

Foaming at the Mouth

BY DAVID MCDONALD



Tips on laminating, fixing, welding and anchoring HDU.

About the author: David and Robin McDonald own and operate Avila Sign & Design, a custom sign shop in Grover Beach, Calif. They may be found on the Internet at www.avilasigndesign.com.

JEREMIAH was a bullfrog, he was a good friend of mine, I never understood a single word he said but I helped him drink his wine — and he always had some mighty fine wine!

Familiar lyrics written in the early '70s for a song that went number one on the pop charts. (I hope they're familiar to most of you, or I'm getting too old).

For some unknown reason those words ran through my head as I was writing this article and I started contemplating the art of writing in and of itself. Does good written material need to be profound? I guess not, judging from those lyrics.

I mean, who was Jeremiah? And was he really a bullfrog or is this merely a name you can call some one who is a good friend of yours?

If he really was a bullfrog then it makes good sense why the lyricist never understood a single word he said, and being a bullfrog he must have been a wine maker too! Because how would a bullfrog get the money to purchase wine? We don't employ bullfrogs — well, except for those three bullfrogs that have recently been acting as spokesfrogs for Budweiser.

Well, no matter, they must make pretty good dough because the lyricist stated that he (the bullfrog) always had some mighty fine wine, and to me that means starting at around \$70 a bottle.

And, I'm sorry, but who was really drinking the wine? Quite frankly I think the lyricist drank every bit of it! The bullfrog couldn't even pour the bottle, and besides, the writer knew it was mighty fine wine and he certainly didn't hear that from Jeremiah; he couldn't

understand a single word the bullfrog was trying to tell the songwriting lush.

Yes it sounds great when you sing the little ditty, but to read the words... forget about it! I think about things like this and can't help but find the humor in them.

Okay, maybe I need to get back to my original train of thought here. No, the informational content in this article may not turn out to be all that profound but I will be sharing a few tips and treatments that I find helpful when working with high-density urethane (HDU), so let's get right to it...

LAMINATION

When laminating HDU we prefer to use West Systems epoxy from Gougeon Bros. This is a two-part epoxy that can be mixed as is needed. It comes with a handy pump system that takes any guesswork out of the mixing process.

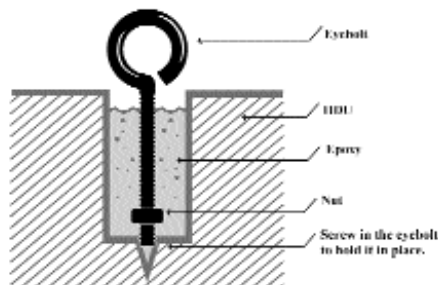
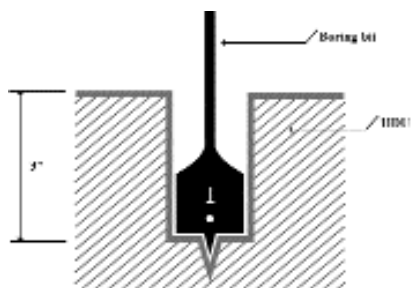
Although we have pipe clamps in the shop we don't use them very often when laminating HDU. Instead we use *pinch clamps*, which can be purchased from woodworking magazines.

This style of clamp is hammered into the HDU and draws the material together, leaving a nice joint. To further clamp the joint with, say, a pipe clamp would only serve to squeeze the remaining epoxy from the seam.

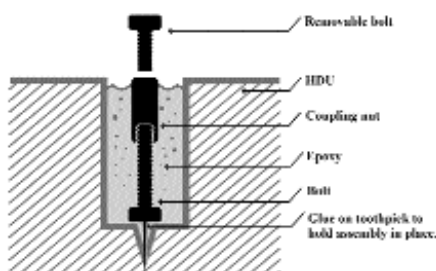
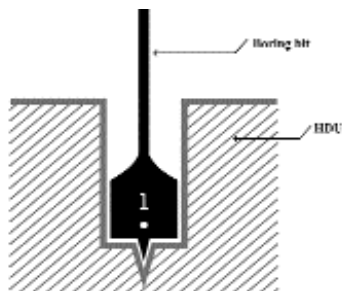
Sometimes it will be necessary to use more force with a clamping system, like the pipe clamp, but this would only come into play when your edges are not as straight as they could be.

To achieve a nice, straight edge for laminating use a jointer or a panel saw. I prefer the jointer but have had good success with even the table saw.

There is a certain amount of surface tension apparent in most materials you may be cutting and HDU is no exception. Therefore, when cutting larger sheets of material it is a good idea to make the cut slightly larger than what is needed to



Before drilling, mark the shaft of the boring bit with a Stabilo to assure proper depth. Screw the eyebolt in a couple of turns to hold it in place and pour in the epoxy 1/4" from the top to allow for expansion.



The removable bolt on this anchor should occupy two-thirds of the coupling nut. To hold the assembly in place while the epoxy cures I break a toothpick to length and weld it to the head of the permanent bolt with cyanoacrylate glue and press it into place. Turn the nut until flush with the edge of sign.

relieve the surface tension, then come back and slice off a small amount (about 1/8") for a straighter, finished edge.

A simple laminating process would be done like this: Both edges being straight, coat with epoxy using a foam brush, then lay down some wax paper on a prepared flat surface. This will keep the epoxy from sticking where it shouldn't.

Next, lay the material down and push the prepared edges together. Theoretically,

this is all that is needed with good straight edges, but it is never that simple!

At this point, tap the pinch dogs in where necessary to draw the edges together and let it set overnight to cure. I try to place the pinch dogs where the holes left behind would not pose a problem, but if necessary fill with your favorite product (my favorite is Minwax wood filler).

HIDING BLEMISHES

TSF-45 texture surface finish (from Coastal Enterprises) is a product we have been using a lot lately. It comes in handy for those jobs that have become a little shop-worn (you know, like when the back of the sign starts looking like a topographical map). It comes in white and has the consistency of cake frosting.

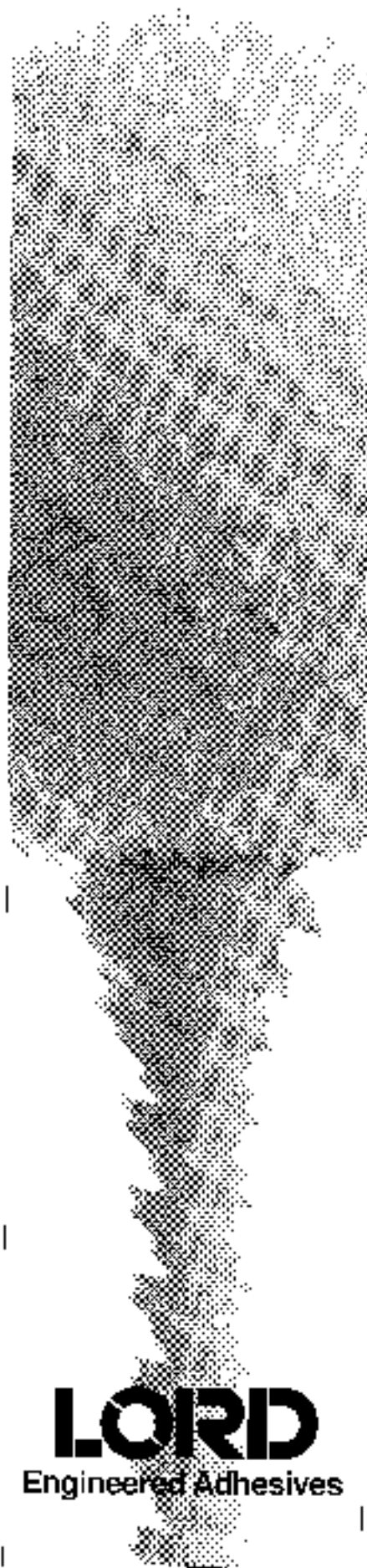
Instead of filling those blemishes on the backs of signs we take a hand broom and smear on a nice texture. TSF-45 is a primer/finish coat all in one, so it's quick and easy! Sometimes it is necessary to apply plywood as a backing on an otherwise unstable sign. Rather than use a more costly panel you could use CDX-grade plywood and give it a nice finish with TSF-45.

Auto-body filler is another example of a product useful for hiding or covering unwanted elements such as seams, hardware and open cracks. We have built box frames for signs and scooped the entire unit with the filler, not only for the texture it can produce but to also hide all fabrication joints and seams. Auto-body filler will give you a hard-shell finish that will need priming and a finish coat of your choice.

INSTANT WELDS

Have you ever taken painstaking measures to hand-cut that perfect letter, little piece of filigree or embellishment only to drop it and watch it break right before your eyes? Well I have, but not to worry!

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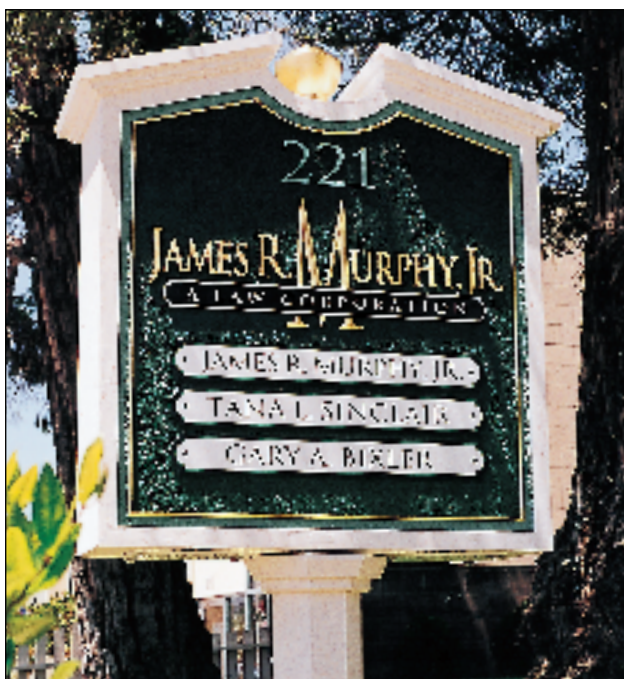


"Pinch dogs" are used to pull the edges together; the wax paper helps keep things cleaner.



TSF-45 is a great product for hiding those unwanted blemishes. See how distressed this panel was! You can also have fun with different textures.

The box frame of this entire sign was covered with a texture of auto-body filler to hide the fabrication seams.



Cyanoacrylate (cyano) glue is a quick fix for some of the most horrific setbacks. I get mine from Satellite City Inc. at (805) 522-0062, and heard about it through some friends in the furniture business. Believe me, I have had some real wingdingers happen here in the shop.

Cyano glue is an instant glue that is chemically hardened with an accelerator. One of the beautiful characteristics about HDU is that when it breaks it will usually break *clean*. That's where the cyano glue comes into play.

Place a couple drops of glue on one side and spray the accelerator on the other side and stick them together. Get it right the first time because it sets right *now*!

Another trick for cyano is to use it as a tack weld when anchoring a larger applique with epoxy. There is always a stubborn corner that won't stay down so just tack it in place with the cyano; it will stay in place until the epoxy has time to cure.

ANCHORING HARDWARE

There is not enough strength present in the lighter densities of HDU to merely drill it, sink a screw and have it last without pulling free at some given time.

To deal with this we drill a larger hole and sink the hardware in a bath of epoxy (see the illustrations); this gives us more surface area of strength.

This method can be used for eye-bolts, all-thread, finials and coupling nuts, or just about anything you can think of that needs to be permanent.

When you fill the hole with epoxy leave a little room for the chemical reaction to swell or it will ooze out all over your pretty sign (been there). With a pot life of about 20 minutes, the epoxy will cure fairly rapidly and can be quickened with a heat source such as a heat gun or hair dryer.

I hope these techniques can be put to good use and as always they should be expanded on as you see fit. Have fun!

Joy to the world, joy to the fishes in the deep blue sea, joy to you and me.



After laying the cherub down with epoxy, one of the wing tips was being stubborn and wouldn't stay down, so I tack-welded it in place with cyano until the epoxy could cure.

A good example of using removable hardware to strengthen the engineering of this sign. Eyebolts are permanent, with a removable bolt at the bottom.



When filling the hole with epoxy, stop about a 1/4" from the top to allow for expansion as it cures (the hole is about 3" deep).

This sign is installed with a decorative iron bracket. Permanent eyebolts are on top with removable hardware on the sides.



Here is a simple method that will support a lot of weight. Screws embedded in epoxy then wrapped with picture wire.



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Rooster Tale

BY DAVID MCDONALD



A chicken, egg and rooster dimensional sign project — what came first and what happened next.

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I WAS GIVEN a specific size of 6' x 8' to work with on the main sign for a nearby winery and eatery, Depalo & Sons. I could not vary from this size because of the existing framework of timbers that lined the wall of the building housing Depalo & Sons.

There was an existing sign that covered one of these rectangular shapes; it would come down and the new sign would replace it. These size constraints would turn out to be the most difficult problem to solve from a designer's standpoint. To make the sign larger would solve a few problems, only to create a few more, particularly in material costs.



I was given a design that consisted of a selected letter style (Bodega Oldstyle), the silhouette of a rooster, and some secondary copy describing what Depalo & Sons was all about.

This design would not fill the 6' x 8' area we were allowed so I had to rework the design to get the best use of the given space, sticking with the established letter style and silhouette of the rooster.

The reason this was so tricky was the fact that the original sign was filled from edge to edge with elements that were

very large, and the distance that the sign could be read from was so great.

I couldn't merely design a nice look and place this onto a rectangle that would cover the existing framework because the elements would be much smaller than the client was already accustomed to looking at.

The solution was to size the elements as large as I was comfortable and allow the rooster to trespass the format much like a super graphic; this would make the elements large enough yet allow everything as a whole to breathe well.

MAXIMIZE MATERIALS

We have recently purchased a computer numerically controlled (CNC) Gerber router table, the Saber 408, and



Creating a material list of this nature allows me to allocate material thickness, size and the amount of materials needed to do a given job without me losing my mind. Because this job was cut on the router table, the list also serves as a blueprint for me to work from when assigning router paths.



Marine-grade plywood was used as a sub-structure, making the over-sized measurements of 6' x 8' more user-friendly.



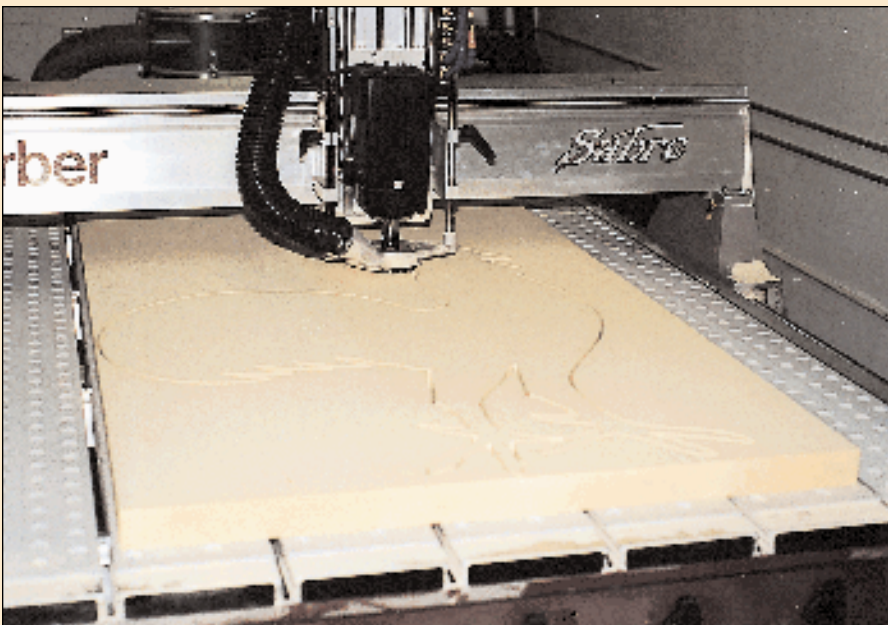
The router table was used for the initial profile on the grape leaves. Texture is added with a die grinder.



This banner could have been flat! Instead we cut a "bridge" profile to glue under the banner for added dimension. Clamps are employed to hold the shape until the epoxy dries.



With a piece of sponge we blend three colors on the back-ground for a deep and elegant appearance. Choosing a color to recede is the ticket; this helps throw the other elements forward.



The router table having its way with one of the many pieces cut for this job.



Gluing up profiles such as this is a good place to utilize scrap material.

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Rooster Tale

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we love it! I have been operating it for just three months and from the first week of operation we have been putting out work with its help.

For about two years we have been working toward acquiring a CNC router table, expanding the shop and setting up our working environment to allow for the new tool. I can report that the software for the router (Artpath) is easy to use and understand and can be very useful in figuring out your material needs, as was the case with this job.

After the design was finished and approved I used the computer file and broke it into the separate pieces necessary to cut and finish the sign. Basically, I reverse-engineered the full design.

Once I have a mental picture in my mind's eye of the finished relief dimensionally I will draw a series of 4' x 8' rectangles on-screen to symbolize the materials that will be used.

All of the elements in the design will then be duplicated, placed on the 4' x 8' rectangles and nested for the least amount of waste.

A material type and thickness is established for each rectangle. Working this way allows us to establish our material usage and cost of goods as well as make any last minute adjustments that might be advantageous for material use, such as to make something a little smaller to fit within the rectangle.

Each rectangle is saved as a file and imported into the routing software, paths are generated for the router and the 4' x 8' panels are positioned on the router table one at a time and cut.

PIECES, PIECES & MORE PIECES

The outside shape of the sign was cut out of 3/4" marine-grade plywood, which would serve as a foundation for the other elements to rest on. It would require two

4' x 8' sheets to achieve the overall size needed, and this material would be a good choice for both strength and cost.

Using epoxy, a 1"-thick frame of Sign Foam® high-density urethane (HDU) was glued to the plywood frame. This would leave a hole in the background to receive the two 1/2" pieces of HDU that were router-cut with paneling grooves, grapevines and leaves.

Thanks to the router, the background panels with the leaves fit perfectly and lined up at the seam flawlessly. With a roller we applied the epoxy and set the background in place.

When we finished cutting the remaining pieces for the sign I put the plotting capabilities of the router to use. By inserting the pen tool into the spindle we could run the file that included the letters; this would serve as a registration when it would come time to apply those characters.



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We have a small plotter (15") and it has been real handy to be able to plot a pattern over 4' with the router table.

I had some fun with the banner that runs across the bottom part of the sign. It was apparent that filler strips would have to be applied under each side of the banner because it was raised 1" above the background.

Because the file was already created, it would be easy to cut the 1" rectangular shapes to fit between the two sides of the borders. For added dimension, I elected instead to add a three-inch rise to the top of the filler strips (this was done using the transform tool in my sign software).

With the strips glued under the banner the whole unit was glued and clamped to the background of the sign, creating a bridge. The banner was then carved and tooled to resemble a wine barrel.

COCK-A-DOODLE-DOO

The owner of Depalo & Sons wanted the rooster to look like a ceramic figure. He had a few on display in the store that come from of a small village in Italy.

**Color makes this sign work.
We were trying to stay with
something more inviting and
warm.**

The rooster I was to carve would stand over 4' tall and be around 8" thick. The silhouette was cut on the router and some scrap pieces of HDU were glued onto this for an anatomically-correct blank.

A polisher with a 6" sanding disk was used to form the basic curves of the rooster. Next, I followed with a die grinder to add the details.

At this point I needed to put the rooster in place on the sign to figure out where the claws should be. The idea was to have the rooster standing on the banner with the claws clinging to it. This would require a few trips back and forth to finally get it right.

COLOR THEORY

Depalo & Sons is primarily a deli and wine cellar. Keeping this in mind we tried to have the color scheme relate to and not conflict with this type of establishment.

Color makes this sign work. Primary colors, for example, would not be the best choice; we were trying to stay with something more inviting and warm.

The overall feel needed to relate well with food and in some regard tie in the Old World Italian heritage that Depalo & Sons should evoke. We painted and finished the sign accordingly.

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Rooster Tale

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An automotive polisher with a heavy grit-sanding disk was used to sculpt the rooster, followed with the die grinder for the finer details.



Transparent color is sprayed on and then gently removed in selected areas to allow the background color to show through. Going for the ceramic look!



Getting them prepared to accept 23-karat gold leaf, Barry sizes about one million letters using a 3/4" squirrel hair flat.

First, we decided on a background color — it would be a medium to dark value to push the other elements forward. We settled for an earthy, dirt color to plant the grape leaves and vines onto.

This background color would be softened with a gentle faux finish to add depth and imply a French-Italian paneled backdrop. There would be plenty of green used on other elements of the sign, so for the leaves it was decided to paint them with a late-season autumn color scheme. This would add more warmth, color and interest.

The Depalo & Sons lettering would be 23-karat gold leaf and would rest against a dark olive green. The olive lends itself to the deli and naturally works.

The banner at the bottom would be finished with green smalt. Green smalt is

Orange declassifies and can make a stuck-up sign more people-friendly — it also looks killer against green.

CONTINUED



The finished work installed and facing north, my favorite exposure for gold outdoors.



An up-close look at some of the details on this sign.



More signage and cut-out letters on wine barrels to complement this Old World deli.

a blue-based color and olive is a yellow-based color, so to stay out of trouble and help eliminate any clashing we decided to blend the smalt from black on the outer edges to green in the middle. This would solve the color shift problem that would occur. The blue tail feathers of the rooster would also help tie in the green smalt.

The lettering in the lower banner was painted light almond. The border would fall into place naturally. The dark olive was used again to trap and separate the background from the outside border that was painted a lighter caramel.

I will sometimes add a pinstripe to the format when designing a dimensional sign. This element can be a lifesaver at times when your color scheme is falling apart (it's a good place to add some color to tie everything together).

Things were working well here so I used orange with a little olive mixed in for a nice touch (orange declassifies and can make a stuck-up sign more people-friendly — it also looks killer against green). We kept the established banner at the top simple; black smalt, 23-karat letters, and an olive border.

Last, we had the rooster. As I said earlier the client wanted the ceramic look so I used transparent color over a Navajo white base.

I sprayed on the color with an airbrush and used removal techniques to achieve the glassy look (spray on, wipe off). This went surprisingly fast!

This sign was part of a new sign system we did for an established business going through a name change. I think we made a nice difference for them, and I'm happy with the outcome.

An age-old question has been answered for me as well... The chicken did come before the egg (egg salad that is). SB

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