

Replacing a synthetic turf field — one manager's experience

EAST DELTA SPORTS COMPLEX in Portland, OR is the home of one of FieldTurf's first outdoor installations of a synthetic infill system in the world. The field was installed in October 1997 and after 11 years of use was removed and recycled in August of 2008. It was replaced with a new generation, synthetic infill system sport field, in early November 2008.

The original installation was a first generation 2 inch, 28 ounce slit film, or honeycomb fiber, with an infill of cryogenic rubber and sieved local sand. This slit film fiber was designed to break apart through maintenance to mimic the finer texture of a natural grass blade. The fiber continued to breakdown past the intended fine texture, however, and the field's surface hardness was attributed in part to the fines and angular properties to the sieved local sand.

This field received extensive use with 650 permitted games a year, primarily soccer and both men's and women's lacrosse. The field is an unlocked facility and is open to the public year round. Multiple practices, clinics, and play occur without permits.

The first several years after installation a variety of maintenance tools were used to keep the surface hardness minimized and to address the playability of the field. A Clegg Hammer was used to measure surface hardness and was converted to a Gmax rating. After the fifth year, the fiber was breaking apart so fine that it would actually break off, and the surface hardness, Gmax results, were at a level of concern. After 8 years the field no longer performed as originally intended. After 11 years the field was worn to a level of minimal pile height of fiber above the infill. This resulted in a field surface that allowed very fast ball travel and slippery footing. It was time to replace the field.

Replacement funding is a key consideration that all synthetic sports field owners should be aware of. Ideally it should be established at the onset of a new installation so that funds are in place at the projected longevity of the field. Portland Parks and Recreation was able to develop a replacement trust fund that accumulated revenue generated by permit fees and light usage fees. Additional funding sources included a State Parks land and water conservation grant, user group contributions matched by levy dollars, and concession/gate fees.



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Upon the securing of funds to replace the field, the selection of a new field was based on the improved technology and advancements within the synthetic field industry. The new carpet is a 2 ½-inch, 36-ounce lead-free monofilament fiber. The monofilament fiber is a single strand that is designed to not break apart. The infill advancements include rounded silica sand, washed of fine materials, and cryogenic rubber.

Selecting a contractor and purchasing a field were the final aspects to allow the project to begin. Within the options of the purchasing process, the contract was developed so that the replacement process could begin. A sole source contract was used because of the agreement with Players Turf USA and Nike, that the Nike Grind (ground up, recycled shoes) would be a part of the infill.

The replacement process began with the removal of the existing field. The installer was fortunate to find a plastics recycling company, Agri-Plas Inc., Brooks, OR that was interested in receiving the old carpet fibers and backing to melt down, with the intention to create nursery container pots. The recycling company preferred that the sand and rubber infill was completely removed. Initially, an air compressor was used to blow the infill to the surface and a heavy street broom swept the infill to the sides. About 140 yards of collected infill was used to topdress eight surrounding natural turf

fields. This infill was tested for metals and lead, to alleviate the concern of health and environmental risks. The topdressing was a thin layer that quickly worked its way into the soil profile.

The removal of the infill was challenged by a late August rain that basically cemented the remaining sand and rubber infill into the fibers but fortunately the recycling company was still interested in receiving the carpet even with the remaining infill. The field was then cut into sections, and backhoes were used to fill containers that were trucked to the recycling company.

Options to dispose of the original field include recycling the carpet with a plastics recycling company, such as Agri-Plas, and using the infill as a topdress, or to reuse the carpet and infill in batting cages, driving ranges, or warm up areas. Landfill costs can be high with the weight of an aged field being approximately 8 pounds per square foot.

Once the original field had been removed we had an excellent opportunity to make additional upgrades and improvements such as base drainage, additional electrical connections, and improvements to irrigation for cleaning and cooling. It was also a good opportunity to address users' desired amenities such as a permanent corner kick flag holders, and improved fencing and netting to trap balls and protect the scoreboard.

The base repair was a significant priority once the entire field was removed. During the removal process, there was a lot of heavy vehicle traffic disrupting the original base. It was necessary to add more rock to raise the field level to its original grade. It was then laser graded, watered in, and rolled for adequate compaction. The field was graded with a 0.5% crown.

The carpet consisted of two varying blades of polyethylene monofilament fiber. It was installed with sewn seams that were precisely stitched so that when each 15-foot wide roll was connected, it would not show any gaps at the seams. The base was constantly raked and rolled to ensure the integrity of the laser grading upon completion of installation. The field was designed to have three primary sports laid out permanently, soccer in white, men's

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lacrosse in blue, and women's lacrosse in yellow. The lines were installed by sheep shearing the green fibers to expose the backing and then gluing the 4-inch colored line to the backing. If future construction is anticipated around your field, however, and you might have to temporarily move the turf, it is better not to install permanent lines.

The final phase of the project was to topdress the fibers with the infill of cryogenic crumb rubber, washed round silica sand, and Nike Grind. A driving street broom was used to raise the fibers upright, as well as a walk behind sweeper to raise the fibers on the inlaid lines. A small topdresser was loaded to distribute the sand and rubber in a layering technique deemed appropriate by the installer. Weather posed another challenge in this final phase of the project as rain made it difficult to evenly distribute the infill. This problem was solved with a rake implement created by

the installer to help distribute the infill through the fibers and level it.

Once the field was completed, the installer said there would be some settling of the infill. After 2 months it was agreed that the infill level was higher than what was preferred. The installer then removed the top layer of infill to reveal more carpet fiber above the infill level. This process was performed again 6 months later when the desired level for playability was reached. The users of this new field have since expressed a high level of satisfaction with the playability and performance of the field.

Lessons are learned in a project of this magnitude. After this field replacement, the involved members learned the importance of evaluating the partnering of labor forces between the contractor and the owner, and to focus more attention and discipline to preserving the surrounding facilities. It would have been beneficial to

have the base surveyed after the final grading and compacting, and to survey the field layout for accuracy. Also, it would be helpful to plan the project for periods of ideal weather!

The valued aspects of this replacement process are numerous. The entire field was recycled, including the packing materials of the new surface. The existing entities were intact such as the base, perimeter, and fencing. A new generation of fiber existed in the polyethylene monofilament that was soft, durable, and mimicked the look of natural grass. All of the new materials used were completely lead-free. The use of clean, round, silica sand was an upgrade, and the inlaid lines were installed very precisely. ■

Debra Kneeshaw has been the on-site sports turf manager at East Delta Sports Complex in Portland, OR, for 11 years. She personally supervised the replacement process of a synthetic sports field in 2008.

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