding them into each other and dropping one of your 36 inch dowels into the hole between them**(Figure 6).** Repeat this, taking care to have someone hold the panels upright until you can add in the end panel and drop that dowel in. Now the panels should be self supporting for remainder of the assembly. Once a long wall and end wall are standing, you can then add the 2x4 ledger guides for remaining walls and follow the same procedure, squaring them up and securing to the ground. Now complete the rest of your panel additions. You should now have a complete standing wall formation. NOTE: You may need to lightly grind down any burrs that could on the stone edges to reduce some of the gap between panels if there is a concern. Bear in mind that once tuckpointed, the gaps are not noticeable. Over grinding for a tight fit will have a negative effect.

4) Adjusting. The next step will be leveling and securing the panels to the ledger with supplied brackets. If this is going on a stamped concrete pad, most likely you will have slight differences in panel heights due to the unevenness of the floor surface. This will necessitate you to use wood shims to make slight adjustments to the panels to bring them to the same level height**(Figure 7)**. For small layouts, place your level or straight edge across along the top of two panels and adjust the height of either ends to give you a smooth and even transition from one panel to the next. Then move down to the next panel and adjust it to match the previous two and so on. For larger layouts you should use a string line to set the height of your panels. If you have a particular high point on the pad that is causing a noticeable panel disruption you may consider cutting down on the bottom edge of that panel. You can also shim the panels as you go instead of waiting until all panels are in place. At times, it may be necessary to shim panels out from the ledger board due to a particular panel anomaly in order to have them meet evenly.

5) Final attaching and stringers Now that the panels are assembled and leveled, you now just secure them to the bottom ledger with the supplied brackets. Make sure you have made any needed height or lateral adjustments before this. Your kits should have come with two brackets for each panel. They will secure the panels to the ledger with the designated screws**(Figure 8).** After the bottoms are secured, now you will assemble your stringers and secure them into place. You will mark on the top edge of you walls, the location of the needed stringers. Stringers are to be located every 16 inches and are needed on the edge of any top cutout such as grill and side burner. These will ensure your walls keep proper spacing and support the countertop. Cut 2x4" lumber in 24 inch lengths to insert in the brackets provided. You also need a stringer for the back edge of any top appliances and one across any corner(L and U shaped) **Figure 9.** The final step for the wall now is to tuck point the seams between the panels using the supplied Panel Patch. Only mix up a couple pounds at a time at a medium stiff consistency for best results. When dry sponge the joints thoroughly and they will dry to match the other joints. You may optionally apply some landscape block adhesive in the joints on the back of the panels.

Fig 5

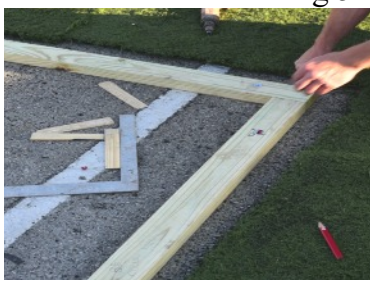


Fig 6

Fig 7

Fig 8

Fig 9

The **Z Counterform** system is a straightforward assembly system that will allow you to pour a custom countertop for your modular outdoor kitchen.

Before beginning, you need to place and drape plastic painter sheeting over your panel walls so that it hangs near the bottom of every wall. This is to protects the walls from the spilling and splashing of concrete that will occur during the pour. **NOTE: If you are planning to incorporate the raised bar top option please read and follow those instructions along with the standard installation instructions as some of the basic procedure will be changed.**

Cutting Cement Board - Measure and cut 1/2" cement board so it hangs over the edge approximately 1/8th inch. You do NOT want to see the top edge of your walls visible. The most commonly used cement board recommended is either HardieBacker board or Durock. **Figure 1.** The cement board should be held in place on top of the concrete panels(over the plastic) with 1 ¼ inch Tapcons on each corner. Make sure screws are placed back far enough to not interfere with the forms when they are placed on the edge, generally back 2.5 inches. Joints should be taped with something like duct tape to prevent leakage into the panel cavities.

Cutting and Attaching Forms - Using the Edge experts from Z and a miter saw is recommended way for cutting the forms to size. A tip for measuring corners is to set a form in place and mark a line along the edge of the plastic form edge roughly 6 inches from each outer corner to the end of the cement board. When you do that on both sides of the corner, it will create an intersecting line a couple inches in from the corner. Where these lines intersect, is the point you will measure and cut the forms to. The same procedure is done in inner corners but you will need to extend the lines with a straight edge to make the intersection. When fitted, forms are simply laid on the cement board, pushed all the way into the edge of the cement board and attached to the cement board with #10x5/8 panhead screws. Forms should be predrilled for screws near the center of the flange. Pre drilling is to prevent easy stripping of the cement board. DO NOT pre drill the cement board. Every time forms meet, they should be taped together with heavy duty tape. If you are using form liners they are just place into the plastic forms and cut to fit where needed**(Figure 2).** Corners can be mitered for a sharp edge or just bent in the corners to give a small radius corner. A dab of silicone every 6 inches near the top back edge of the liner is more than enough to hold them in place for the pour. Most likely you will have at least one opening that you need to block off for an appliance, sink, etc. You can use a backwall form to frame out the cutout to the specifications listed**(Figure 3)**. Forms should be attached to the cement board on the inside of the cutout so they can be easily removed after the concrete is set up.

Reinforcement - There are several valid ways to reinforce the concrete but one of the easiest methods is with the recommended Z Counterform fiberglass mesh**(Figure 4)** which is held at the proper height with the available Z Clips. This mesh is light weight and incredibly easy to handle and cut to size. Other common types of reinforcement are 6x6 welded wire mesh or 3/8" rebar. If using rebar, make sure it is low enough in the concrete to prevent ghosting.

Fig 1

Fig 2

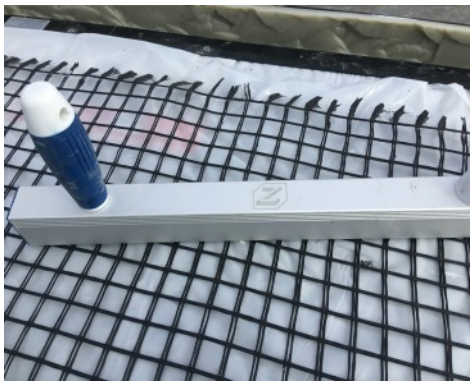


Fig 3

Fig 4

Concrete - You have many mix options for your concrete countertop. Just make sure it is a mix recommended for pour in place applications. Some of these tops can get quite large and you do not a mix that is to aggressive that you are unable to finish it properly. Recommended options from Walttools are Tru Pac C ad pac and Tru Kast then Liqui Crete ad pac from Z Counterform. All with give you excellent results and allow ample time to finish your top properly.
Pour and finish the top as you would any other concrete countertop, generally working from one end to the other. Screed the top as you go along making the surface as level as possible**(Figure 5)**. If using edge liners, it is important that somebody is working that edge to remove trapped air bubbles. This can be done by pressing a palm sander lightly against the edge and slowly running down the length of all edges. If that is not available you can use the manual method of placing the bottom edge of a hand float into the concrete along the outer edge NOT touching the edge form and briskly reciprocating the tool up and down while moving along the edge.

A. Magnesium Float - Once an initial set is recognized you may begin to trowel concrete with a magnesium float. In a controlled temperature and humidity this will most likely be 30 minutes to 1 hour after the concrete is placed

B. Steel Trowel - Once all bleed water has evaporated and the concrete is very firm, you will use a steel trowel for the final finish. Again, the amount of time will vary significantly depending on a number of factors but will most likely be around the 2-4 hour mark**(Figure 6)**. Steel troweling too soon will trap moisture in the concrete and leave you with a soft, dusty finish when the concrete cures. You can test the concrete by lightly pressing down with your finger. A light touch should not leave a finger print nor will wet concrete stick to your finger. A very firm press will leave a slight indentation. At this point, use the steel trowel with moderate to firm pressure to smooth the concrete to a slick surface. You can repeat a half hour later. Each successive time will yield a tighter, more burnished surface. Once finish is satisfactory, let concrete cure for at least 24 hrs before removing forms or sanding.

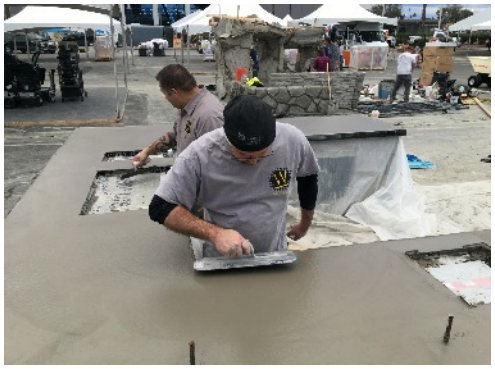
C. Texture top - If you prefer a textured surface, this is actually an easier method of finishing and it is more forgiving than finishing as outlined in the previous section. About the same timing as above(firm press with finger leaves small impression), steel trowel the surface one as above and then you apply a think spray of liquid release on the surface and lightly roll one of may texture rollers randomly over the surface. You can also choose to use more than one roller to get creative or even use some small texture mats. When you are satisfied, just leave it alone. If you see problem areas, you can then lightly knock them down with a steel trowel and redo if needed as long as the surface remains pliable.

D. Removing forms - After sufficient time has passed you will be able to gently pull form edge away from top, creating a small gap down the length of the form. You can then continue to gently bend the form away from the edge, putting the emphasis on flexing the form, NOT pressing down on the form**(Figure 7).** Once most of the way down, you can remove and inserts if you used them and then flex the form up and down a few times until it snaps off. Inspect the edges for any damage. You can optionally fill in the small voids on the edge with a patch mix made for that purpose. Clean, stain and seal as desired.

Fig 5

Screeding to get level

Fig 6



Initial trowel before texturing

Fig 7

Revealing the edge

Corbels and raised bar option .

Bar installation is achieved by installing several decorative concrete corbels and filler blocks on which you pour another countertop level. You could also install a granite top or related material. The raised bar system is either form curved or straight tops. The corbels for a curve have a difference in the recess that exists on the bottom of allowing them to be set more forward or rearward. To get started, choose which edge where the bar will be placed. Bars will typically run the full length of the chosen side but it is not required. Bar kits come with corbels cut for a straight application or as a gently curve. On the chosen edge, the standard countertop will not be framed to the edge along with the remaining edges. Instead you will use the included styrofoam edge forms(included in bar kit) to block off and create a 1.5 inch ledge for the corbels along the face and partially on the sides**(Figure 1 and 2).** Curved bar sets will need a 16 inch side block, where the straight set will only need a 14 inch block out. Take one of your backwall pieces and cut it into several pieces about 6 inches long. The foam strips will snap into the plastic edges and can then be screwed or caulked onto the concrete panel edges. If screwing them down, using the small masonry bit, drill a pilot hole thru the foam/plastic edge and into the concrete panel, then use a tapcon to secure. They are removed after the initial pour.

Fig 1

Side blocks set

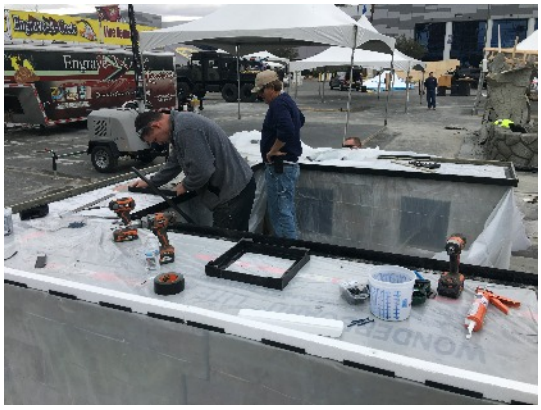


Fig 2

Front edge complete

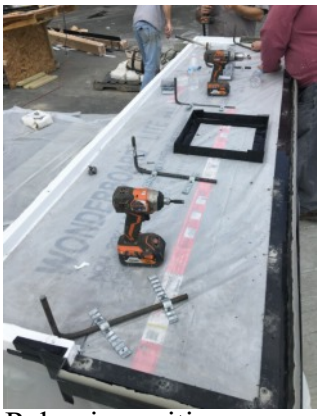


Fig 3

Rebar in position

Take all of your corbels and pre-position them now where they belong based on your span. You will then bend some 18" pieces of rebar into an L shape as shown and attach them to the surface, similar to figure 3 so that the vertical rebar section is positioned where the hole on the corbel will be**(figure 3).** The corbels and filler blocks will be mortared into place the following day once the initial top is poured and then stripped. The remaining edges of the top should be finished normally as instructed in the standard directions. NOTE: When pouring the top, be sure the rebar remains straight up and down and does not fall over.

The next day, strip the forms as instructed previously including the foam strips created for the bar. Dry fit the corbels and spacers together**(figure 4).** The spacers will need to be cut and trimmed to fit properly. Make sure to leave about 3/8 inch space between blocks to allow for tuck pointing. You should cut down excess rebar protruding from the corbel anchor holes, leaving up to 1.5 inch. Setting up a string line to check for straightness and spacing is helpful. Mix up some block mortar or panel mix and use that to mortar the corbels into place tapping them down level and enough to create about a mortar joint of about ½ inch**(figure 5).** You can pack any extra mortar material into the anchor holes with rebar. It is easiest to set a center corbel first and use a level to be sure it is set properly. Set the remaining corbels the same way, leveling each one as you go. Carefully mortar the front and rear spacer blocks in between the corbels as well**(figure 6).**

Fig 4

Dry set for fit

Fig 5

Setting mortar

Fig 6

Set in mortar bed

After giving the blocks some time to set, you now cut your cement board for the top. Depending on a curved or straight bar kit, you will need to cut the cement board accordingly**(fig 3)**. For a curved bar, you can mark the underside of the cement board while it rests on the mortared corbels. And then draw a curve based on those points. You should make 3" holes that see thru to the corbel holes and protruding rebar to accommodate that. You can attach board to the surface to the corbels with tapcons(again, at least 2 inches in from the outer front edges to allow the Z forms to set flat) or use landscape cement(**fig 1, 2)**. Attach the Z Form plastic edges as you did with the previous counter. When screwing down the forms on the front side, you will need to be as far in as possible on the nailer edge so when you employ your tapcons, they do not get too close the corbel's decorative edge and result in damage. **(Option)** You can add more rebar by bending 5 more pieces into an L shape as you did setting the posts for the corbels. These can drop into the holes you just created with the other rebar**(fig 4)**. Once packed with concrete, the stability of the top is really strong. Now you can fit your edge liners and mesh and get ready to pour that top.

Fig 1

Fig 2

Fig 3

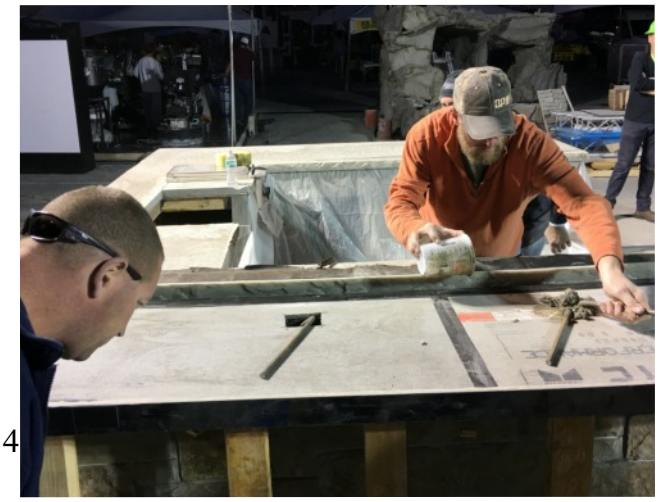
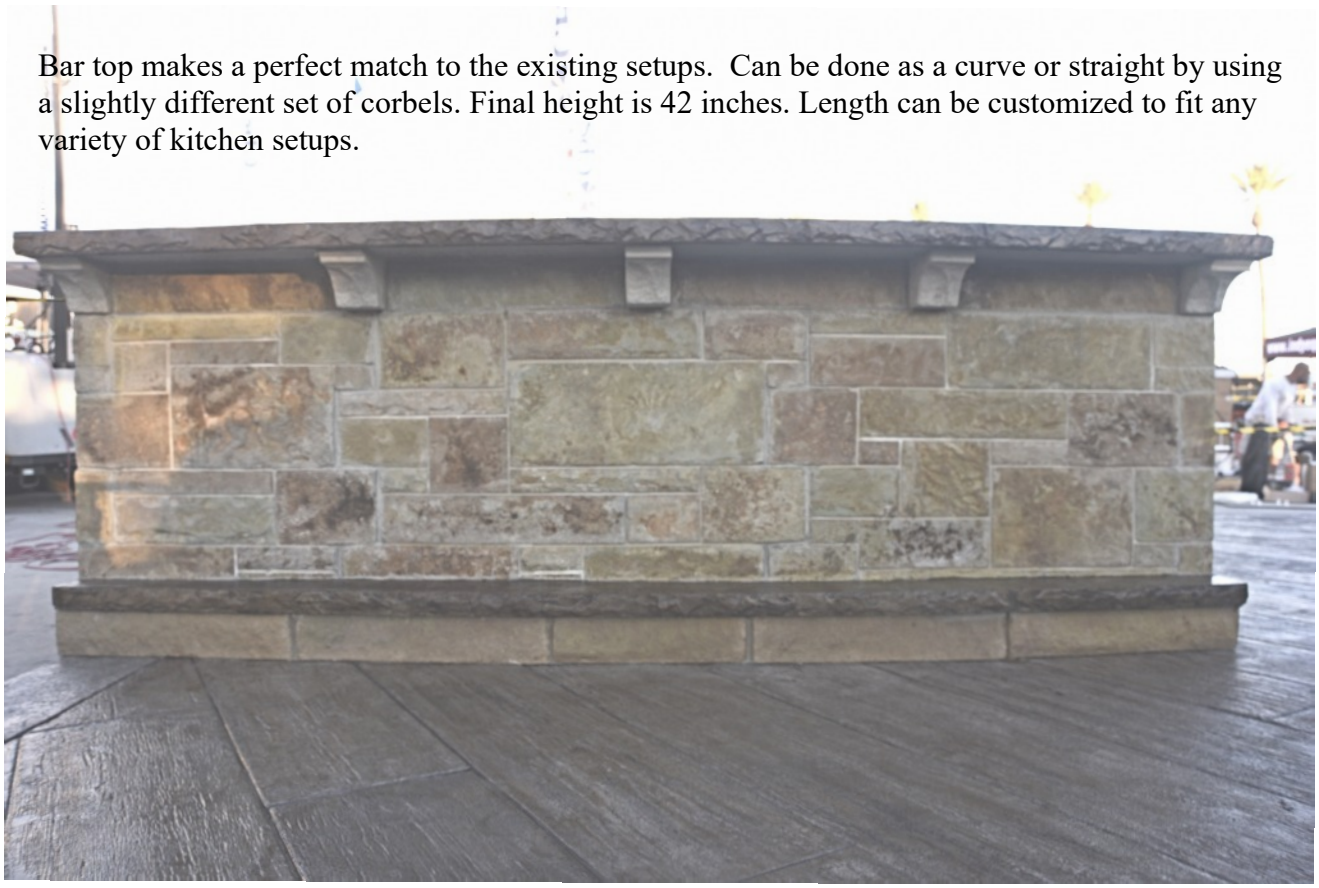


Fig 4

Before pouring, it is a good idea to provide extra support under the front edge of the top to reduce any sag that can occur from the weight of the concrete. This is shown in the bottom of Figure 4.

If you are also doing the footrest, you will just use a single row of the spacer blocks, mortared into place along the bottom front face of the panel wall and cut a piece of cement board that extends about a quarter inch beyond the front edge of the blocks**(Pictured on next page)**. For curved foot rests, just pull the blocks out a bit until you achieve the look you are going for. You will need to block up the irregular space/edge where the cement board butts up against the panel wall by putting a strip of wide tape along that edge pressing firmly into the block wall. This is to prevent much concrete from leaking down into that void when you pour the top. Cut and attach Z Form edging and appropriate liners and you are ready to pour. Strip this the same time as the top bar. When using the standard Z form system, the raised surface is 5 inches above the main top.

Bar top makes a perfect match to the existing setups. Can be done as a curve or straight by using a slightly different set of corbels. Final height is 42 inches. Length can be customized to fit any variety of kitchen setups.



Video demonstrating the setup of this kitchen can be found on Walttools.com in Outdoor Kitchens