

City of Portland Green Purchasing Case Study

Recycled Tires Cushion Artificial Turf

Purchasing Green

In 1997, Portland Parks & Recreation used crumb rubber, made from shredded old tires, in artificial soccer fields in Strasser Field at Delta Park and Mary Rieke Field at Mary Rieke Elementary School.

The product used, FieldTurf, is an artificial turf sewn into a synthetic fiber carpet, which is then infilled with crumb rubber and sand. Although a common practice now, Delta Park and Mary Rieke were among the first fields in the world to use FieldTurf.

After 11 years of service, Strasser Field was replaced in 2008 with a later generation of synthetic turf called Players Turf. The infill for Players Turf is similar to that of its predecessor, but also includes recycled athletic shoe soles. The old synthetic carpet and rubber infill was recycled into planting pots for local nurseries. Portland Parks & recreation is also pursuing funding for the replacement of Mary Rieke Field, and converted Buckman Field to a synthetic field in 2011.

Benefits

Crumb rubber is made from recycled materials: scrap tires. One passenger tire can be turned into 10-12 pounds of crumb rubber, instead of being landfilled or stockpiled. It typically takes 20,000-40,000 scrap tires to produce enough infill to cover a football field. Strasser Field used about 140 tons of crumb rubber while Mary Rieke Field used about 104 tons.

Unlike the Astroturf-like synthetic grass of the past, new technologies like FieldTurf and Players Turf are designed to perform more like natural grass. The crumb rubber serves as a cushion in the synthetic grass rug and improves traction in all weather conditions.

There have been concerns about lead in infill material of synthetic fields, which is present in coloring agents in the fabric of the carpet as well as the crumb rubber. Before Park Services replaced Strasser Field, they had Players Turf tested by an independent third party lab. The tests revealed that this product's lead level was very low, and was no higher than natural soil's lead level. Furthermore, the lead was not available for ingestion and did not pose a threat of leaching offsite.

Cost

The total cost of the initial installation in 1997 was about \$578,000 for Strasser Field and \$365,000 for Mary Rieke Field.

While capital costs for synthetic fields are higher than natural fields, maintenance



Delta Park's Strasser Field contains crumb rubber, a product made from old tires that provides cushion for artificial turf

At a glance –

Who -

Portland Parks & Recreation

Product -

• Crumb rubber made from old tires

Cost -

- Initial 1997 installation cost \$578,000 for Strasser Field
- Replacement of Strasser Field in 2008 cost \$400,000
- Reduced maintenance and operation costs

Benefits -

- Uses recycled material
- Easier to maintain
- Allows for more frequent use

"Delta Park's Strasser Field is appreciated by its users for its consistently level playing surface and for the fact that it is available during the winter months when the natural grass fields are closed due to weather conditions."

Debbie Kneeshaw, Park Technician, Delta Sports Complex costs are significantly lower. Since artificial turf requires little or no water, fertilizer, and pest management, it is easier and less costly to manage. The crumb rubber requires raking approximately six times per year to reduce compaction.

However, artificial carpet and infill wears out after 7-10 years and must be replaced at considerable expense. The 2008 replacement of Strasser Field – including the removal of the old carpet and infill – cost around \$400,000. Even with these replacement costs, artificial and synthetic fields are comparable in price when the full lifecycle costs of each option are taken into consideration.

Performance

Artificial fields can be used more frequently than natural fields with less damage to turf. Because they are more durable and less affected by cold weather, Strasser and Mary Rieke Fields can be used year-round, unlike natural fields which are closed December through April. Using artificial fields also helps Portland Parks & Recreation manage its natural fields. For example, Delta Park can close one of its eight natural fields for maintenance without losing play time by increasing use at its artificial field.

Lessons Learned

Although successfully used in artificial turf, crumb rubber was not as viable when used as a soil conditioner in a natural turf field at Lents Park in 2000. Unlike the artificial field installations, crumb rubber was tilled into the soil in addition to being used as a top dressing. This required Portland Parks & Recreation to keep people off of the field for four months to allow new grass to grow, which was difficult to enforce at the popular Lents Park. The crumb rubber itself further impeded grass growth, and staff had to use more water and fertilizer than usual to maintain the little grass that was able to grow. Other natural fields in the U.S. have effectively used crumb rubber solely as a top dressing for natural turf – without tilling it into the soil. Portland Parks & Recreation may consider this option for natural fields in the future.

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About Portland Parks & Recreation

Portland Parks & Recreation provides care to over 10,000 acres of parks and natural areas, and offers thousands of programs for all ages at its community centers, swim pools, and other recreation facilities.

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