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So! Ya wanna have your NiceRink.

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A little background on our company.

Hello, my name is Jim Stoller, creator of NiceRink, the outdoor ice rink system that works for you, not against you. Irving J. Stoller (My grandfather) established our family company, in 1948. He developed it in the early days as primarily a poly coated paper drop cloth Company in its infancy and continued its growth with many other creative plastic solutions. In 1963, Jim Stoller, Sr. (My Dad, James H.) joined the team to help his father with the family business. The company continued in its growth pattern continuing to develop new and creative applications for the flexible films it converted and distributed. In 1968, Jim Stoller Jr. (James E., that's me) was born. I remember, as many of you will too, our little backyard ice rink that my dad made on the patio in our backyard. Jim Sr. brought some small tubing home from the shop, laid it around the edge of the patio, filled it up and flooded the interior where the water would then hold and freeze into the 1st Stollerena. That little rink ended up making our family a Skating one, with a capital S! Jim Sr. only made that little rink for a year or two because it took too much time and effort to flood, freeze, flood, and freeze every night, because the plastic tubing didn't hold the water in. However, my brothers & I, and now my children Tyler & Tatum continued to skate and joined the local mite teams in our area, and moved on the "AAA" ranks in Chicago, IL. During those year's we had Mom and Dad running all over the place, as you run your children here and there. Three boys and two parents make for some tricky nights of making three "AAA" practices at three different rinks, a real scheduling nightmare. We had the luxury of living on a lake during those years, so if we wanted more ice than three or four nights a week, we'd go down and get a few more hours of ice in until the ice was either too bumpy or little brother Bryan, 8 years old at the time, decided to litter the ice with rocks to see how far they could slide. Those were the great skating days when lakes stayed frozen and one could have an outdoor play land anytime. Ken and I went on to play Junior "A" in the USHL for a year each, to pursue the dreams of boyhood wonder. I permanently joined the family business right after my stint in the juniors during March of 1987. My first years were spent learning the complete ins and outs of the operation. I had worked in the factory during the summers of my teen years learning the business from the bottom up. My first rink building experience was helping out the local town to flood a parking lot with a liner Dad & I donated for the experiment. The liner held the water fine, but the town didn't take care of the ice very well, resulting in poor ice conditions and low skater turn out. My first personal backyard ice rink was attempted during the winter of 1991. I started like most do, spraying the grass and spraying and spraying to build a whopping ½" of ice (whoopee, not!) the first night only to have it disappear the next day. "This is ridiculous," I thought, who in their right mind would continue this losing effort against Mother Nature. NiceRink liner to the rescue! The very next day the first NiceRink liner was cut, installed, filled in one night and frozen solid the next. I benefited from a small 10' x 20' level area the first year. Well that was easy, talking to myself, I wonder how many other crazy rink building parents of little skaters like myself would enjoy the ease I had discovered in building a rink by sitting inside and watching it fill and freeze on its own. Turns out, a lot! Although the NiceRink liner concept was new for us, it is old hat for some of the seasoned outdoor rink-building veterans. NiceRink liners, however, are not just regular sheets of plastic. Our materials are made for industrial applications, which require much more strength and durability characteristics than readily available 6-mil poly film. The NiceRink liners are made from top of the line, engineered films which are made lightweight, yet durable enough to withstand the cold weather and abuse ten times that of cheap clear plastic sheets. They can be manufactured almost any size in one piece, so there is no need for taping or gluing two sheets of 20' x 100' together to get the rink you really want. Then comes the NiceRink Brackets, what a back and time saver those have turned out to be. My mission with NiceRink is to provide simple yet effective solutions to making and maintaining an outdoor icerink. Also to provide products to help develop skaters creativity and abilities whenever they want to without regiment. The pages to follow will detail for you the personal triumphs and tribulations I personally have had, along with the solutions for the many situations of the outdoor rink, we at NiceRink, have encountered over the past 15 years of providing the NiceRink liners and its associated products to NiceRink clients around the world.

Determining the best site for your ice rink

There are just a few items of importance to consider when choosing the best site for your rink. To start, you want to locate your rink near an easily accessible water source. This will make it much easier when it's time to flood and resurface your rink. Second to water, would be the distance away from the house. You want the rink to be close enough to enjoy having it in your backyard and not having to trudge across the field, although you want it far enough away from stray pucks in the case of any hockey being played. The rink should run parallel to the house if possible, to avoid pucks being shot directly at the house. Next would be the pitch or levelness of your sight. The pitch may be more important if you (A) want a nice clean looking rink or (B) don't want to end up filling your rink with 30,000 gallons of water. A site that has a pitch of 6" or less is best, as it will take less effort to install the side boards, will use less water and take less time to get your base ice going. The last major point would be the size of your rink. The open space you have available will be the single biggest determining factor of how big you can make your rink. Budget and appearance will be the next. Let's do a quick recap and go over the four major factors and go into more detail on each factor separately.

Access to water
Convenience of use
Pitch (Levelness) of the rink site
Size of the rink

Access to water is important, not when setting up because it's not –5 degrees out and your hose won't freeze up. Later in the season it will be to your advantage to have the rink close by, as the farther away the water is, the farther you'll have to haul your hose. When it's 10 degrees outside, you'll be glad you don't have to haul out 300' of hose every time you want to resurface. It's nice to be able to set your hose outside the house, hook it up and resurface. Two good items to have available are either a hose reel or large plastic bucket (muck bucket or garbage can). When your done resurfacing you'll need to bring your hose back inside so it doesn't freeze solid. When the hose is brought inside, it will have some water left in it. If you have the hose reel, most of the water will be dispersed while winding it up, or if you have the hose bucket, the water that may drain out will be nicely contained within your container leaving no mess.

Convenience of use is why you are or are not considering building your own ice rink in the first place, so make it as convenient as possible. Out the door and on the ice is best, but you have to consider windows, doors opening and viewing the rink from inside. My rink is about 20' from the house, which makes it great for viewing from the whole house. We can see everywhere on the rink from any facing window, which is nice when you can just let the children out to skate and easily watch the enjoyment while warmly conversing with friends and neighbors. It's also nice to walk out, set the kids on the rink and hop back inside. Then if the kids get cold, hop out and back in again. Also you won't have to shovel a very long path to the rink, although the path gets well worn out without any shoveling anyway.

Pitch of the rink site may be more important to some than others as previously mentioned. If you have a nice level site to work with, all the better. When your site is level the sides will be very easy to put up, as opposed to a little more effort when the site is not level. A **NiceRink** can easily be built on ground that is not level as well. That's why we created the NiceRink system of building a rink. Ninety Nine percent of yards will not be flat, as a yard that is perfectly flat does not have proper drainage away from the house and shouldn't have water added onto it because it may cause flooding problems in the spring. My yard currently has an 18" pitch, which is quite a bit, but we have clients that have built rinks with 30" of pitch with no problems. You just have to make your sideboards higher and stronger to support the weight of the water on the deep end. We'll go over that later on in the instructions. My current rink is 55' x 85', and with the 18" of pitch it used to take myself and a friend about 3-4 hours to complete the old way of stake & sideboard construction and about 30-40 minutes to lay out the liner. With the NiceRink brackets, it only takes about 1.5 –2 hours to set up the boards! That's easily less than 50% of the time it takes to spray the rink to completion and get the ice surface you'll get from a single, time saving flood. The nice thing about filling a NiceRink liner to get a base, is that your ice surface will always be level to start with, as water will always seek its own level. No more skating up, down and over hills!

Size of the rink should be determined by several factors. The first factor is your available space. If you have the space and budget, go big. You'll enjoy your rink much more when you have more room, especially when you have skating parties (which I can assure you, you will). Everybody will have plenty of room to skate around without bumping into each other. If you're not sure if you'll use your rink enough to make it worth your while, start smaller. You can always decide to go bigger in a year or two, and continue to use the boards and equipment that have already been purchased. Besides space and budget, the people that will be using the rink will determine the size as well. When your rink is just for children, you can go smaller and be very satisfied, as they don't need a huge rink to make it feel huge to them. On the other hand, if you're an experienced skater yourself, you'll be able to cover a 30' span rather easily with one stride, which doesn't end up being really fun if you're an avid adult skater. The choice is entirely up to you, the "rink manager", but I can tell you I've heard time after time, "I sure wish we would've went bigger!"

Also keep in mind when deciding size, that plywood and our NEW plastic boards come in 8' and 4' sections respectively. This means rinks with widths and lengths divisible by eight or four are the easiest to put up and will have less wasted material.

Ordering the NiceRink liner is a very simple affair. After determining what size rink you'd like, add 5' to the length and 5' to the width to get your liner size. Examples: 35' x 45' rinks requires a 40' x 50' liner, a 55' x 95' rink requires and 60' x 100' liner. This will give you 2.5' of liner around the entire perimeter of your rink to go up the inside the edge of the boards to contain the water/ice. As mentioned in our NiceRink pricing, the sizes of liner available are dependent upon which liner type you select. NiceRink #1 material is available in widths of; 20',30',35',40',50',60',70',80',90' and so on by any length. When the width of a NiceRink #1 liner is over 70', the **width** must be the 10' increment. For NiceRink #3 material, the liners can be ordered in widths of 24',30',36',48',54',60',72',78',84',96',102',108',120',126',132' by length increments of 5', starting at 50'. The NiceRink "CheapSkate" material is available in widths of 32',40',50',60' (and 80' by request) by any length. If you have any questions, PLEASE call us @ 888-NiceRink for help! We'd rather help now, than have the wrong size at your house later.

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Perimeter material needs

The perimeter of your rink can be constructed using a multitude of materials depending on your site, the time you have, how you want it to look and what kind of skating the rink will be used for. The easiest way to put up the sideboard system is the NiceRink Brackets and Thermoformed boards. The brackets can be placed into UNFROZEN ground in less than half the time of the following construction method. The brackets will hold either our NEW 18" x 4' interlocking thermoformed plastic boards and/or any height piece of ¾" plywood, making them very versatile for just about any rink site. If you plan on "building" the sideboard system, a board thickness of 1/2", 5/8", or 3/4" thick can be utilized. A sheet of "CDX" plywood is supplied in 4' x 8' sheets, which can be cut by either the lumber yard or yourself if you're handy. A ¾"x4'x8' sheet of "CDX" plywood can be bought for around $35.00, depending on your location, and then cut into strips of either 6", 8", 12", 16" or 24". I mention these sizes because they are all divisible by 48", so there isn't any wasted material left over. With all that in mind, a ¾" sheet of plywood cut into four 12" x 8' strips would yield 32 lineal feet of boards for around $35.00, making a 36' x 66' rink, having a side board cost of around $225.00. The boards should last 5-7 years if stored properly, which when amortized out, brings the cost per year down to $32.15 per year. Another point of using plywood is that the amount of board on the ground is very small and will have very little effect on the grass underneath. The above is the favored method among rink building veterans, however other items that can be used are the NiceRink brackets as mentioned, railroad ties, landscape timbers, 2"x6", 8", 10", 12"...PVC piping, telephone poles, old concrete forms or whatever you may have around that can used to support and contain water. The building of the sides is the part every first time rink builder thinks is going to be a big hassle, when in fact, after the first year a 55' x 95' rink can be put up with two people in about 3-4 hours or less. After you have selected your top choice location, put a stake in each of the four corners. Now the pitch of the site must be determined so that the right height of boards can be utilized to contain your deeper water on the lower end of your site. There are a few ways of checking your pitch, the first and least expensive way is to purchase a line level from your local hardware store and follow the enclosed directions within the package. Start at what you think is your highest point and tie a string to the stake 4" above ground level. We recommend a minimum of 4" of water/ice at the shallow end, so this will be your water height at this stake if it is in fact the highest point of your yard. Your pitch will determine the depth at the low end of the rink. Pull the string as tight as possible and then raise or lower the low end of the string at the other two stakes until the line level is level. After going from stake to stake all around, tie off the string at the height it's at, and that is your water/ice line. To double-check yourself, go across the angles from corner to corner as well. I have found that when using a line level on large rinks, it is better to put a couple of stakes between the corners so the line doesn't sag between the stakes when the line level is set on it and give you an incorrect reading. An easier way is with the new laser levelers. The cost is about $20.00, but they are much more accurate and easier to use. The easiest and least expensive way to check your site, is to see if a friend in the construction or landscape business has what is called a laser leveling transit. Call him/her over for coffee and have them "shoot" your site. A laser transit will give you a perfect reading of how much pitch is at a particular site and the boards can then be built accordingly. When the pitch is determined, you can then measure the height of the boards you'll need to contain your water. The line that is now strung around the perimeter of your rink is the <u>water</u> level line. Your board heights must be over this line to contain the water. The height of board over the string should be determined by how the rink will be used. If it is just for skating, a low sideboard will look nice and clean. If you are planning on using bumper caps, a board edge of at least 4" above the water is needed to completely seat the bumper caps onto the boards. If the main focus of your rink is to play hockey, a higher board should be used to contain the pucks, especially on the ends or where ever you plan on shooting at the net. (You can also use the 8'x24' perimeter netting or the white plastic fence, with flexible posts to contain the pucks and keep your boards low and the rink looking nice.) Remember again, that the boards come in 8' or 4' sections, so rinks that have widths and lengths that are divisible by eight will be the

easiest to construct, i.e. 32' x 48'. Now that the rink size and board heights have been determined, let's figure what and how many NiceRink brackets, boards, stakes & screws you'll need.

Determining what materials you'll need

How many NiceRink brackets will you need? The perimeter distance around your rink will determine that. For example, a 35' wide x 65' long rink would have linear perimeter foot measurement of 200'. This is determined by using 2x the width + 2x the length of your rink, 2 x 35' = 70', 2 x 65' = 130', 70'+130'=200'. There should be a bracket every 4', plus two at each corner. The math equation for that is the perimeter divided by 4, plus 3. A perimeter of 200' would require 200' divided by 4= 50, plus 3 equals' 53 brackets. If using plywood, how many sheets will you need? For Plastic Boards, skip ahead to Plastic Board Requirements. If you have the luxury of a fairly level site, your boards can be as short as 12". Recommended minimum height is 12" boards. If any hockey pucks in general are going to be used, I wouldn't go below an 8" board height above the ice to lessen the chance of the pucks flying out all the time. For the sake of figuring, let's say all your boards are 12" tall. We have 200 lineal feet of sides to put up and the boards are 12" x 8' long each, so 200' divided by 8' is 25 sheets of 8' long boards. At a 12" height you'll get four 12" x 8' boards from each sheet of plywood. As mentioned above, we needed 25 sheets of 12" x 8' and we'll get four from each sheet of plywood. 25 divided by 4 equals 6.25 or 7 full sheets of plywood, cut into 12" x 8' pieces. For stakes, if not using the NiceRink brackets, you'll need one stake minimum for every four feet of boards. Back to our 200' of perimeter divided by four equal's 50 stakes. (pick up 5-10 extra just to have on hand). You will also need two 1.5" wood screws for each wood stake or at least two times the number of stakes you have. In this case you'd need 100 screws, get 150 to be safe. You may want more stakes in some areas, especially if you have an area that has more than an 8" pitch, which is covered in the next paragraph.

PLASTIC BOARD REQUIREMENTS: This figuring is much easier, as they are only available in 18" x 4' sections. So divide your perimeter feet x 4', and deduct four boards. The plastic boards only make round corners, therefore eliminating one board per corner. For the above example, with 200 perimeter feet, divide 200' by 4' = 50 – 4 = 46 Plastic boards.

Now that you have all your board needs figured and have them at you rink site, lay them all out around inside the string perimeter of your rink boundaries along with one NiceRink bracket or wooden stake at every four foot increment along your boards. First method will be the instruction on using the pounded stake method. If you purchased the NiceRink brackets, skip ahead to the next section on the NiceRink brackets. When starting to put up your boards, start at a corner on the inside of your rink line. Leave the string up while building, so you know where your ice line is going to be. DO NOT build your rink dimensions bigger than your measured string line, as your liner will be to small. Tip the first board up and align a stake on the rinks outside edge at the end of the board, "corner of the rink". If you are utilizing Radius Boards (Complete Radius Board Instructions Below), start this process 60" in from the corner, and stop 60" short of each corner. The Radius boards get put in last. Drop the sideboard down flat back on the ground and proceed to pound the first stake in. Try to keep it straight up and down as best as possible. Pound it down until it is at least 1-2" below the height of the side board you are using. (You may have to tip your side board up and down a couple of times to make sure the top of the stake is going to end up being below the top of the side board). Tip the side board back up and position another stake approximately in the middle of the board or 4' away if using boards longer than 8'. Again drop the sideboard down and pound the stake in 1-2" below the height of the sideboard. Tip the sideboard back up again and align the third stake at the end of the sideboard or 4' from the last, if using a longer board. If an 8' board length is being used, you should be at the end of the first board with the third stake. Align this stake, half behind the first board and the other half to be used with the next board to go up. In other words, share the stake at the end of each board with the first part of the next. When you've pounded the third stake into place, tip the first sideboard back up and using a drill (cordless power models work best) with a Phillips head bit in the drill. Proceed to put two screws through the plywood and into each stake from the inside of the rink to the outside, one towards the top of each stake and one 3-4" up from the ground level. This will make the board nice and secure and eliminate problems later when it's 5 degrees out. Continue this process around the entire perimeter and you'll be all set to roll out your NiceRink liner **once the weather turns cold**. If your rink site is pitched 8" or more, you'll have 10" plus of water pushing on the sideboards at the deep end. If this is true of your site, you'll also **need to do** the following to prevent the water's weight from pushing your sideboards over. First construct your entire perimeter as directed above and then at the point where the water is going to be 10"+, you'll need to put an "angle stake" attached to each vertical stake at points where the water is going to be 10" or more. An angle stake is simply an additional stake that's point is set about 8-10" out from the vertical stake and then pounded in at an angle until the top of the angle stake is slightly below the vertical stake. The angle stake can then be attached to the vertical stake by using a nail or screw which will completely penetrate the angle stake and enter into the vertical stake at least an inch or more. What you have done by doing this, is to take the water weight at the top of the boards and distribute it to the angle stake, therefore helping prevent the water from pushing the boards over, and it will! Just give me a call I'll tell you all about it!!!!!

PLEASE READ BEFORE INSTALLING YOUR NICERINK BRACKETS

The NiceRink Brackets design allows them to be installed easily year after year, with proper instruction. Please read through the following instructions to better educate yourself and your helpers, on how the proper installation of the brackets is to be done.

NiceRink Bracket Installation Utilizing WOOD Boards
(FOR PLASTIC BOARDS-GO TO NEXT SECTION WITH PLASTIC BOARDS)

Bracket Install Pictures available at: http://65.61.29.229/nicerink/750/bracket_install.html

To start the bracket installation using wood boards, mark your four corners with stakes and run a string to outline your rink and leave the string up. Test your slope as mentioned at the start of these instructions to determine how much water/ice will be at all portions of your rink. (4" minimum of water/ice is required). Set out all of the brackets, one every four feet and two at each corner. If utilizing Radius Boards, the center of each corner bracket should be set 60" away from your corner stake to install the Radius boards. (Complete Radius Board Instructions Below) The radius boards are last, just leave the corners open until all the boards are up. One bracket will be in the center of each board and one will be shared at the ends of each 2 boards. If you have a deep end of more than 16" of water/ice the brackets should be spaced at 2-2½' intervals along the deep end and ¾" diameter spikes driven through the provided support hole. You'll notice on the design of the brackets that the "spikes" that go into the ground are angled backward. They are engineered that way to hold the most water pressure possible with this design. This angled spike design presents one key issue when installing them. When the tips of the spikes are set into the ground, the bracket will travel backward approximately 2" when they are completely installed into the ground. You'll want to start the front spike tip of each bracket, the one under the U-Channel on the string line, then simply place the string into the U-channel before you start pushing the bracket in. By doing this your brackets will be lined up straight and in the right location to accommodate your measurements and boards you've already purchased. Also, make sure before they're installed into the ground that they are at a 90 degree angle from the string line. This will make your boards go in easier and be straight down the lengths of your rink. It will be easier to install the brackets into the ground with two people, one person to apply pressure or pound at the front of the bracket and one for the back portion of the bracket. By having two people applying pressure at the same time or alternating hits, the bracket will install into the ground much easier than trying to go back and forth yourself. Once you have your brackets all laid out and ready to install, start them into the ground and get them as far as possible with foot pressure. Use the inside of the bracket for one foot and the step plates on either end for your other foot. Make sure to apply the pressure to the center of the end step plates.

DO NOT STEP ON THE CORNERS OF THE STEP PLATES, AS THIS MAY CAUSE DAMAGE TO YOUR BRACKETS!!!!!!!!!!!!!!!!!!

Once you have the bracket started in the ground you'll now be able to put one foot inside the bracket opening and one on the back step plate. Do this and rock back and forth (side to side) to loosen the ground and work the brackets in. If they did not go in all the way to the bottom, don't be alarmed, the first 4" installs relatively easy, the last 2" is where your friend comes in. Now you can pound the brackets into the ground with a 2x2 stake and/or a piece of 2x4. **POUND VERY CAREFULLY WHEN HITTING DIRECTLY ON THE BRACKETS WITH ANY HAMMER**, **THIS MAY CAUSE DAMAGE TO YOUR BRACKETS!!!!!!** How you pound them is to distribute the force of the hammer evenly over the step plates using the 2x2 or 2x4 piece of wood to avoid breaking them. For the back step plate, lay the 2x2 down across the step plate, and pound on top of the 2x2 in the general direction the bracket is going into the ground. (Do not try to get one side completely in and then the other. Work your way back and forth until completely installed.) Move to the front of the bracket, stand the 2x2 stake upright on the center of the step plate and aim in the direction the bracket is going into the ground. Do not aim the stake too horizontally as this may break the "U-channel" off. To avoid this problem all together you can use a scrap piece of ¾" board, inserted into the "U-channel" negating the possibility of breaking that piece all together. When the first three brackets are installed into the ground, you can then proceed with the board installation. This is recommended to make sure the brackets are spaced properly. The front board holder portion, "U-channel" of the bracket is purposely designed with an inward angle in front to keep the boards secure against the upright portion of the bracket. The narrower top opening of the "U-channel" is actually thinner than the ¾" board you will be placing into the U-channel. When putting the boards into the U-channel, you'll have to slightly pry open the top or angle and wedge the board in at the start so it will slide into the bracket properly. After all the boards are in place, we recommend the following procedure to help prevent the possibility of the front part of the U-channel from breaking off. This extra procedure will also make your sideboard system much sturdier. You should screw the sideboard to the bracket. This is done by drilling a small pilot hole into the back of the bracket (two at a shared bracket point), approximately ¾" down from the top of the bracket at the base of the top flange. You should only drill through the bracket, not the board, as the screws will self tap into the board by itself to secure the board to the bracket. This drilling will only have to be done once, as next year the holes will already be there. Use a wood screw, Phillips head, 3/4" long. (The screws will also self-tap into the brackets if you give a little pressure to them while screwing them into the bracket, eliminating the need to drill

the holes.) If you use screws longer than 3/4", there is the possibility of going all the way through to the inside of the rink with the screw tip, which presents the obvious problem of puncturing your NiceRink liner. Included with your brackets were four corner brackets that will help to keep your corners connected if you're not using radius boards. They can be lined up and screwed into place through the provided screw holes.

NiceRink Bracket Installation Utilizing Thermoformed Plastic Boards

Bracket Install Pictures available at: http://65.61.29.229/nicerink/750/bracket_install.html

To start the bracket installation using the new thermoformed plastic boards, mark your four corners with stakes and run a string to get the general outline your rink. Test your slope as mentioned at the start of these directions to determine how much water/ice will be at all portions of your rink. (4" minimum of water/ice is required). Set out all of the brackets, one every four feet minimum and bring out all your plastic boards. (Complete Radius Instructions Below to make your corners round) One bracket will be shared between the end junctions of two boards. If you have a deep end of more than 12" of water/ice using the plastic boards, the brackets should be placed one at each junction and ALSO one in the center of each plastic board. If over 12" of water/ice ¾" diameter spikes should be driven into the bracket through the provided support hole. You'll notice on the design of the brackets that the "spikes" that go into the ground are angled backward. They are engineered that way to hold the most water pressure possible with this design. This angled spike design presents one key issue when installing them. When the tips of the spikes are set into the ground, the bracket will travel backward approximately 2" when they are completely installed into the ground. With the Thermoformed boards, you will actually be able to put up all your boards first and set them up freestanding where your rink will be, before you even start installing the brackets. Start by interlocking all of your boards together, and standing them up as you go. To connect the last two boards together, simply swing the two last boards into the rink until they can be connected, and slide them all back into position. After you have the boards ALL attached to one another, set them on or as close to on the string line as possible without exceeding your liner dimensions less 5' either way. At this point you can move and maneuver your plastic sideboards until you have the rink exactly how you want it. You can get your corners bent how you want, go around any trees and/or landscaping. Remember NOT to make the dimensions any larger than 5' less in width and length than the liner you bought to accommodate your rink. The rink should be made 5' shorter in width and length than your actual liner size. Now that your rink boards are all standing up, we can get to the brackets. One bracket will be shared every 4' at each board seam, EXCEPT on radius corners if you so choose to round your corners. Starting in the middle of one of the lengths, place you finger on the ground on the back of the board at a seam, and keep it there. Push your plastic sideboards forward about 8"-12", and then put the front spike of a bracket, (the one under the U-Channel) where your finger is. (Move your finger first…) By doing this your brackets will be lined up straight and in the right location to accommodate the location of your boards you've already placed. For the corner areas of the rink, place the tip of the bracket about ½" in front of your finger fro proper alignment. Also, make sure before they're installed into the ground that they are at a 90 degree angle from the boards. This will make your boards go in easier and be straight down the lengths of your rink. It will be easier to install the brackets into the ground with two people, one person to apply pressure or pound at the front of the bracket and one for the back portion of the bracket. By having two people applying pressure at the same time or alternating hits, the bracket will install into the ground much easier than trying to go back and forth yourself. Start them into the ground and get them as far as possible with foot pressure. Use the inside of the bracket for one foot and the step plates on either end for your other foot. Make sure to apply the pressure to the center of the end step plates.

DO NOT STEP ON THE CORNERS OF THE STEP PLATES, AS THIS MAY CAUSE DAMAGE TO YOUR BRACKETS!!!!!!!!!!!!!!!!!!

Once you have the bracket started in the ground you'll now be able to put one foot inside the bracket opening and one on the back step plate. Do this and rock back and forth (side to side) to loosen the ground and work the brackets in. If they did not go in all the way to the bottom, don't be alarmed, the first 4" installs relatively easy, the last 2" is where your friend comes in. Now you can pound the stakes into the ground with a 2x2 stake and/or a piece of 2x4. **POUND VERY CAREFULLY WHEN HITTING DIRECTLY ON THE BRACKETS WITH ANY HAMMER**, **THIS MAY CAUSE DAMAGE TO YOUR BRACKETS!!!!!!** How you pound them is to distribute the force of the hammer evenly over the step plates using the 2x2 or 2x4 piece of wood to avoid breaking them. For the back step plate, lay the 2x2 down across the step plate, and pound on top of the 2x2 in the general direction the bracket is going into the ground. (Do not try to get one side completely in and then the other. Work your way back and forth until completely installed.) Move to the front of the bracket, stand the 2x2 stake upright in the corner of the step plate and aim in the direction the bracket is going into the ground. Do not aim the stake too horizontally as shown as this may break the "U-channel" off. To avoid this problem all together you can use a scrap piece of ¾" board, inserted into the "U-channel" negating the possibility of breaking that piece all together. As the brackets are installed into the ground, you can then proceed with the plastic board installation. This is recommended to make sure the brackets are lined up properly. The front board holder portion, "U-channel" of the bracket is purposely designed with an inward angle in front to keep the boards secure against the upright portion. The

narrower top opening of the "U-channel" is actually thinner than the ¾" width of the plastic board you will be placing into the U-channel. When putting the boards into the U-channel, you'll have to slightly pry open the top at the start so it will slide into the bracket properly. Make sure to fully seat the boards into the brackets, and the aluminum support bar locks over the top of the bracket flange.

Radius Board Installation

(If you have the thermoformed boards, you may use them to make your corners, SEE BELOW) If you are utilizing regular Radius Boards, I have mentioned several times above about starting your side boards 60" from the actual 90˚ corner in each direction. The radius boards (RB's) will fit into that 60"x60" opening. If you used brackets, you should have half a bracket open on each end of each corner. That's where the RB's fit into. It's a tight squeeze when it's cold, and is easier to pre-bend them into shape with two people. If you place one end on the ground before installing and bend them into the curved shape the corner will be, they will hold their memory curve for a little time until you install them into the brackets. Start by placing one end of your RB into one of the bracket openings. Then have one person stay at that end to hold the board in the bracket, and proceed to bend the RB towards the other bracket opening. Over bend it until the end of the RB lines up with the other Bracket opening, and slide it into the bracket U-channel. The hard part is done! As you'll notice in the pictures of the radius boards in the catalog and/or website, there are also wood stakes behind the RB's. This is for added corner support, and **SHOULD** be done. I used three 2"x2" stakes spread evenly across the 8' length. Pound 3-2"x2" stakes evenly spread 3" below the top of the RB's. Then screw them to the RB's with a 1 ½" wood screw, from the inside of the rink, through the RB, then into the 2x2 stake securing the stakes and RB's as one solid unit. If you didn't use brackets, you'll need 5-2"x2" wood stakes for EACH Radius Board. Pound one stake just outside and next to the end of each straight sideboard, and then flex the RB into place the same as above, using the two stakes as your holders. Pound the other three stakes as explained above, and attach. Make sure all stakes are below the top of the board.

Thermoformed Board Radius Corners: To use the NiceRink thermoformed plastic boards and make rounded corners the opening in the corners will change and can be completely custom. You can make an 8' radius with three thermoformed boards or a 10'6" radius with four thermoformed boards. Leave either 8' from the corner each way or 10'6" and simply swivel them into place. One side of each thermoformed board is designed to accept a NiceRink Bracket. On the corners using the thermoformed boards, the brackets DO NOT need to be on both boards. They only need to be on the board that has 4" opening to accommodate the bracket. If the water/ice is more than 8", use another bracket in the center bracket location as well for added support.

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Laying out & Filling the NiceRink liner

Do Not attempt the liner roll out during or on a windy day!!

DO NOT INSTALL AND FILL LINER WITH SNOW IN THE FORECAST!!

When: The best answer for this is not a date, but rather the weather forecast. As a rule of thumb, in Southeastern Wisconsin, I usually install my brackets and sideboards the weekend before Thanksgiving and lay out the liner the week after. By giving it a good two weeks, it will also give the brackets and boards a chance to "freeze in". The week after usually has a temperature ranging from 30-35 degrees during the day and down in the high teens to low 20's overnight. The nice cold nights are the trick! With a few cold nights in the low 20's you'll be able to freeze 1-2" of water per night or more. With that kind of cold at night, combined with the reflective and water holding qualities of the NiceRink liners during the warmer part of the day, you should freeze up a rink, with 8" or less of pitch, solid in 4-7 days. Laying out the liner is pretty much the easiest part of the job. (Kind of ironic, the most integral part of the system being the easiest part.) Most liners will roll out down the length unless otherwise noted on the outer liner wrapping. With that in mind, you'll need to place your liner on the outside center of one of the ends of the perimeter. Carefully unwrap or cut the stretch wrapping and start to roll the liner up over the end board and down to the other end. If you have extra hanging over, **leave it on**! You can cut it off later when there's water/ice holding it in place. When the liner is laid out and empty, it will seem as though you have a lot of extra liner material. Once the water/ice gets on top of the liner, it will take up much of the slack that seems like extra material. As soon as the liner is spread out and in the position that covers the entire interior area and the extra material is laid up and over the edge of your sides, this is a great point to put on the bumpercaps if you are using them. They will aid in holding the liner secure and tight to the boards and help prevent the wind from blowing it around. **Do not permanently attach your liner to the boards until the water is in.** If you do and don't leave enough slack, the weight of the water will tear your liner as it fills up. At this point, it's wise to place some sort of weights on the liner, along the inside edge of the boards. This is to temporarily hold the liner in place while it is filling with water. I used to use carefully placed pieces of firewood, about every 4-5' along the edge. In 2001 I started using the water fillable liner weights that are now available from NiceRink. No sharp edges to worry about puncturing your liner, and they just empty out into the rink when you're done with them for the year. You can use whatever is readily available to you, such as sand bags, 2x4's, pipes, or anything else that doesn't have much chance of puncturing the liner. Put the hose in, turn it on, and let it run. **DO NOT,** I repeat, ***DO NOT*** layer your ice using the NiceRink liner system. The liners are tough and are used to purposely eliminate the time wasting, base layering process. You can layer for stronger ice after your base is down. As the water fills into the liner and reaches your weights,

whatever they may be, you can remove them from the rink. If your not using the water weights, take your liner weights from the inside of the rink and place them on the outside edge of the boards, as you'll need the again in the spring to hold the liner down when emptying. Fill the liner until it's at a level where as the shallowest point is filled to a minimum of 3-4" of water. While it's filling the liner will get very taught in some spots if you have BumperCaps applied. Simply lift the BumperCaps, the liner will slide down into place, and immediately replace the BumperCap. When the shallow side of your rink gets to 3-4" of water depth, turn off the water, coil up the hose and do your best "bring on the cold dance!" If you are going to be utilizing KickPlates, you can either lean over the sideboards and attach them now, or wait until the water is frozen and attach them then. I like to wait until I can physically go on the ice and install the KickPlates as it's easier to work on the ice rather than leaning over water with power tools. After the water/ice is in, hold the KickPlate with its bottom edge at the water line or "slightly" in the water. The KickPlate will then extend upward another 6" to the top of them. The mounting screws are to go 4 per KickPlate, spread the screws out evenly at the top edge of the KickPlate. By top edge meaning approx. 1/2" down from the top edge. This is where I can explain that it's OK to screw through the liner. All the screw holes will be anywhere from 5-6" above the water line, and will have no effect on the water holding capabilities of the liner. Do not over tighten the screws into the boards. Over tightening will strip out the hole where the screw is going in. After all the KickPlates are mounted, I take a permanent marker and mark a line all the way around the rink along the top edge of the KickPlates, that way you'll know that all your screw holes are anywhere from 1/4" to 1" below that line, and will allow you to more easily line up and/or patch your liner correctly next year. Don't be too antsy to get skating on your rink. Make sure it's frozen up good and solid. For the impatient skaters (like me!), you can test your rink without getting on the ice by first, pressing on the ice with your hands to see how thick the ice is. If you can't push it down very easily, then you can press one foot on the ice, if you hear cracking, **STAY OFF**, if not, you can put more pressure on the ice and then the other foot if it seems ok. Now, you'll be saying to yourself, "I did it, I really have my very own rink, right in my back yard", all the while checking to see if the neighbors are watching you, the crazy person, as your creation has become a **SOLID** reality. Don't deny it, I'm going on my 15th rink and I still look for the neighbors!

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Maintaining the Ice

There are several methods of maintaining the ice. There is the flood method, spray and squeegee method, spray-spray-spray-spray, NiceIce resurfacer and the Zamboni method. I'll go through all of them in detail and you can make your own decisions for your rink, as you are the **"rink manager".**

The Flood –The flood method is simply that, flooding. To flood the rink you'll need to have the availability of large hoses and above average water pressure. You'll need to get the entire rink completely covered with water before any of it starts to freeze. I will actually use this method if the water wasn't frozen and it snows on the rink. You end up with kind of a mess. The best way to overcome the mess is to totally saturate the snow to the point where it is completely slush and no white, dry snow visible. This will freeze up and be bumpy, at which time you'll have to use one of the other methods to smooth out your ice. **Do not use** the flood method on smooth ice, you'll wreck it.

Spray and Squeegee-Again, simply spray water onto the ice surface and squeegee it out to the spots that need the most attention. Do not try and squeegee areas that have started to freeze. You'll end up with mounds of frozen slush, which will have to be chipped or scraped off later.

Spray-Spray-Spray-Spray-The name says it all! The trick to spray coating ice is wet ice is done ice. In other words, start spraying a spot on the rink until it's glossy and move on. Put the layers of water on as thin as possible to get a "Nice" glass like finish and also to prevent cracking or "lifting". The way water freezes will help explain this. Water normally freezes from the top down and it also expands as it freezes. Therefore, if you put too much water on the surface and it starts to freeze, it will first freeze the top and you'll have your base ice, a layer of water and the top layer of fresh ice. Three layers; base ice-water-top ice. The water in between will start to freeze and expand as it does so. As it expands, it can only expand up into the fresh ice, therefore causing the "lifting" of the fresh top ice layer and making it bumpy and/or uneven again. If thin layers are applied, it will freeze solid with no expansion to give you the glass like finish that ice-skating has become accustomed to. This method is the most time consuming, but will give you the best ice surface without the use of the development listed next. A 40' x 70' rink will take anywhere from ½ hour to 1 ½ hours by spraying to get the ice back in glass shape, depending on the temperature and ice condition you have to start with.

NiceIce Resurfacer-The NiceIce ice resurfacer is the best and most economical method of resurfacing any ice rink. My personal backyard rink is 55' x 85' and takes me a whole 12 minutes to put on a fresh coat of ice. It used to take me at least 1 ½ hours to spray coat a new layer of ice and now, as mentioned takes about 12 minutes or less, with less water and a much better ice surface to skate on when done. I usually put two coats on when I'm out and the second coat takes less time than the first and provides a surface that rivals indoor ice quality.

The single biggest detriment to ice is the oxygen/air contained within the ice. You'll remember skating out on the ponds and lakes and when you made a sharp cut you'd get a big groove in the ice. The groove could be formed because too much air is contained within ice, allowing the skate to easily dig in and groove out the surface. Your base is basically the same as pond ice until it gets resurfaced and layered a couple of times. While utilizing a Patented NiceIce resurfacer, you will be laying down a very thin, fast freezing layer of deoxygenated water that will then become your skating surface. You now have the same ice surface that is laid down on the indoor rinks and sometimes better as air temperatures determine outdoor ice quality. Indoor ice is kept at about a constant 21-24 degrees. Your ice can be as cold as the outdoor temperature, 15, 10, 5 and so on. Hard, deoxygenated ice is good, fast ice and also will not get chewed up as much, requiring less maintenance time and more skating time!!!!! The NiceIce resurfacer is also great when Mother Nature doesn't cooperate like we would appreciate her doing so. When she dumps snow, rain, sleet or slush, it has a definite tendency to mess up a rink surface very quickly. The NiceIce resurfacer can lay down approximately ¼-1/2" inch of ice in an hour, depending on the outside air temperature which usually takes care of even the most severe rink surface in a maximum of 3-4 hours of walking. Let's face it, we all need winter exercise anyway, Right?

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When and how to close up

The issue of when to close up for the season is again, not really a date or time, but the time at which the weather will no longer support the ice structure and you're left with, well a pond. This is obviously going to vary greatly from region to region as Minnesotans will most likely be skating into March, while a rink in southern Pennsylvania may only make it until mid February sometime.

*****WARNING*****

*******Do not drain to an area where the water is going to end up in someone else's backyard!!******

Once the time has come to start taking down the rink, the first thing to do is get the water out of the liner. There are two ways to do this. First, is to make a small slit in the liner (let me finish), at the deep end of your rink and let the water drain out that hole as it melts. The hole can then easily be patched with the repair tape provided with your liner for next year's use. The first method is the easiest; because you won't get your feet wet or be fighting any water pressure as with method two. Method two takes two people and goes like this. One person carefully pulls back the liner at the waters deepest point and stands inside the sideboard structure holding the water/liner back so the other person can remove a few brackets and/or stakes. The person inside the boards should then step to the outside of the boards. When this is done, push the edge of the liner down into the water. The water will start seeping between the boards. Next start pulling the loose board up allowing a gap to be formed at the base of the board. As the gap gets larger the liner will fall into and through the gap. When it goes through, watch out for Niagara Falls! The water will be free flowing to wherever the low land is. While the water is draining out the low end, the high areas of the liner will then become exposed. Remember those liner weights we talked about when installing the liner? Well this is why they needed to be left close by. As the liner is being exposed, take your weights whatever they were and place them back onto the liner to hold it in place while the water is draining. This will help prevent any wind gusts from turning your rink liner into a kite. (A big one!) Other than replacing the weights, you can roll your liner towards the water as it drains, which will prevent the liner from blowing around as well. When all of the water is out, you can then proceed to refold & roll your liner for storage. (Secret Tip: Roll Bounce® Fabric softener sheets into the liner when storing. This will help prevent the Mice and Critters from chewing little holes.) The trick to this rolling process is not trapping any air inside the folds, as this would create a large air balloon to deal with. What needs to be done is, get a partner or two to help with this portion of taking down the rink. All participants' line up along one side of the rink, preferably all lined up along the width or short side of the rink. Then grab the liner about 8-10' down the length and fold it back, pulling the liner from the other end, toward the end where you started. This will give you a fold about 4-5'. Repeat this process over and over until you've pulled the entire liner into a "fan folded" form. At this point, you can do one of two things. You can either roll the liner from one end to the other as it is which will allow all of the air to escape from the liner and give you a compact roll like the one that was sent originally to you wound on our machines. The other option is to fold the liner in half, from one end to the other. When it's folded in half you can then roll the liner as above, from the folded end to the open end, again allowing the air to escape out the other end while being rolled. When done folding, the liner is ready for storage. Try to find a spot the mice, chipmunks, etc. won't be able to get at easily. Also the liner should be stored out of the sunlight. The NiceRink liners are UV protected, but the less sun they receive the longer they'll last, on the UV aspect anyway. Then you can take down the boards and whatever else you have and store it all away until fall comes around again.

Frequently asked questions

Q: Must the ground be perfectly level before installing my NiceRink?

A: No. Most yards are not level in order to provide proper drainage away from the home. The NiceRink system can be setup on slopes of 14" very easily and larger slopes with a little extra care. Your ice will be level no matter what the slope is, as water seeks it's own level.

Q: Do, I need a large area for a full size rink in order to skate well?

A: No. Even if you only have room for a small NiceRink, your family can enjoy hours of skating enjoyment. Larger rinks will accommodate a greater number of skaters as well as a greater variety of activities and games.

Q: How many seasons can I expect from my NiceRink liner?

A: Your NiceRink is designed to give you several years of service. Accidental damage is easily repaired using our NiceRink tape or underwater glue systems. The liner should be taken up once the weather thaws the ice and stored properly to ensure many years of use.

Q: What is the best time to install my NiceRink?

A: The NiceRink Brackets or your chosen side system should be installed before the ground freezes, as it is hard to pound stakes into frozen ground. For the liner installation, any time after the onset of cold weather is a good time to install your NiceRink liner. It is best to fill the liner immediately after it is in place to prevent accidental damage from high winds or animals. Walking on the liner with the wrong shoes or over sharp objects left underneath can cause damage.

Q: How will rain and snow affect the surface of my NiceRink?

A: Snow can easily be removed by using one of the many NiceRink shovel designs or a standard snow blower. A NiceIce resurfacer will return even the worst of surfaces back to skating condition no matter what the situation provided the weather stays below freezing.

Q: Will my NiceRink damage my lawn?

A: Absolutely not. Your lawn will come back with no significant problems once the rink is taken down and spring gets into full gear. By the end of May you'll be wondering where the edges of the rink were.

Q: How cold does it have to be for NiceRink to work?

A: There must be extended periods of time when the temperature is below 32 degrees F, otherwise the water will not freeze. Generally, if you have nights that are in from the high teens to the low twenties F, and days that don't get much above 35 degrees F, you'll have a successful rink. With NiceRink's ultra-white colorant, even the sunniest days at 32 degrees F won't have much affect on a NiceRink.

If you haven't purchased your rink yet, and are trying to make up your mind on what to do, ask yourself the following:

1) Liner warranty: NiceRink liners are warranted to hold the water when you get it. Some warranties on the market are for a 5 year "UV warranty". That's fine, but UV damage is not going to be the problem as the liners are covered with Snow and Ice during usage, so the UV doesn't affect the liner. You need a good strong liner to do the work.

2) Can the height of the sides be adjusted? Does the system you're looking at have a system in place to adjust for the slope in your yard, or does the yard have to be perfectly flat for the system to work? NiceRink will simply adjust to slopes in a yard, by simply changing the board height. No need to stack foam or wood blocks under the sides to get them to the right height. NiceRink Brackets will adjust to 16" of water without any additional support needed.

3) How long has the company been around? NiceRink has been around since 1990, along with our parent company being in business for 58 years, since 1948.

4) Market Reputation? Did you get a referral to use a particular rink system? Do you know someone that had a working rink of what you're looking at purchasing?

5) Actual Photos of Rinks and Products: When looking at buying a rink system, make sure you know what you're actually buying. Do you see nice close up photos of what you're actually buying. What are the sides? How do they adapt to uneven ground? Do you see actual rink pictures showing customers rinks in use with the product being used? On a pitched site?

Conclusion

I have tried to be as thorough as possible in documenting these NiceRink instructions to make sure that all aspects of making an outdoor rink are covered. By being overly thorough, some portions can get a little confusing unless you have made a rink before. These directions were written to help give you the knowledge to make your rink building experience easy and complete, so you won't have to deal with some of the situations we've already encountered. If you should have any questions about any portion or think a particular direction needs to be explained better, please feel free to give us a call and we'll better explain your particular issue and then better document that portion for future rink builders.

I hope you've enjoyed this little essay on rink building, as much as I enjoyed writing it!

Sincerely, Jim Stoller-NiceRink-President, Sales & Marketing