

THE SILVER LINING

by Bob Dews

There are plenty of things to consider when planning construction of a new water feature. Location, depth, water flow, rocks, and plants all play a major role in the preplanning process. Good preliminary vision for the overall completed project will always net you good results. However, there have been too many times that I have seen projects that don't "fit" in the surrounding to which it was applied. In other words, the watershaper was more preoccupied with something functional verses artistic harmony. Why is that? I believe the functional elements of building the pond dominated the creative aspect of the project; specifically when it comes to putting multiple pieces of liner together to create a waterfeature. We know that liner comes in rolls and those rolls come in particular sizes. We design our ponds based on those sizes to eliminate as many seams as possible. Unfortunately, that's the wrong way to approach building an artistically correct waterfeature. Sure the waterfeature needs form. After all, we all know that water is relentless in its pursuit to find a lower center of gravity. However, building a waterfeature to fit your liner is not the solution.

You see, in our business we have to be both a designer and engineer. In many industries those responsibilities are delegated to separate individuals, if not two compa-

nies. First, the designer looks at the surroundings, understands the vision of the clients, then gets the crayons out and colors up a dream. If you asked them how to build it, most of the time they wouldn't have a clue. It's not their job. They are the dreamer. That's where the engineer comes in. They know the materials available and can figure out a way to get it done. Now, if you give a designer a 2"x4" and said: "be creative, but you have to design it around this". That would totally shut done the creative ability to dream and the designer would be perplexed as to how to make something beautiful using the board. Why then do we allow a roll of liner to hinder the artistic vision of our waterfeatures? Why do we carry that 2"x4" in our back pocket every time we visit new site? I believe that most of it has to do with an uncomfortable level of ability when working with multiple pieces of EPDM. Let's face it; if manufacturing a solid seam is not an issue, the possibilities are endless! The world is your apple and the pond is your ocean! The good fellows at Firestone have plenty of the stuff on hand, so I say, let it roll. The first priority is to dream. Only after I'm done being a visionary do I get out the slide rules and calculators to figure out how to make the dream a reality. So, let me share a technique I have used over the years with proven success to join two pieces of EPDM.

The Layover

Some seams occur when joining two pieces of liner together to create a larger base pond. These seams are relatively easy because the two liners can be laid out flat joining the two edges along a straight side. However, most seams occur when attaching a watercourse to the base pond. If you are one of those who believe that just lapping one piece of EPDM over another is sufficient, you might as well stop reading and find a different article to fill your time. Because it 'ain't right' (as they say here in the south). When water is moving, it has energy. This energy can be greater than the force of gravity. Therefore, it is a fact that water can defeat the force of gravity and move upwards if enough energy is applied. Don't ever underestimate the potential energy of moving water and always put a seam where two pieces of EPDM meet. With that said, the first step of making a good seam is a good layover.

Wouldn't it be nice if all EPDM were to lay nice and flat where a seam is to be placed? Is it just I, or is that nice flat spot always five feet away from the area in which you are working? When working with a flat piece of rubber in a concave bowl, there is inevitably going to be folds. Therefore, if you can't beat 'em, join 'em. Don't worry about trying to iron out the folds. We will straighten them out in the next step. However, reducing the number of folds in the seam area is a good idea. Instead of having several folds along the leading edge of the seam, refold the liner to produce only a few larger folds. That way, the complexity of the seam is minimized. I would much prefer to work with two large folds verses several small folds along a seam line. The folds should lay flat on the liner with vertical creases. The goal here, if dealing with folds in a seam, is to fashion them so that they will stay in place without having to hold them. Stretching or pinning the liner to get a straight seam area will only create headaches down the road. If the rubber lies nicely with the folds, it's one less thing you have to worry about.



Overlay the top piece to match the bottom piece and mark both ends where the seam will be.

Now that the base liner (the piece that will be on the bottom of the seam) is settled, it's time to mark the width needed to cover the area along the seam. I like using a yellow construction crayon to mark the liner. The crayon easily and clearly marks the area and cleans off easily when I'm ready to make a seam. When marking the width of the desired seam, make sure there is enough liner coverage to extend the seam well beyond the water level of the waterfeature. Once again don't worry about the folds in the base liner, just mark the two sides the seam is to cover.

The next step in the layover process is to position the top piece of EPDM in place over the bottom piece. It's at this point I find that many watershapers also stifle their creative opportunities. Since liner is provided in rectangular sections, it would only make sense to seam two pieces along the two straight edges. However, this form of thinking can create a mindset of functionality before creativity. It will dictate where and how the upper body of water will flow in relation to the bottom piece. Basically, it sets up a perpendicular water entry to the base pond that forces multiple folds to "bend" the liner when snaking your headwaters. By breaking out of the straight edge mentality of seaming, a new world of dimension becomes available in creating interesting water courses.

With that said, go ahead and lay out the new piece of liner to be seamed in whatever direction suits the given situation. Overlap the new piece until you have completely covered the marks made on the bottom piece. Now is the time to make the folds in the top piece to match those that were previously made in the bottom piece. It is extremely important that the folds in the top piece are matched fold to fold with the bottom piece. Whether or not folds are present in the seam, make sure the top piece overlaps the marks made on the bottom piece by a couple of inches. This will provide the area needed for the actual seam material. With the top piece now in place, mark it at the corresponding point in which you marked the bottom liner. The two hash marks should touch each other. Therefore, the distance between the hash marks on the bottom liner should be the same distance as the hash marks on the top piece once the two pieces are laid out flat. Just when you've wrestled everything together to make a good fit, it's time to pull it all back apart again. No worries, all the pieces should have the appropriate markings to give the correct information for making the perfect seam.

Coming together

In creating a seam, all the steps are important. However, applying the adhesive is the most crucial. After all, what good is a seam if it leaks? There are a couple of different methods of applying adhesive to create a seam with EPDM liner. Each has its own advantages and disadvantages. For this article we will use double-sided tape between the two pieces of liner with a single sided tape, or cover tape, to finish off the seam. Whichever adhesive you decide to use, it is extremely beneficial to have a flat hard surface to work on. That's where the trusty 2"x12" comes in handy. It's portable, has a large smooth working surface, available in lengths up to 20 feet, and comes in two flavors: pressure treated or kiln dried. Get one at a lumberyard near you. You'll be glad you did.

Position the 2"x12" under the bottom piece of liner so that the liner seam area can be laid out flat with no folds over the length of the board. This will probably take some shifting and repositioning of the board, but it's ideal to have the seam area lay flat over the length of the board without pinning or holding it. Put the two hash marks which represent the leading edge and the width of the seam at the top edge of the 2"x12". The edge of the 2"x12" now becomes a straight edge guide to use while applying the double sided tape. Now, take the other piece of liner and lay it over the bottom piece lining up the two hash marks. I like to overlap the liner about a foot. That gives me plenty of overlap in case my seam gets off line a little. If there is more than a foot overlap, trim the excess using the bottom edge of the 2"x12" as a straight-line reference. Now is the time to make sure both pieces of liner are relaxed and lay flat together. Make sure there is plenty of slack in both pieces of liner so that it won't easily get pulled out of place while seaming the two pieces together.



Use a 2"x12" board to make the cleaning and seaming process easier.

It's a good idea to clean the liner in the seam area. Even if the liner is fresh off the roll, a good wipe down will remove any contaminants left over from the manufacturing process. There are a variety of cleaners available; however, I have found that denatured alcohol works well and evaporates without leaving a residue. Many of these products are highly combustible. So, as the lawyers will say, it's not advisable to smoke or roast marshmallows over an open fire while doing this procedure. Clean the top area of the bottom liner and the bottom area of the top liner. Once everything is clean and prepared, carefully pull back the top liner to give enough room to work in front of the board with the bottom liner on it.



Using the edge of the 2"x12" for a straight edge guide, apply the 2-sided tape and trim excess liner.

Once the bottom liner is prepared, roll the doubled sided tape onto it using the edge of the board as a straight-line reference. Smooth the tape with your free hand onto the liner as it is being unrolled. This will help avoid bubbles and creases. Remember a bubble or crease is a potential water leak. Once the tape is unrolled over the length of the seam, use a roller or the palm of your hand to firmly apply pressure against the paper backing of the tape. This will ensure good adhesion between the tape and the liner. If there is any excess liner hanging over the 2"x12", now is the time to trim that off. I like to trim any excess more than two or three inches away from the tape. Leaving more may result in bunching up or snagging under the finished seam.



Lay the top piece over the bottom piece matching the alignment hash marks. Trim any excess using the 2"x12" as a straight-line guide.



Gently peel the tape paper while applying pressure to bond the top piece of liner.

Now is the time to take a break and eat that marshmallow, as it will be crucial to have everything together when adhering the two liners. Working from the bottom side of the board, place the top liner back in position over the tape with an overlap of two or three inches. Once again, make sure the liner lays relaxed without pinning or stretching. Starting at one side, fold back the corner of liner to expose about a foot or so of tape. Peel the protective paper back exposing the surface of the tape, but do not tear the paper away from the tape. Gently, roll the liner corner back over the tape and lightly press down to tack the liner in place. This should give a good start to a straight line across the entire seam. Using the protective paper from the tape as a pull-tab, begin peeling the cover tape in one or two foot sections while with the free hand smoothing the top liner onto the tape. Working in small increments will help to avoid those nasty bubbles and creases and help you maintain a straight line. While you are working across the seam, be careful not to stretch the liner while adhering it to the tape. EPDM has a memory and will return to its original shape when stretched;

therefore, if you stretch the liner and adhere it, it will scrunch back and potentially cause a leaky crease. Even the force of peeling the paper from the tape will stretch the liner. Therefore, after peeling a section of cover paper, allow the liner and tape to relax before tacking them together. Work across the entire seam and then compress the seam with a roller or the palm of your hand. After the seam is complete, trim the excess liner as close to the tape as possible. Ideally, I prefer to expose a half-inch of tape while trimming the excess. This will give me a great secondary surface for my cover tape to adhere to in the next and final step.



Trim any excess as close to the seam as possible.

The Cover Up

The final step is to apply the cover tape bonding the seam together. Of course a good cleaning of the surface area is a good idea (no smoking). Roll out the cover tape over the entire seam and add about six inches of extra on either side of the seam. Cut the cover tape to length and lay it on top of the seam keeping the trimmed edge of the liner in the center of the cover tape. Extend the beginning of the cover tape six inches beyond the seam on one side and roll it back exposing a foot or so of the protective paper on the bottom of the cover tape. Peel the protective paper, but do not tear it off. Roll the tape back over the seam towards the starting side without creating bubbles or creases. Work in small sections across the remainder of the seam using the peeled protective paper as a pull-tab. Once again, cover tape is extremely flexible. Therefore make sure you allow a second or two for the tape to relax between peeling the paper and applying it to the liner. Once the cover tape is fully applied, take the extra on either end of the seam and fold over under the liner. This will give extra strength in holding the two pieces of liner in place. Finally, use the roller to seal the seam. Pull the board out, and presto! You're ready for action!



Once again clean the entire surface of the liner and apply the cover tape.

Many watershapers tell me that thoroughly seaming two pieces of liner together is the most difficult process in building a pond. Webster describes the word “difficult” as: Hard to be made, done or performed. I can think of many things that have been “difficult” in my life. Riding a bike, operating a mini-excavator, and thoroughly seaming two pieces of EPDM together is to name just a few. I have learned to overcome the difficulty of these things by practicing the process over and over again. When learning to ride a bike, I fell many times, but soon enough I was riding with no hands and flying over home-made jumps without falling. When I first got on a mini-excavator, it seems as though I had grown 10 thumbs, and was lucky not to inflict any major damage to anything within my swing radius. Now, I can effortlessly move the machine as if it were an extension of my arms.

Unlike riding a bike or operating a mini-excavator, the opportunity to practice seaming techniques only occurs once or twice with every waterfeature that is built. Additionally, with every field application, there is always some unforeseen twist to increase the difficulty of the procedure. Is it any wonder that it is considered to be the most difficult part of building a waterfeature? Things become less difficult when they become less different. Things become less different with more repetition. If creating a good seam is difficult, take several pieces of scrap EPDM and practice seaming them together on a rainy day. Do it over and over again until the process is not “different”. Once the technique is mastered in a classroom setting, it can be applied with ease in the field even with the unforeseen twist that will inevitably be added to the mix.

Overcoming the subconscious apprehension of creating seams in a waterfeature will allow creative freedom in design without limitations. Get the 2”x4” out of your back pocket by becoming “indifferent” to the seaming process.

Bio: Bob is the founder and president of Xtreme Ponds. His primary focus with Xtreme Ponds is to design and engineer water movement over difficult and steep terrain, emulating the natural streams and waterfalls of western North Carolina.



This is one of Bob's Xtreme Ponds.

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