Technical Bulletin – XPotential® Installation
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Installation Guidelines for XPotential® 6X6 Impact-Posts™ (Billets) around playground perimeter

Unique Product Characteristics

- The material is heavy. Each 8 ft long billet weighs 160 lbs. As the billets only come in 8 ft lengths, consideration needs be given to moving them around. It is a 2-person job!
- The material is very dense. This makes it hard to cut. The person cutting it should always wear protective eyewear.
- The material is made from recycled plastics. It expands and contracts lengthwise in temperature. Each 8 ft piece can expand or contract 1/8".
- The material has limited bending strength. It should not span distances greater than 16-18 inches, otherwise it may sag/deflect over time.
- The material does have small amounts of non-Ferris metals in it. Currently it's less than 5% by weight. The manufacturer has developed technology to reclaim a higher percentage and future products will have smaller amounts of non-Ferris metals in them.

Pre-design Considerations

- Design or modify the existing perimeter around 8 ft sections. This will keep the expansion and contraction consistent with each billet.
- Try to minimize the cutting of the billets. This will make the installation a lot faster.
- Try to avoid angles.

Pre-installation Recommendations

Cutting: It's the torque, not the RPM, of the cutting device that makes a huge difference. We recommend similar tools that would be used in cutting concrete. A gas power concrete saw with diamond blade works very well. A pipe cutter has also been suggested.
The material can be hard on blades. Some customers have found that using inexpensive carbide tip blades (36 tooth recommended) with a circular (Skil™) saw works fine; while you will go through blades, it still may be more economical. Placing saw blade lubricant on the blade after a few cuts will reduce friction and melting of the plastic billets.
Drilling: The material needs to be pre-drilled. For re-bar or lag bolts a concrete hammer drill with concrete bit works well.
Routering: Not recommended ~ very hard on the router bits.
Lap Joints: Not recommended ~ stick to butt joints or angle cuts at 90-degree corners.

Installation Guidelines

- The ends of the billets should be trimmed. This will ensure a true finished joint when butting the billets end to end. Also, rounding off the cut edge slightly with a file is recommended to reduce the sharpness of the edge.
- The ground should be prepared prior to the material being laid down. Do not lie on top of old wooden material. The ground should be tamped and leveled. Ideally a tamped 12-18 inch gravel base similar to what is done for concrete block is the best. If there is compaction or soil erosion over time the material will want to bend to the lay of the land.
- The material expands and contracts. This is dependent on the temperature of the air and the surface temperature of the material. A general rule of thumb is that if it's cold (5 degrees Celsius or colder) leave a minimum of ¼ inch gap. If the material is hot

(30 degrees Celsius or hotter) put the joints tight together. Between 5 and 30 degrees, a gap of 1/8 of an inch should be fine.

- Try to keep all the billets the same temperature when installing. When on a pallet in the sun the top billets will be hotter than the billets in the middle. Lie out all the material the way you want it, have the temperature become consistent with all the billets, and then fasten.
- If you are putting only one layer down and ½ of the billet is below grade, it's not mandatory to pin them to the ground. Fasten to the inside joints a piece of 8" long 5" wide Steel or ½" Polyboard®. Pre-drill this with slotted holes. This will keep the joints together, stop material from getting into the joint and allow for the expansion and contraction of the billet. The weight of the billets will hold it all in place.
- If you are pinning the material to the ground it's recommended to use a minimum of 3 - 5/8" or ¾" re-bar per 8 ft section. One in the middle and one on each end with a minimum of 8 inches end distance.
- Pre-drill the holes with the same size hole as the size of the re-bar you are using. If the hole is too small it will be very difficult to pound it in.
- If a second layer is required:
    - Overlap the joints
    - Either lag bolt or use a 3/8" x 10" galvanized spiral nail. The lag bolt is preferred if necessary to have to take apart. Both require pre-drilling.
- If a third of fourth layer is required, consideration will have to be given towards using tiebacks.

Installation details




Resources for more information:

http://www.wishboneltd.com/xppost.htm

http://www.xpotentialproducts.com