

VILE THINGS

http://www.vilethings.com/vilethings_graveyard_fence_project.htm



Keeping the monsters in ...

I need a fence system for my graveyard haunt. I need a fence that can be assembled and broken down easily. I need a system of modular pieces that can be positioned as needed and adjustments made to taste.

This fence has to provide a sturdy barrier between the contents of the haunt display and anyone itching to get a closer look. This fence has to look right.

The modular requirement will be satisfied by building individual fence panel sections with *identical* mounting points on each end. Individual panels will fit onto intermediate fence posts, also having *identical* mounting points on opposing faces.

To make this fence strong, I'll start with a wood core. A 15-inch square plywood base will hold a 41" tall by 7 1/4" square (hollow) plywood column. This decent footprint, plus a plan to assemble the fence pieces at different angles will provide a sound combination of vertical support, minimized component weight, and better stability along the fence "line."

Each post will have upper and lower sockets that will receive pins from each fence panel section.

Pins and sockets will allow for a degree of motion away from a straight line. The pins will be located in an identical plumb position on each panel section, making all panel sections interchangeable. Sockets will be positioned on uniform vertical points per post, and lateral adjustments can be made to compensate for uneven ground, intentionally skewed posts, or otherwise aesthetic reasons.

The wooden post cores will be skinned with extruded sheet foam. This material lends itself quite well to any builder's imagination. This malleable material can be distressed, textured, painted, etc. to achieve the "right" look for the haunt.

Building the Fence Posts



Four identical pieces of 1/4" luan receive nailer blocks. These are glued and nailed in place along one side of each plywood wall. Whether you start with the left or right side doesn't matter as long as all pieces are the same for each column.



This photo shows the reasoning behind the first step.

Since all pieces are the same, some of the layout work is eliminated.

The second piece laps over the edge of the first and is glued and nailed in place.



You guessed it ... the third piece laps over the second
My recommendations for this part of the build are weather proof wood glue and a pneumatic brad nailer or stapler. If you plan to make more than a couple of these, or plan to finish the structural build in a day or two, the air nailer is a must-have tool. It is fast, precise, and eliminates the need for clamps during glue cure times.



3/4" plywood backing boards are added to the inside faces of opposing walls.

Adding these before completing the main structure is easier than adding them after the glue is set.

These backer boards will aid in supporting the fence panels ... more on that later.



After adding the final side, check the assembly for square. Scrap wood can be nailed across corners to maintain square while the glue cures.



The base of each post will appear larger than the center column segment.

In keeping with the overlapping square method, spacer blocks are nailed at each corner of the center column. Bulking this section out in wood serves two purposes for me. It's slightly faster than adding third or fourth layers of sheet foam (3/4" styrofoam is our maximum available thickness around here.)

This will also create a slightly bigger footprint at the base, which will be altered in the next step.

Here's the start of a handsome dozen graveyard fence posts.



So far with this build, everything has been built square. Building square simplifies most of the process, as most machines are designed to cut straight lines, square, or parallel lines. Square assemblies require less intricate layout work, less time orienting components, and less opportunity for error when assembling multiple pieces at once.

While "square" saves the builder some aggravation, it can take away from the appearance from a hunter's design standpoint.

The goal is to build something new and sturdy that looks old and rickety.

The first photo above shows a cut line drawn around the bottom of one post. One face will be $\frac{3}{8}$ " shorter than the opposing face.

The sides will be cut diagonally between these lines. If $\frac{3}{8}$ " doesn't sound like much, take a look at the second photo above.

The post on the left is cut with one side $\frac{3}{8}$ " short of square, while the post on the right is left square.

Some posts were altered to tilt to the side, some tilt to the front/back, a couple are out of plumb in two directions.

Just for fun, three posts are left square. The difference may be subtle, but there IS a difference, and it will pay off in the end.



A 1X4 support block is added to the bottom of each post, inside the center column.

Wood glue and finish nails hold the block in place while the glue sets. This joint will be part of the fence post's structural integrity, so a good fit here is important.



A square plywood base is attached to this support block from the bottom.

1 1/2" coarse thread screws will pull everything tight and wood glue will make it stay.



Adding sheet foam to the plywood carcass isn't necessarily a fast process.

I choose to add foam to opposing sides. Polyurethane glue is applied and spread with scrap material. A thin, even coat is sufficient. 100 percent coverage isn't necessary, but is recommended.

Mist lightly with water from a spray bottle, position the foam, and tape it to the sides of the box. Misting with water supplies the moisture needed for the polyurethane glue

to begin its expansion process. A light misting of water and a thin layer of glue will guarantee a solid bond without over expanding the joint.



After the polyurethane glue is fully cured, excess sheet foam is easily trimmed with a handsaw. Keeping the saw blade tight to the wood box will produce a tight fitting joint when the remaining sides of the box are covered with sheet foam.

Any imperfections in your cut can be sanded, filed, etc. Also remember that the polyurethane glue used to adhere the next layer of sheet foam will expand slightly to fill minor voids in the joint.



Four sides are skinned with foam, and I'll repeat the process. I want a thicker carving base here for the detailing process.

After the second layer of sheet foam is applied and the glue cured, all excess foam is trimmed. The sides are trimmed "square," and the tops are trimmed to the 1/4" luan substrate. Pieces of sheet foam are added to finish the top of the box shape of each fence post's lower segment.

One more rough trimming for the bottom segments after the glue sets.

At this stage , the 3/8" alterations are more prominent from column to column . We still have a square column to work with, but many of the posts will sit out of plumb - intentional artificial neglect (?)





To skin the center columns, the process is the same as for the base sections.

Sheet foam is cut roughly 1/4" larger than needed, glued, and taped in place.

Once the glue is fully cured, the excess foam is trimmed flush with the plywood faces.



The second stage (shown above) completes the skinning process for the center columns.

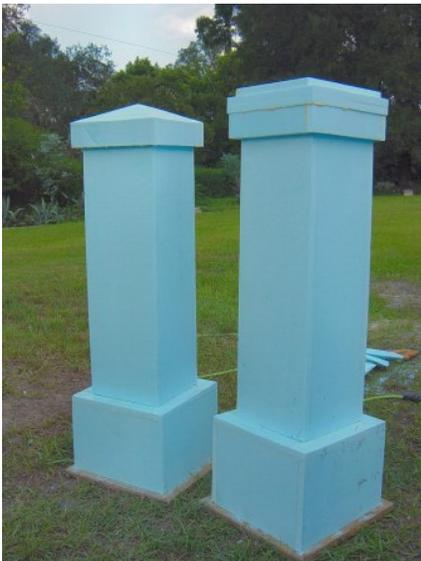
As with other foam applications, the excess will be trimmed after the glue cures.



These curing assemblies will become cap pieces for the graveyard fence posts.

The stacks to the right are laminations that will be shaped into tapered, pyramid-type tops.

The stacks to the left will be glued as bands to the underside of the top, creating the look of a thicker slab of material.



This photo shows a rough shaped post cap (left) and a post cap assembly prior to rough shaping.

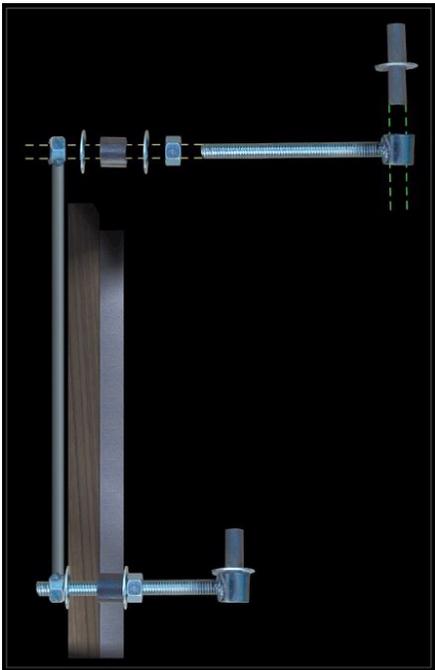


Here we are, structurally complete and rough sanded ... ready for mounting hardware and the detailing process.

Part 2, Graveyard Fence Project

On the first part of this project, fence posts carcasses were built.

As mentioned at the beginning of this article, this project revolves around a modular fence system consisting of individual "posts" and fence panels. Before moving to the detailing process for the posts, it is time to fabricate and install mounting hardware.



This is an attempt to illustrate the plan in addition to writing an explanation.

Along the lines of livestock gate hardware, this mounting hardware consists of a pin side and a socket side.

A short length of pipe is welded to a length of 1/2 inch all-thread rod. This assembly is bolted in position through each fence post ... one upper and one lower. For future ease of adjustments, the nuts inside the posts are joined by welding a rod between them.

Each socket can be locked in position as needed to receive the pins from a fence panel.

The pin side of the joint is nothing more than a length of 1/2" round bar. a 7/16" flat washer is tacked in place slightly above the center point of the pin. This washer is added to reduce abrasion between the steel socket and the wood fence panel.

A spacer is used between the two 1/2" nuts. The length of this spacer is equal to the thickness of the foam used to skin the post. By adding this spacer, the socket assembly can be tightened against the luan and 3/4" plywood backer board providing a very sturdy mounting point without crushing the foam skin.



This is the fabricated hardware needed to build twelve fence posts.

48 socket pieces, 48 fence panel pin pieces, 48 pipe spacers, and 24 back nut assemblies.

Also required, but not included in this photo are 48 1/2" nuts and washers.



Marking the locations of the through holes ...

Working on a flat, level surface, use a level and a combination square to establish a point from the ground level to the uppermost mounting point. Draw a level line (horizontal) through this point.

Depending on which direction each post leans, draw a plumb line (vertical) that hits the average center of each post.



Why bother with level and plumb you ask?

Well ... these fence posts are designed to stand out of plumb. They are intended to look old and forgotten, where nothing appears to be straight. However, strength and simplified fence panel configuration are still within the guidelines.

By building off of plumb and level lines, you will be working with an "ideal center", as opposed to the actual center.

For example, if two consecutive posts lean in opposite directions (front-to-back) your fence panel would have to twist in order to mate up with all four mounting holes. When you install your mounting hardware to the post's ideal center, the panel will hang plumb regardless of individual post's degree of tilt.

Note: there is need to mention the earth/ground you'll be using. This method will accommodate some degree of unevenness in your site grade. The yard I'll be using is, for all intents and purposes, ... flat. If you need to work around slopes or uneven terrain, this generic construction method likely will not apply.



The center of the top hole is located on the crosshair drawn in the last step.

The distance between centers of the top and bottom holes is determined by the length of the back nuts and connecting rod. Since these were fabricated on a jig, all of them are the same. A basic template made using leftover 1/4" luan plywood simplifies the hole drilling process, and allows for greater accuracy.

The pipe spacer (inserted in the foam) in the photo above measures 13/16" o.d. 3/4" holes drilled through the foam provide a snug fit for these spacers. Using a 3/4" spade (or paddle) wood bit, you can easily drill through the foam using the plywood template to keep the drill bit aligned. When you drill through the foam, the center spur of the bit also marks the center of the hole.



Using this center hole, switch to a smaller drill bit that is slightly over sized for the threaded rod portion of the mounting hardware, but smaller than the pipe spacer's diameter. In this case, a 9/16" hole is perfect.

The threaded rod has ample room for alignment, and the pipe spacer has plenty of plywood shoulder behind the foam for support.



All that's left to do is hold the back nuts/connecting rod assembly in place while the threaded rods are started in from the outside. Once positioned properly, the outside nuts can be tightened fully.

This is definitely strong enough to support the fence panel sections.

Adding detail to the fence posts.



There is something about the look of field stone ... so I decided to mimic that effect on the bases of these fence posts (hence the extra foam thickness in this area.) Beginning with a dremel tool and a thin tapered diamond burr bit, horizontal lines were carved all the way around the base - generally three lines, but occasionally four.

Vertical lines were added to create individual stones." In an attempt to incorporate some realism, the thickness of these lines vary everywhere, from roughly 3/16" wide to 1/2" or better. Also, try keeping square corners to a minimum if you're going for the "unkempt" look.





After carving all of the rough lines, I used a sand blaster to break all of the hard corners and begin shaping some of the stones. Depending on how you plan to fine finish this area, you may not want to remove too much material ...just enough for a good start in defining the general shape.



The final stage in the shaping process ... A careful application of heat from the torch softened some of the corners and edges. It also added some inconsistency to the faces of treated stones. To finish off, and in this particular order, a chemical application of acetone causes sporadic pitting anywhere it lands.

The polyurethane glue doesn't react to these treatments as the foam does, meaning it may protrude in places. This will be removed prior to painting.

Special Note:

These steps, melting with heat and/or chemicals, should be performed with a high degree of caution.

Adequate ventilation is an absolute must, as foam releases some nasty things when melted. Thoroughly test these types of procedures on scrap material before jumping into the project you've dedicated hours to building ... Know what to expect!

Safety precautions like safety goggles, fire extinguishers, etc. are always a good idea, but especially important with tasks like this.

Texture



Beginning with the post caps, texture is applied to the "distressed" foam pieces.

All surfaces were rough sanded to shape. The hard corners should be broken down to at least a small radius.



Hard corners don't hold finishes very well, plus the desired look here is old and worn. Softer corners fit the bill.

Be sure to scuff all of the surfaces slightly. The finish of your choice will adhere better.

In the first photo, Lee is shooting joint compound, reduced properly with water, through a paint/texture gun.

For anyone unfamiliar with the tool, this is a pneumatic spray gun. The hopper is loaded with the material to be sprayed. The air supply line is connected to the base of the gun and air begins flowing through the tool and out of the nozzle.

As the trigger is pulled, gravity takes over and the texture material falls into the chamber. Compressed air pushes the material through the nozzle, and it breaks into small air born "clumps." By adjusting the viscosity of the texture material, the air line pressure, shooting distance/angle, and the tip size, it is possible to create many different textures.

For this portion of the project, we used a thin batter-like joint compound consistency. Roughly 60 p.s.i. line pressure was adequate for this texture, and the distance ranged from 18 to 24 inches. Approximately 1/16" to 1/8" material thickness was applied creating an aggressive orange peel-like texture. The post caps were hung by wire and allowed to dry fully.



The post columns were treated a little bit differently.

The foam surfaces were scuffed using a sureform type tool. The vertical joints where foam meets foam were patched with joint compound, filling any voids or gaps. A slightly thicker batter-like joint compound was mixed and sprayed using less air pressure. Using less air pressure causes the mixture to leave the gun in bigger clumps. These clumps are allowed to set on the foam until the edges dry, and the majority of the compound it's glossy appearance. When everything "right," a broad taping knife or straight edge is gently pulled across the textured surface. This is known as a knockdown finish ... you are knocking the clumps down, and slightly dragging any soft material. In doing this you recreate a flat plane, while leaving semi-controlled depressions in the surface.



This is not a difficult procedure to master. Shoot a few test pieces on scrap material. Experiment with different joint compound consistencies and air line pressures until you achieve the spray pattern you like.

Wait certain timed intervals for the texture to dry. Depending on the climate, this could range from ten to thirty minutes or so. Knock the texture down during these timed intervals, paying attention to the amount of pressure applied to the straightedge or knife.



This is a closer photo of a knock down texture finish as it begins to dry.

The darker colored areas are still wet.



Once the joint compound texture is fully dry, everything is base coated.

Kilz water base primer is perfect for this job. It seals the surfaces, adheres very well, and dries to a matte finish.

The post caps are base coated white, and the columns are base coated a medium gray. To make the gray, an even ratio of Kilz white latex primer and flat black latex paint supports easier color matching between separate batches.



Because of the size of this painting job, I elected to spray the paint using an air gun. This tool aids in a faster application, and a faster set time ... for a faster second coat. Spraying the paint also covers the textured areas with less effort, particularly the deeper grooves in the stone bases.



Although the foam skin is textured, it looks terribly flat in battleship gray mode. To achieve a generic stone appearance, specks of lighter gray and black were applied using the texture gun. By adjusting the amount of water added to the paint mixture, you can achieve a slight degree of translucency during this stage. This can help the colors work together rather than simply overlap each other.



The consistency of your paint will determine the gun setting you need. A thinner paint will flow much easier into the chamber. Because of this, it is probably necessary to turn the trigger adjustment knob until very little trigger motion is available. Reducing the size of the opening here will keep the paint from literally dumping into the chamber. Another trick is to run the gun at a very low air pressure ... somewhere around 22 p.s.i. for starters and make adjustments as needed.

After the color specs dry, a faux staining is applied to the posts. This was achieved by brushing a wash of black paint and water onto small areas of the surface. A spray bottle filled with water is used to create the fade effect. Depending on the degree of staining you hope to add and the intensity of your wash, you may need to repeat a process like this several times.

The photo above was taken after two applications.



This is a closer photo of the paint texture and stain effect.

The white post caps were splatter-painted with the same lighter gray as the post columns.

The idea was to lighten the posts and darken the caps ... maintaining different colors, but bringing them closer together.

The caps received two black wash applications as well.



Here is the result so far ... getting closer ...

Graveyard Fence Project

With the completion of the fence post build process, it's time for the second phase of this project - the construction and finish of fence panel sections. After some lengthy consideration, the decision was made to build wood fence panel sections.

... Not wood disguised to look like iron ... just wood ... An old wood fence, possibly nice when it was new.

That's the look I'm after here.



Basic sawing operations are required to prepare the dimensional pressure treated lumber.

In the first photo above, the top rail piece for each panel section is bevel cut twice, creating a mild crown.

1 X 6" boards are ripped to 2 1/2" widths. These will be used as top and bottom plates to position/hold the vertical boards of the fence.



A simple jig is made for panel assembly. For the creation of this jig, scrap pieces of wood are nailed in position marking the maximum location of each corner of the panel sections. Long, thinner strips of wood are nailed in place to hold the vertical pieces at the proper height in relation to the top and bottom plates (ripped during the previous step.)



Here the jig is loaded with the first four panel pieces.

Two pieces of 1" X 2 1/2" wood are used for top and bottom plates. These plates are precut to length to fit between the jig's corner blocks.

Between these, the outermost 2" X 2" vertical pieces are cut to length, glued, and nailed in place.

In keeping with the artificial aged and forgotten look of the fence posts, these panel sections will be built to look "bad."

One side may be shorter than the other, the top center may be pulled downward to break the straight line. Individual vertical "bars" will be installed at different angles to the top and bottom plates ... some square, most out of square.

If you own or have access to a finish nailer, this would be the time to get it out! Air nail guns save a lot of time in tedious fastening jobs such as this one. You can add three or four cement coated finish nails in far less time than one wood screw of equal length, and have adequate holding power in the process. As long as your cuts/joints are good, the glue will eventually do all the work. In a way, the fasteners perform as temporary clamps.



All of the vertical pieces are all cut, glued, and installed between the top and bottom plates.

Each piece is marked for length and angle, making the process somewhat slower than in traditional, square framing projects. The distance between the vertical pieces may vary drastically, depending on the angle of neighboring pieces.

No measurements were taken or used for this part of the project. Each piece was marked in place and cut on the (nearby) miter saw.

Side note: (This one will surely attract some strange looks at the lumber yard.) Twisted, warped, bowed, etc. 2X2's were NEVER on my shopping list prior to this project.



Having intentionally worked with them for these fence panels, I would highly recommend them for this type of work.



The original jig is disassembled after the last center section is built. Once the glue dries, each section will receive upper and lower 2X4 pieces. The center panel sections rest on (loose) 1/2" thick strips of wood, creating the proper reveal (of equal size) on each side of the fence panel section.

The 1" boards bend easily into shape, but 2X4's don't ... you'll likely need a clamp or two to aid in pulling things together for securing.

These pressure treated 2X4's are added for a couple of reasons. First, they add a great deal of strength to the fence panel sections, just in case somebody decides to lean on the fence a little bit ...

The added mass also completes the look this fence requires. Lightweight fence panel sections would look terribly out of proportion against larger "stone" posts.



Later in the day, the majority of the build process is finished.





In order to properly align the post hardware and the panel, another jig is used.

This step is of importance because each fence post has upper and lower hardware of specific location.

Both sides of every panel section must align with these mounting points. The use of a jig will guarantee any panel will fit any post.



Easily handled lengths of 2"X2" material are drilled to receive the pin portion of the mounting hardware.

As with the vertical fence pieces, each mounting extension must be individually marked and cut prior to installation. Once a satisfactory fit is achieved, each piece is glued, clamped firmly in position, and secured with coarse thread wood screws. Solid joints will determine the overall strength of these fence panels when mounted.



Here's a fence panel section mounted between two fence posts.

Any adjustments for grade/elevation are possible through the socket (screw) hardware at each post.



The mounting hardware used with this project allows for varied angles between the posts and panels. This creates a unique effect, as opposed to perfectly straight lines.

These angles also improve the rigidity of this fence system.



A sawhorse-high view of the fence project to date.



A little paint to finish things off ...

Flat latex exterior paint was applied to the fence panel sections.

I cut the paint to 50% paint-water and sprayed it on with an air gun.

At this ratio, a thick application gives nearly complete coverage, while a thin (typical) application dries to a washed, faded appearance ... just right for this project.



Additional streaks were airbrushed on the fence posts and caps.

While this isn't necessarily "natural" looking, it is the effect I had originally sketched out.

In addition, the spaces between the "stones" were airbrushed black to mimic a dry-stacked look.

The exaggerated features will hopefully stand out in the haunt's lighting. Even though this fence is designed to blend into the foreground of the display (hence the minimal color palette) I did want to apply some degree of detail to the posts.



In this photo, the fence panel is freshly painted, hanging between two posts to dry.

You might notice the sizeable gaps between the panel and the post(s).



Easy fix with this system - lift the panel out of the sockets, thread the sockets into the post, tighten the nut, and reinstall the panel. The gap is adjustable per intersection!





A few photos of the fence in the 2006 Halloween display.

I'm pleased to announce that it worked beautifully. It went together quickly, held strong, and even earned a couple of compliments.



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