

Concrete countertops? Try this for creative expression

The KAN STEP program continues to provide needed facilities to many communities across the state. KRWA appreciates the opportunity to be of assistance to so many local projects. My work at KRWA is to help the KAN STEP program and local volunteers. It's all about improving water systems, pouring concrete, hoisting rafters and helping install plumbing and heating. For this article, I thought readers might enjoy the recent experience I had pouring new concrete kitchen countertops in my home.

Shane Holthaus
KAN STEP Tech



The question is why not just order a laminate countertop to go with new oak cabinets? But concrete countertops? Okay, let's first agree that concrete is an awesome material. It can transform into a solid form taking on almost any shape. With

concrete, the possibilities for creative expression are endless. It can be ground, polished, stamped and stained. It has substance, mass, character and warmth. Once in place, it becomes very permanent! It assumes forms that inevitably touch our daily lives: bridges, highways, floors, walls and at our house, even the kitchen countertops.

When most people hear about concrete counter tops for the first time they may shrug a little and say, "What made you think of

that?" Most people just walk on concrete, glance at a wall, and become accustomed to a rough appearance and the cracks found in almost every example of exterior concrete. This simple recognition of concrete has placed it in the categories of structural, exterior and underground usage. Despite these prevailing norms, the idea of introducing concrete into our home didn't take a second thought. I was ready to give it a try.

Using concrete for counter tops is



Shane and his son Jackson pose over their reflections in the new concrete counter top that is part of their kitchen remodel.

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not without historical precedent. Around the 19th century, a poured-in-place material ground and polished to a high sheen, called Magnesite, was very popular with architects of the day. Magnesite fell from favor because of high labor costs and its asbestos content. Terrazzo is another Italian concrete milestone, usually made with white cement, marble chips and/or some other pre-selected

colored aggregates. It is poured in a thin layer over regular concrete, screeded and smoothed. Once the concrete is cured it can be sanded until a high sheen is accomplished and the aggregates are exposed. A concrete counter top is simply the next step up as a working surface.

Design is important

I borrowed ideas from several sources but in the end, no matter

what materials are chosen, they become your creation. Several things need attention when designing a set of counter tops. How thick to pour them? Two to four inches is normal – two inches

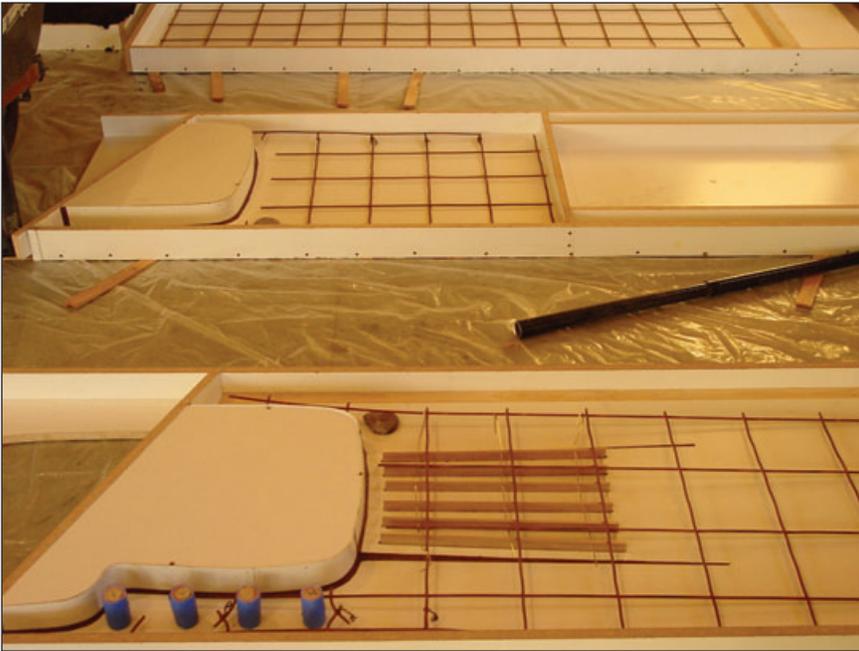
cabinets and floor joists. I poured our counter tops 2.5 inches thick necessitating extra screws through the base cabinets into the wall and the use of cross members to help spread the weight of the concrete

which has an offset so that one basin is deeper and wider than the other standard basin. This added the curvature, which became a challenge during the later steps.

Forming, reinforcing

The material of choice for forming concrete counter tops is Melamine. It is a smooth surfaced painted particle board used for cabinets or shelving and can be found at most lumberyards. The smooth, hard Melamine form surface leaves a concrete finish that requires very little grinding and polishing. Other materials will work as a form but I found that Melamine is the easiest material to work with.

A template should next be made to ensure the mold matches the counter’s final resting place. Don’t be intimidated. Remember to double, triple, and quadruple check before each cut as the form is built. Once a mistake is made its hard to overcome the loss of time and form material. It’s a good idea to first present ideas and theories to friends, family and of course your spouse before moving on to the next design/forming task. When the mold is upside down, every aspect becomes a mirror image and is turned around. I was lucky not to have a set back while forming the molds for the integrated counter top. Professionals who do this for a



Completed Melamine forms using shims to ensure their being level, sit on the garage floor waiting for cement. Note the blockouts for the sink basin, faucets and brass rails on a sloping surface leading to the sink basin. Also notice the placement of steel mesh that gives extra strength to the concrete.

is a little thin and four inches is too thick and extremely heavy. A thicker slab could be poured in place if the support is also designed into the project. This means extra support for base

behemoth. I also designed a bathroom and recycling storage closet in the basement to provide additional walls to help support the span of the original floor joists. We chose a granite composite sink

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Concrete countertops? . . .

living have flat and level work tables. If attempting this in a garage and requires pouring more than one piece, plenty of floor space and shims will be needed. This may not be the most ideal method, but it may be the only choice.

The next step after preparing forms is caulking corners and seams created by forming. The mold should be watertight. This is very important for pouring molds and moving them into place later. By having the molds water tight, better control of water pooling, efflorescence and materials consistency is achieved during the curing process.

Another important step before pouring is reinforcement of concrete's strength. The easiest method is to use six-inch by six-inch steel grid mesh mats. The mesh comes in eight and 20 ft. sections that are trimmed to fit before placing inside the form. I recommend bending 3/8-inch

Concrete is screeded from the bar section of forms. More than 30 feet of forms were required for the countertops in Holthaus' kitchen.

rebar, tied in place on top of the mesh in the thin and potentially weak areas around the sink and perimeters. Once done, and the mat of steel mesh reinforcement is suspended in place it is time to pour concrete.

Pouring and curing

Different mixes need to be considered before figuring how much material to use. If the plan is to grind and expose aggregate, then consider adding an aggregate that compliments the look and feel of the room. White cement may be



used to lighten up the otherwise dark green look of normal concrete. Accent colors may also be added. The color we chose for our counter was a dark charcoal. Depending on how light hits the surface; it either looks pitch black or dark gray charcoal in color. After choosing, be sure to have a sample form for a test instead of

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starting on the good pieces. SakCrete from the lumberyard was used for my project instead of a truck delivery because only a



Shane applies a little elbow grease in the knock-down and polishing process that exposes the aggregate (look on the rounded edge) and smooths the counter top's finish.

half-a-yard was needed. It is important when mixing the concrete that the least amount of water be used in relation to cement. This produces the least amount of shrinkage and the strongest, most durable concrete. It also reduces the risk of water stains and efflorescence, the whitish coating of calcium-carbonate mineral salts that can form on the surface of the concrete. It is also important to vibrate the concrete after pouring. It's not possible to over vibrate! By having the mix too dry or not vibrating enough can cause air pockets to form on the surface. However, this is not a great worry because the surface can be lightly ground to expose all the holes so they can be grouted and sanded.

The next step is to strip the forms. It is recommended to let the molds set for three to four days before gingerly turning the mold over to strip the forms. Stripping the forms a little early like this, allows easy knock-down of undesirable edges that become sharper and harder to remove with additional drying days.

Sanding and grouting

After stripping it is recommended to let the concrete cure for seven to 10 days before sanding and grouting. This process will take a little elbow grease and water. Wet sanding with diamond pads makes short work of the rough edges, but may take several hours to work through one set of sanding grit. The surface needs to be ground down smooth to a minimum of 400-grit before grouting. This allows air pockets extra time to show. Once the grouting is finished, let it set up for three to four days. Then move up to 800 grit and then finally 1500 grit. The 800 and 1500 grit pads are best used on a variable speed grinder attached with a Velcro disk. It is important not to grind to fast. The burnishing disc holding the 800 or 1500 grit pads may be burnt and clogged if water is inadequate or if used at too high of RPM.

Sealing, waxing, buffing

When the surface has the desired sheen it is time to seal the concrete. The sealer I used is the latest in water based acrylic microemulsion technology. After a couple coats of sealer have been applied, and allowing for the recommended curing time, it is time to wax and buff the surface. This process is much like waxing you car. Just get all the wax buffed off by keeping the buffer wheel moving. Don't try to horse the buffer, let the buffer do the work for you.

With the final polished product sitting on a work table, the next thing to do is to call a few friends and family members to help move the concrete behemoths into place. The counter tops weigh about 60 pounds per foot and with 30 feet of counter I was thankful for the help. I am glad to be done with this project. Will I do another one? With some time to relax and reflect on the project I would have to say yes! With every do-it-yourself project there is great satisfaction after the project is done. I had no idea of the degree of difficulty of this one but it was well worth the

time. The counter top will serve this kitchen for the remaining life of this house, which is coming up on its century mark in just eight more years.



Tapering the edges around a fossil (top) is delicate and time consuming. One of the fossils mounted in the countertop is shown below.



Shane jogs the second sink section into place. Notice the narrow points around the sink that needed the 3/8 in. rebar reinforcement for extra strength. A break certainly isn't needed at this point.