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Sustainability is Above Board at Chicago's Newest Harbor

Posted By [Matt Baker](#) On March 20, 2013 @ 8:21 am | [No Comments](#)

By *Matt Baker*



<sup>[1]</sup>Bears season tickets. That is possibly the only waiting list in Chicago longer than the one to get a boat slip. With marina demand so large, the need for a new harbor was evident. The [Chicago Park District](#) <sup>[2]</sup>conducted a study of the lakefront in 2005 to determine the best spot for a new marina. At the top of that list was one location: 31st Street.

Chicago is home to the largest municipal harbor system in the U.S., with ten marinas stretching up the shore from Jackson Park to Lincoln Park. The latest to open is the [31st Street Marina](#) <sup>[3]</sup>, which boasts over 1,000 boat slips, a new beach, a play area, an extensive green roof and a host of amenities for the community.

The harbor was designed for a minimum LEED Silver certification, but it likely will obtain LEED Gold. Even better, the project is paid for entirely by revenue from the boat owners; no taxes and no capital

budget funds were needed.

One reason that the 31st Street location stood out was that a lot of work had already gone into the site. "We had already done some shoreline protection work. We had already put in boat ramp," said Robert Rejman, Director of Planning and Construction at the Chicago Park District. "We knew it was a great place for a harbor."

<sup>[4]</sup>Along this portion of the lake, the water closer to land is deep, which is ideal for a harbor. However, there was also a natural, shallow ridge farther out, which would cut down on the costs of breakwater construction.

Before development began on the harbor, the area had no beach and was essentially untamed lakefront land. A few isolated, poorly configured parking lots took up some room, but the site was otherwise in disuse.

Designed by [AECOM](#) <sup>[5]</sup>and constructed by [McHugh Construction Company](#) <sup>[6]</sup>, the first challenge for the harbor was preparing the land for stormwater management. Existing parking was moved to the north and each lot given a contingent of bioswales, crushed stone and underground vaults to manage and cleanse the stormwater before it hit any sewer infrastructure.



<sup>[7]</sup>"Our approach was for no net loss of green space," said Rejman, which is a tall order considering all the new construction and infrastructure. A 63,000 SF green roof covers virtually all of the new buildings. "The facility is low impact," said Rejman. "A lot of people have a hard time knowing it's even there until they get to the harbor."

Unlike many vegetated roofs that are comprised of two-inch deep plastic trays, this green roof is several feet deep in places. Because of this, the green roof is able to retain a much larger amount of stormwater, in addition to the usual green roof benefits like higher HVAC efficiency and reduction of the urban heat island effect.

Of course, storm runoff is only one source of water contamination that concerned the developers. More boat slips means more potential for pollution to enter Lake Michigan's fragile ecosystem. State of the art pump-out systems and a strict inspection regimen ensure that no discharge from the boats enters the lake. Because of these practices, the Park District and [Westrec Marinas](#) <sup>[8]</sup>, the manager of all ten Chicago harbors, received several awards, including the ISS Fabien Cousteau Blue Award—which honors stewardship of marine ecosystems—and the Illinois Society of Professional Engineering's Award for Engineering Excellence.

Access to the site was also key. The marina is ADA accessible, but thanks to a reconfiguration of the exit ramp off Lake Shore Drive, bicyclists can reach the harbor via the lakefront trail. A new underpass improves circulation and promotes access to this area by means other than automobile.

<sup>[9]</sup>A harbor services building and attached parking garage—which will double as winter boat storage—were built atop former surface parking lots. These structures are mostly covered by the green roof, with the buildings tucked into the landscape. One of the transitions from higher grade to lakefront is a park, featuring paths and playground equipment, bringing the public on the roof even if they didn't realize it. The landscaping is composed of native trees, shrubs and grasses that reduce maintenance and irrigation demands as well as promote bird habitat, an important consideration since the Lake Michigan shoreline is a major migration path. Additionally, all glass that faces the lake is fritted to help eliminate bird strikes.

The harbor services building features a community room for visitors and a patio with sail-inspired shades, all served by an energy-efficient HVAC system. A component of this is a geothermal loop that uses the lake to temper the air, helping to achieve a 33% energy use reduction.



Additional environmental benefits were achieved through enhanced refrigerant management as well as light sensors and daylighting in 100% of the occupied spaces. Low-flow plumbing fixtures help reduce the building's water use by 40%, while the site enjoys 63% water savings overall.



<sup>[10]</sup>During construction, the developers attempted to maintain onsite soil management to cut down on the amount of material entering and leaving the site. A larger diversion rate meant less material headed to landfills and fewer trucks on the road hauling it. "Aside from some broken footings, all major soils stayed on site," said Rejman.

Development of the land also meant that many trees had to come down or be moved. Those that were felled, however, were put to use as well. "We worked around as many big trees as we could," said Rejman. "We relocated as many trees as possible. And for trees that did come down, we had some really creative reuse on site." Several of the trees were stripped of their bark, dried and then painted. These surreal, multicolored tree trunks were then installed around the playground area as interactive artwork.

Some of the timber was also used as an underwater habitat. Working with the [Army Corps of Engineers](#) <sup>[11]</sup>, the Park District anchored the trees to the lakebed, inside the breakwater near the harbor entrance. Much like the considerations given to migratory birds, the marina was designed with aquatic life in mind also.

"We know that riprap and stone are a huge draw for fish. We wanted to see, with the addition of trees, how we could promote fish habitat," said Rejman. Smaller fish are attracted to areas of refuge and shade. Where small fish go, big game fish will follow. The harbor was designed to promote both the surrounding community and natural habitat. This measure does both since it enhances the underwater ecosystem and provides a great location for area fishermen.

Fish also prefer areas with water flow, so an underwater culvert was included in the 3,000 foot-long breakwater. Burnham Harbor also has one of these culverts. They appeal to fish which are attracted by the current.

The Park District is working with the Army Corps of Engineers and the [Shedd Aquarium](#) <sup>[12]</sup> to install underwater cameras in the lake, to serve as an educational tool. "Kids can come see fish in the water, become interested in habitat and in how infrastructure can be married to habitat creation," he said. "We'd like to promote that kind of connection, that responsibility we have to restoring the Great Lakes." If it goes forward, Northerly Island—which is currently undergoing a 40 acre restoration project—would be the first location to get the cameras, though Rejman believes that 31st Street Harbor would be a great location too.

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[2] Chicago Park District : <http://www.chicagoparkdistrict.com/>

[3] 31st Street Marina: <http://www.chicagoharbors.info/harbors/31st.php>

[4] Image: [http://www.sustainable-chicago.com/wp-content/uploads/2013/03/ariel\\_sm.jpg](http://www.sustainable-chicago.com/wp-content/uploads/2013/03/ariel_sm.jpg)

[5] AECOM : <http://www.aecom.com/>

[6] McHugh Construction Company: <http://www.mchughconstruction.com/>

[7] Image: [http://www.sustainable-chicago.com/wp-content/uploads/2013/03/31st\\_Steinkamp\\_03\\_sm.jpg](http://www.sustainable-chicago.com/wp-content/uploads/2013/03/31st_Steinkamp_03_sm.jpg)

[8] Westrec Marinas: <http://www.chicagoharbors.info/>

[9] Image: <http://www.sustainable-chicago.com/wp-content/uploads/2013/03/community-building.jpg>

[10] Image: [http://www.sustainable-chicago.com/wp-content/uploads/2013/03/31st\\_Steinkamp\\_02.jpg](http://www.sustainable-chicago.com/wp-content/uploads/2013/03/31st_Steinkamp_02.jpg)

[11] Army Corps of Engineers: <http://www.usace.army.mil/>

[12] Shedd Aquarium : <http://www.sheddaquarium.org/>

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