

Park Without Pier



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Innovative maintenance for a one-of-a-kind park



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Brooklyn Bridge Park sits on and around a series of former shipping piers. Manufactured soils are used beneath the turf and water that drains through is captured, filtered and re-used. The facility first opened three years ago; this rendering shows what the park will look like when all piers are completed.

PHOTO COURTESY OF MVVA, INC.

Last season, Brooklyn got its own NBA team, the Nets. Which is great, if you want to sit inside and watch other people exercise. For Brooklynites who want to get outside and have fun themselves, there's a new local destination that's attracting much more attention: Brooklyn Bridge Park.

First opened three years ago, the park continues to grow as new sections are regularly opened (the facility should be a little more than half-way complete by the end of this year). In all, the park spreads over 85 acres and sits right on the water, with spectacular views looking directly out to Manhattan. Its setting is unique in another way: Brooklyn Bridge Park is built on and around a series of reclaimed shipping piers. What's more, the park grounds are managed organically and sustainably. These factors all provide the park with a one-of-a-kind character, and also influence every aspect of its maintenance.

"We're in a very harsh environment. We're on the coast and our lawns get so much abuse," explains Rebecca McMackin, park horticulturist, who oversees maintenance of all the grounds. "Our biggest issue is compaction, and the majority of our challenges arise because of compaction." On an average summer weekend, the park will host some 90,000 people. "And we have events on

certain sections of the lawn that can see 6,000 people on an acre,” she adds. “Sometimes that lawn is wet, and sometimes those people are dancing.”

The park’s landscape design firm, Michael Van Valkenburgh Associates, chose turfgrass varieties to handle the stresses it would face. But modifications have been made as conditions have changed and experience has been gained growing grass in this unique setting. “The turf originally was a blend of ryegrasses and bluegrasses, and *Poa annua* worked its way in there as well. In the future I think we’re going to go pretty much exclusively with a turf-type tall fescue,” explains Paul Sutter, a former golf course superintendent who joined Brooklyn Bridge Park as its turf and irrigation manager earlier this year.

Sutter says the turf-type tall fescue is well suited for the challenging environment for several reasons. “The hardiness of the plant itself and its adaptability to shade, sun, drought and wet conditions,” he explains. Adaptability is just as important as durability at Brooklyn Bridge Park because each of the lawns is unique in its own way.

“Different management practices need to be applied to each of the different lawns. They all have to be cared for individually,” he explains. “Some are south-facing, some are north-facing, some are under constant wear. And some of the soils are completely different; some are sand and some are a mixture of loam-sand.”

It starts with soil

Because of the park’s construction on piers, the soil composition is man-made versus natural. “They are all entirely constructed. And soil technology has advanced and we have learned a lot since Pier I (the first phase of the park) was installed, so the soil profiles have evolved with new piers that are being installed right now,” explains McMackin. “Originally we started with a much siltier soil mix, with higher organic matter content. We’ve found that those soils show more compaction in some areas. So we switched over to a much more sandy soil.”

But those soils, more than 90 percent sand, because they drain so well, also have posed challenges, mainly delivering nutrients and water to the rootzone.



“I think there’s a great opportunity for a public park to have high sand content soils if they are not organic, because you can put down as much nutrients as the grass needs. We can’t do that,” says McMackin. “So now we’re trying to find a happy medium with our soils. On the lawns that have a lot of silt, we’re doing drill-and-fill with sand, and on the lawns with a lot of sand we’ve been topdressing with organic matter. We’re still trying to find the right balance.”

Of course, being on a coastline adds daily challenges, and particularly during extreme weather events. Last year, for example, Hurricane Sandy flooded the park under 4 feet of salt water. (“That recovery effort could be

a whole separate article!" says McMackin.)

Partly out of necessity given its unique make-up and partly out of an innovative spirit, there's a lot of similar experimentation taking place in the care of the grounds at Brooklyn Bridge Park. "One of the things we're dedicated to is staying abreast of the latest research and making sure the work we do is based on sound science. We're always experimenting. Anytime there's a new fertilizer or other product we will try it on a certain section of lawn and watch the results before applying it on the entire park."

For example, the park is experimenting with organic products such as Sustane and Milorganite organic fertilizers to find the right rates of N-P-K and the optimum blend that to achieve the desired results for each individual lawn within the park.



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About 90,000 people enjoy Brooklyn Bridge Park on an average summer weekend. The park hosts numerous special events, including concerts and movie night. Soil compaction is the biggest challenge for keeping healthy turfgrass. PHOTO BY JULIENNE SCHAER.

Compost teas

"We also do a lot with compost teas; we don't think they're going to solve everything, but they are the piece of the puzzle," says McMackin, while emphasizing that organic lawn care requires a focus on soil biology and a process-based rather than product-based approach.

"It's much more complex than just putting down a pound of nitrogen; we don't have that option," she points out. "We have to do things like determine when to put down protozoan that will eat the bacteria in the soil that will then produce the nitrogen that grass will need to grow."

McMackin compares organic lawn care to learning a long lost art. But beyond relearning techniques used decades ago, "there's so much fantastic research coming out. It's a fascinating time to be doing these things," she states. "The take home message is: If we can do it here, it's absolutely possible for anyone else to do it at their home or park. I know golf courses are a whole different situation, but if your grass is 2 inches or higher, it's absolutely possible to go organic."

Sutter says that one important component of the organic turf care program at Brooklyn Bridge Park is regular and extensive soil testing. "We're trying to develop action plans for each individual lawn to find the optimum way to feed the turf plants and provide the soil structure they need," he explains. "The goal is to create a 'nutrient cycling' environment in the soil wherein the microorganisms we introduce are breaking down and become available for plant uptake. We are managing the soil and experimenting with many different ways to provide a sustainable soil foundation in which to grow healthy turf."

Given the perpetual battle against compaction, experimentation is also taking place with aerification timing and techniques. Aerating is a regular maintenance practice at Brooklyn Bridge Park. It's also done after extreme events. "If we have a Thursday night movie on one of the lawns with 6,000 people there, then we'll try to get out there a day or two after to flocculate the soils and open them up to relieve some of that pressure," says Sutter, adding that experimentation continues to find the "sweet spot" for how aerification can help the turfgrass stand up to the extreme use it sees. One technique is already showing promise: "Deep tine aerification is going to be the future, for sure," he states.

Another key strategy in the battle against compaction is to try, whenever possible, to prevent it in the first place. "We regularly close the lawns on a set schedule every week and after every rain event," explains Sutter of the effort to give each lawn a resting period and recovery from heavy traffic. Following large events, the lawns are closed for two days. "This method of relieving compaction is supplemented by regular aerification and compost tea applications," he states.

Among its many other unique features, Brooklyn Bridge Park boasts a recirculating irrigation system that collects all of the water from the park and pumps it through a series of wetlands; it is filtered and then re-applied through the irrigation system. "That makes it very difficult if not impossible to just dump things on the lawns," explains McMackin.

For example, care must be taken in putting down sulfur, because if that makes its way into an anaerobic environment in the wetlands, hydrogen sulfide could be produced. "So there are a lot of practical reasons why we have to use the least environmentally harmful products, because everything we use stays on site. The park is built on piers, so there is basically cement underneath the park."

Sutter says the irrigation system (from Tucor) is a high-tech two-wire decoder system. The pumps and pump panel are Watertronics. "It's very unique in that there are three 36-inch pipes that are considered holding tanks and run parallel to each other for about 1,000 feet. Attached to that is a node or holding tank that the pumps are actually located in underground," he explains. "So when the pump panel tells the pumps to turn on the water is getting pushed out from the node into the storage tank, doing its irrigating, and then any over wash or runoff gets put back into the storage tank and recycled. It's definitely a neat system."



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Brooklyn Bridge Park sits in a spectacular location directly on the water across from Manhattan. An organic, sustainable turf care program is used to maintain the lawns. Superintendent McMackin hopes it can serve as a model for other parks.

PHOTO BY JULIENNE SCHAEER.

Small staff, big challenges

The staff that cares for the grounds at Brooklyn Bridge Park is not huge: Currently in addition to McMackin and Sutter there is a crew of six seasonal gardeners and one assistant who works on the lawns. Beyond horticultural and agronomic challenges, the staff also faces a very real logistical hurdle. Because of the park's layout on a series of different piers, just getting people and equipment from one area to another can be time-consuming. Equipment and staff are staged when possible and by the time the park is complete there will be numerous different maintenance facilities at strategic locations.

The crews use Toro Workman and Kawasaki Mule utility vehicles to get around. Toro mowers, one commercial zero-turn and a number of push mowers, are used to mow the often broken-up lawns. "No lawn is larger than about 1 acre, and most lawns have quite a few tree rings in them and have pitches and hills; it's a rolling topography," explains Sutter. Experimenting is ongoing to determine the optimum mowing height, but he expects it will be about 3 to 3.5 inches, noting that a higher mowing height will provide the best chance of establishing a healthy stand of turf to crowd out weeds and stand up to extensive wear-and-tear.

The park, while certainly created to meet the needs of the thousands of people who use it on a regular basis, also is intended as a space for other organisms, says McMackin. That means ensuring a safe environment for birds and insects that also use the site. "It's very neat to be able to see the lawns also being used as a habitat," she states. "Especially in environmental movements, there seems to be a little bit of a lawn backlash going on right now. We're trying to say that lawns can actually be an environmental benefit if they are managed properly." The lawns are considered one of the seven interconnected ecosystems at the park (others include ornamental gardens, freshwater gardens, native woodland gardens, prairies, salt marshes and green roofs), each designed and maintained to play a role in the overall beauty and functionality of the park, for both people and wildlife.

In that regard, she hopes Brooklyn Bridge Park can be model for other parks and grounds looking to follow a similar approach. "I think we're doing a lot of things in the park that could help other parks make the transition over to organic care, as much as they're able," says McMackin. In the meantime, she's also hoping to learn from others: "If anyone reading this has ideas about things we should be doing, or tried different strategies and made them work, we'd love to hear from them."

As the park continues to expand, and more is learned, there's no doubt the care of the lawn and landscape will continually evolve. But one thing that won't change is the spectacular setting, which Sutter, who sees it every day, doesn't take for granted. "It's a really, really unique place to be," he emphasizes. "With the skyline of Manhattan literally right in front of you, you feel like you can reach out and touch it. There's so much activity here and the Brooklyn Bridge is right above you, and yet if you stand in some areas of the park and feel like you're out in the country. It's an amazing place."

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