

FOREGROUND / **MATERIALS**

COLOR AND CUSHION



NEW SURFACES FOR PLAY CAN CHANGE THE GAMES.

BY JEFF LINK

ABOVE

The topographical playground features at Mary Bartelme Park include poured-in-place rubber surfacing, chosen for its play value and conformance with sloped surfaces.

Back in July 2016, when I took my two-year-old son to Mary Bartelme Park in Chicago's West Loop for the first time, he, quite literally, jumped for joy. That reaction is unusual for my son, who tends to approach even the most whimsical neighborhood playgrounds with the practiced indifference of a data scientist.

But the rubber-surfaced topographical playground at Mary Bartelme Park, designed by Site Design Group and completed in the summer of 2010, is not like most other playgrounds. For starters, it has hills, angular slopes, and trenches that

create suspense in what they reveal and what they hide. Take a few steps and you'll discover, as my son soon did, that the rubber surfacing itself is a medium for play. You can climb it. You can scramble down a slope. You can jump on it and feel a pleasant give underfoot.

The project is part of a recent generation of playgrounds that, says Hana Ishikawa, a Site Design Group design principal, represent a dramatic change from an earlier era defined by "post-and-deck" style platform equipment: a dominant central climbing structure outfitted with slides, bridges, stairs, peekaboo windows, and the

like. Others have followed, such as Mt. Greenwood Park in Chicago by Hitchcock Design Group; LeBauer Park in Greensboro, North Carolina, by OJB Landscape Architecture; and Waterfront Park in San Diego by Schmidt Design Group.

A big part of what has made that evolution possible, as Ishikawa pointed out when we sat down in the firm's South Michigan Avenue studio, is poured-in-place (PIP) surfacing: a spongy course of shredded rubber granules held together by polyurethane glue that are mixed in a concrete hopper and then troweled onto concrete or aggregate.

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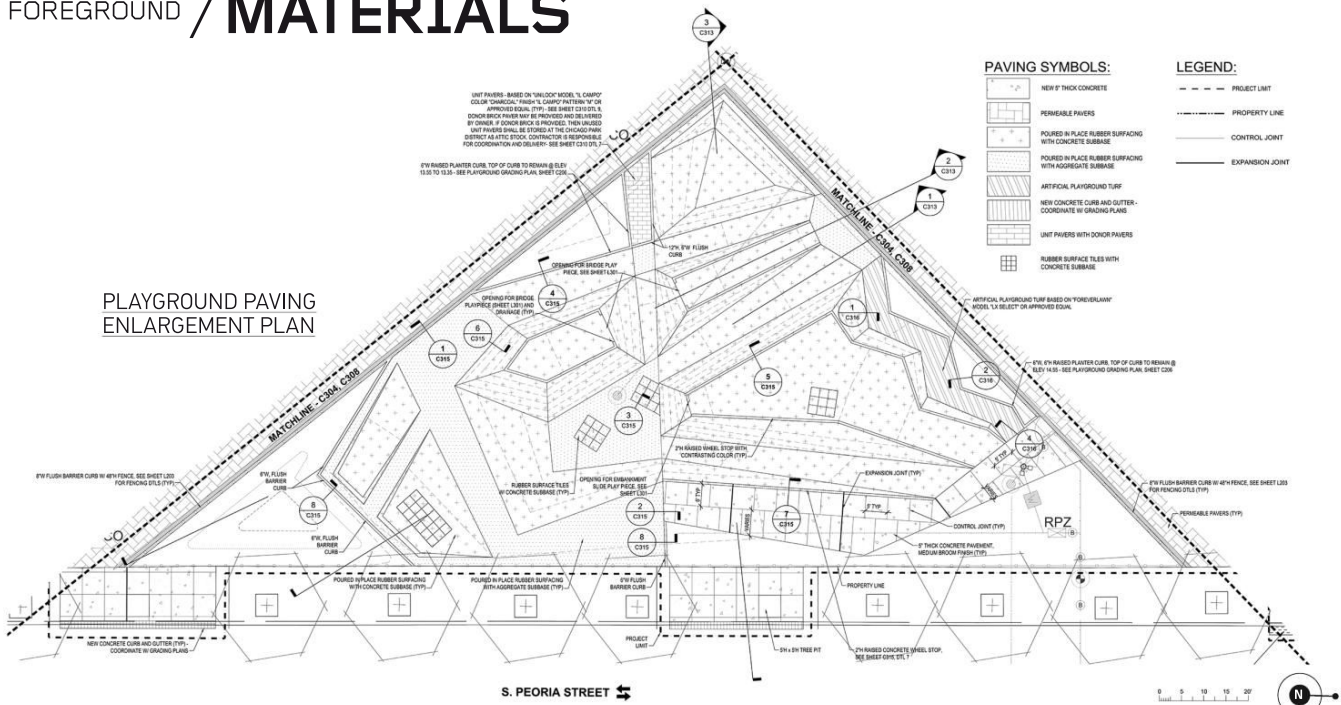
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PLAYGROUND PAVING ENLARGEMENT PLAN

Mary Bartelme Park was guided by the concept of founding principal Ernie Wong, FASLA, and made a reality through the work of Ishikawa and Brad McCauley, ASLA, a managing principal. Taking cues from the undulating design of Hargreaves Associates' Louisville Waterfront Park and a handful of concrete topographical playgrounds that existed in New York in the early 2000s, as well as artistic inspiration from Zoe Ryan's *The Good Life: New Public Spaces for Recreation*, it was one of the first topographical playgrounds in Chicago. The detailed sectional drawings defining its layers of rubber, cement, and fabric became a model for many Chicago park playgrounds that followed, Ishikawa says.



ABOVE
Located on the former site of the University of Illinois Eye and Ear Infirmary, the playground required extensive site remediation to contain hazardous materials.

"Most playgrounds at the time were flat, with raised playground equipment in the center. But the big driver behind that, as we found out, was that playground equipment requires an open fall zone—in Chicago it's six feet," Ishikawa says. "Poured-in-place rubber surfacing, which serves

as a fall zone, doesn't have to be laid flat, so you can incorporate playground equipment along slopes."

Integrated across the playground at various heights, for instance, are tactile moving pieces, such as a hammock swing and a rocking horse saddle, whose responsiveness echoes that of the surfacing. The design's architectural standout—a climbing piece of horseshoe-shaped recycled conveyor belts made by Berliner Seilfabrik—although large in scale, is not the hydra-headed jungle gym of earlier-generation playgrounds. Rather, it is one feature of an episodic design that uses the gradient of the landforms, often in dialogue with the equipment, to challenge and entertain kids.

"I really like the input-output you get from all the equipment. Everything is bouncy. The surfacing affects the ropes and vice versa," Ishikawa says. And because fall zones may overlap on rubber surfacing (imagine the intersecting circles of a Venn diagram),

playground equipment can be densely integrated. Armando Chacon, the president of the Mary Bartelme Park Advisory Council, who lives in view of the park, says its spatial efficiency is one of its major achievements.

"What Ernie Wong and the designer did a really good job of is making the playground feel bigger than it actually is. With all the angles and berms, you can really get lost. And if you don't have eyes on your kid, you're going to have to spend some time looking for your kid," Chacon says.

Today, PIP rubber-surfaced playgrounds are found throughout the country. Uses of the surfacing vary. It is used for visual storytelling, for creating slopes to help storm-water drain, and for constructing physically challenging topographical landforms, says Nathan Elliott, ASLA, a principal at OJB Landscape Architecture. Competition among distributors over the past 15 years, Elliott says, has driven the rapid maturation of a market that now



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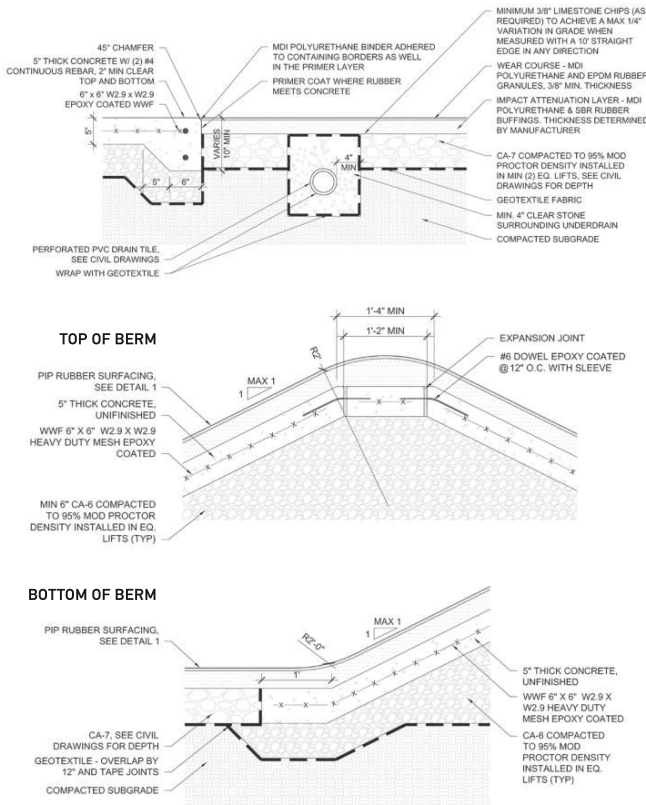
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POURED-IN-PLACE RUBBER SURFACING SECTIONS



RIGHT
Crews pour impact attenuation layer of styrene-butadiene rubber granules.

BOTTOM
Berms are constructed of layers of portland cement as well as CA-6 and CA-7 compacted aggregate.



offers a high degree of technological sophistication: cushioned subsurfacing, antimicrobial backings for dog areas, UV-resistant coatings, and a range of colors that includes robin's egg blue and teal.

But in 2003, when the idea for Mary Bartelme Park emerged as an initiative of the Chicago Park District (CPD), topographical playgrounds were fairly new. Chris Gent, ASLA, a former deputy director of planning and development for the CPD, says: "We wanted to figure out how to make play more interesting, not your standard poured-in-place rubber surface and prefab equipment. And Site Design was good at responding."

At the time, Gent says, CPD was looking to purchase underused land to develop park sites in residential areas with high population growth. A flat city block at the intersection of South Sangamon Street and West Adams Street, high on the priority list, was home to the former site of the University of Illinois Eye and Ear Infirmary. When the infirmary closed, the state assumed ownership of the historically significant terra-cotta building.

Initially, McCauley says, some community members believed a park was not the best use of the site, and suggested such alternatives as a go-cart track or fishing pond; the Illinois En-

vironmental Protection Agency was concerned it presented contamination risks. But in fall 2006, after receiving a grant from the Illinois Department of Natural Resources to redevelop the site, CPD put out a request for proposals to a prequalified list of landscape architects, and Site Design Group came back with the winning bid: three park concepts that included a sunken dog park, a fountain plaza, native planting beds defined by Cor-Ten steel walls, an open lawn, and the children's play area.

In a series of meetings beginning that fall, Site Design Group unveiled three concepts to a committee of West Loop Community Organization members, residents, and aldermen: the first, a circular park with curving promenades; the second, in a Beaux-Arts style with formal rectangular rooms; and the third, in an angular, off-center style with walkways extending diagonally to street intersections. The community chose number three.

For CPD, a key selling point, Gent says, was Site Design Group's use of rubber surfacing as part of a site remediation strategy that included a

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ABOVE
Applied at a 1:20 grade, the berms serve as accessible paths that don't require handrails.

BELOW
A wear course of EPDM rubber is troweled in place. Blue denotes water; green denotes land.

permeable paving system for storm-water infiltration, soil reuse, and containment of hazardous materials beneath layers of concrete aggregate. CPD, like many municipal park departments, requires a minimum barrier of three feet between the ground level and the soil of a site deemed to be an environmental risk.

"The idea of capping a site was something that the city was struggling with, as was the retention of on-site water. This project helped inform the development of other parks as we moved along," Gent says.

And this is where Site Design Group's use of PIP rubber for its malleability and capacity to be troweled in place gets fairly sophisticated. Sectional

drawings for the playgrounds' slopes, developed after a series of conversations with the installer, Total Surface (which is no longer in business), show a surface wear layer of EPDM (ethylene propylene diene monomer) virgin rubber at a minimum 3/8" and an impact attenuation layer of SBR (styrene-butadiene rubber) recycled from tires. The rubber surfacing is molded to fit the form of the deeper containment layers—in this case, portland cement, CA-6 and CA-7 compacted aggregate, and geotextile fabric.

Much of the playground, Ishikawa says, sits below grade, a choice born of environmental necessity: An underground storage tank had to be removed to complete the project. PIP surfacing, which, unlike engineered wood fiber, can be contoured to a slope, made the furrowed design achievable. Wheelchair-accessible pathways were also made possible because of the pliability of the material. Ishikawa says that the surfacing could be applied at a 1:20 grade—a

pitch just slight enough to constitute a walkway, not a ramp, and thereby eliminate the requirement for accessibility handrails.

McCauley acknowledges that PIP rubber surfacing has its challenges. Because the binding agent weakens over time, and rubber granules can eventually tear and flake, especially in areas of heavy wear, it needs to be replaced. Site Design Group's Coliseum Park in Near South Chicago, which opened in 2000, was resurfaced in 2013, and a 10- to 15-year replacement schedule is typical.

PIP rubber surfacing is also expensive—about \$22 to \$27 per square foot, compared to \$25 to \$35 for rubber tile, \$20 to \$22 for artificial turf, \$7 to \$10 for rubber mulch, and \$5 for engineered wood fiber, McCauley says. Ensuring adequate seam closure at the bottoms of hills where the rubber course transitions from flat to sloping sections (and in spots where a crew clocks out for the day after troweling the surface) requires the expertise of a good contractor and installer, he noted. At Mary Bartelme Park, rubber tiles by softTile installed at the bases of slides and around spinners provide extra wear protection.

And though not focused on PIP rubber, there has been some concern about the chemical safety of shredded rubber infill at playgrounds and sports fields. An NBC News story from October 8, 2014, included the claim that 38 soccer players, particularly goalkeepers, from all over the country have developed cancers after playing on artificial turf.





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ABOVE

Much of the design sits below grade. An underground storage tank was removed to complete the project.

INSET

The nonlinear layout is designed to integrate play among children ages 2 to 12.

Much of the concern stems from the crumbs of rubber infill in artificial turf, which are often made from recycled tires. As reported in an April 2015 article in *Science News*, “Those tiny crumbs are known to harbor an array of dangerous chemicals, such as toxic polycyclic aromatic hydrocarbons and metals, such as lead.” However, the author of the article cautioned against overplaying the significance of the reports, noting that “no scientific study has found an association between exposure to artificial turf and cancer.”

McCauley notes that the top course of the playground at Mary Bartelme Park is finished in EPDM virgin rubber, not the recycled rubber that poses concerns, and that the material is fixed into place with an aliphatic binder, and thus not loose and capable of sinking into the skin. What is really important about PIP surfacing, McCauley adds, is its capacity to shape angular landforms, create visually interesting thematic

patterns, and make children’s play more accessible and exciting.

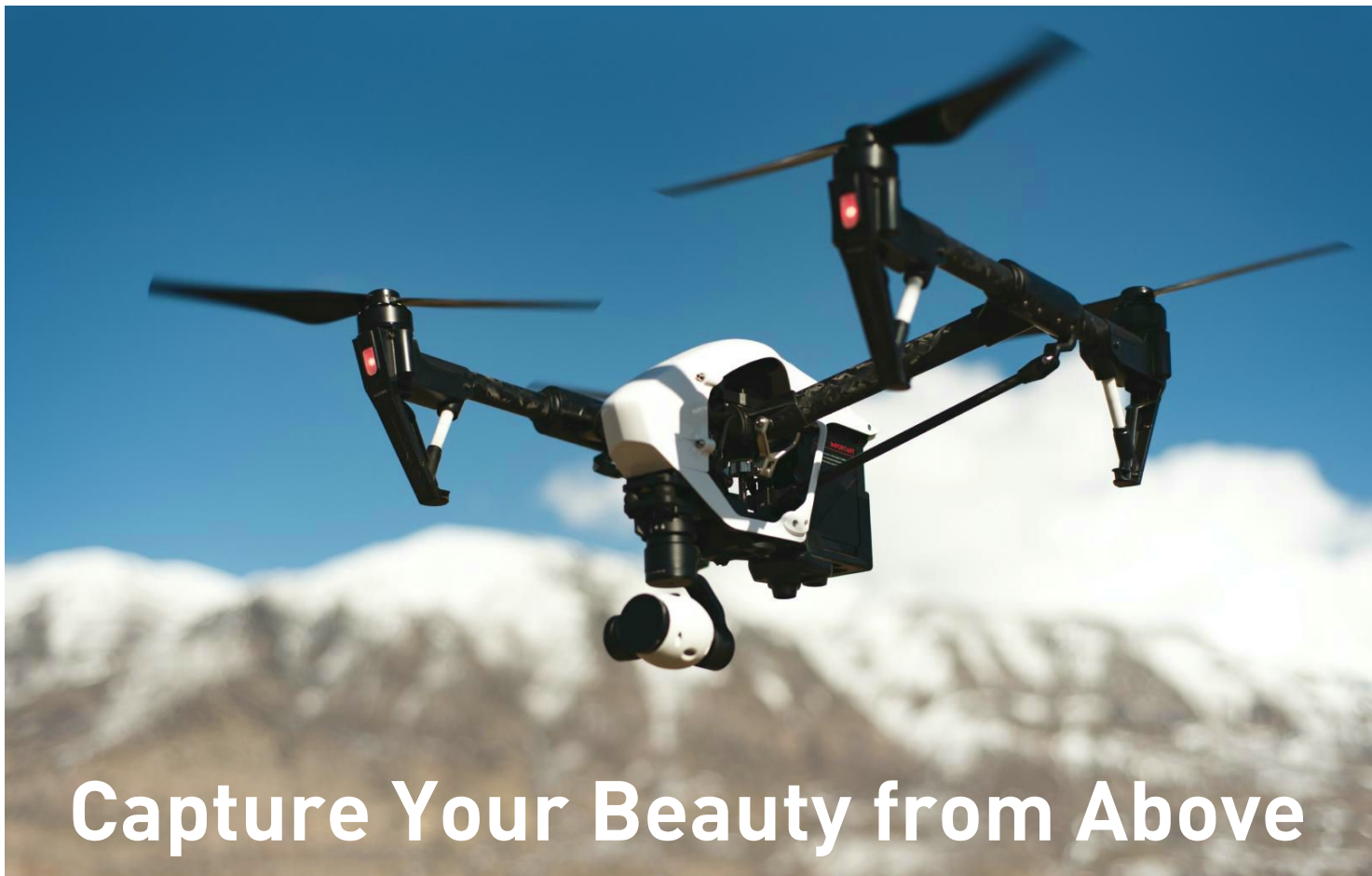
And these design considerations, Ishikawa says, have helped forge a path for ambitious Chicago projects such as Michael Van Valkenburgh Associates’ Maggie Daley Park and emboldened Site Design Group to pursue at least a dozen other topographical playgrounds, including taller and more elaborate designs, such as Park 574 in Chicago’s Near West Side. Opened in 2014, the fitness playground occupies the site of a former housing complex and features adult fitness stations, a spinning net, pommel horses, rings, and even a zip line. All existing soil was

reused on site, not shipped to a landfill, which, Ishikawa says, kept the project within budget while limiting its environmental impact.

“It’s hard to say if we’re doing anything different or more interesting than others,” Ishikawa says. “Challenging playgrounds and sustainable parks are really prevalent in our profession right now and sparked an interest to work with this material. The idea is not original. The way we do it is original.” ●

JEFF LINK IS A GRADUATE OF THE IOWA WRITERS’ WORKSHOP. HIS WORK HAS APPEARED IN PUBLICATIONS SUCH AS *FAST CO.EXIST* AND *REDSHIFT*.

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