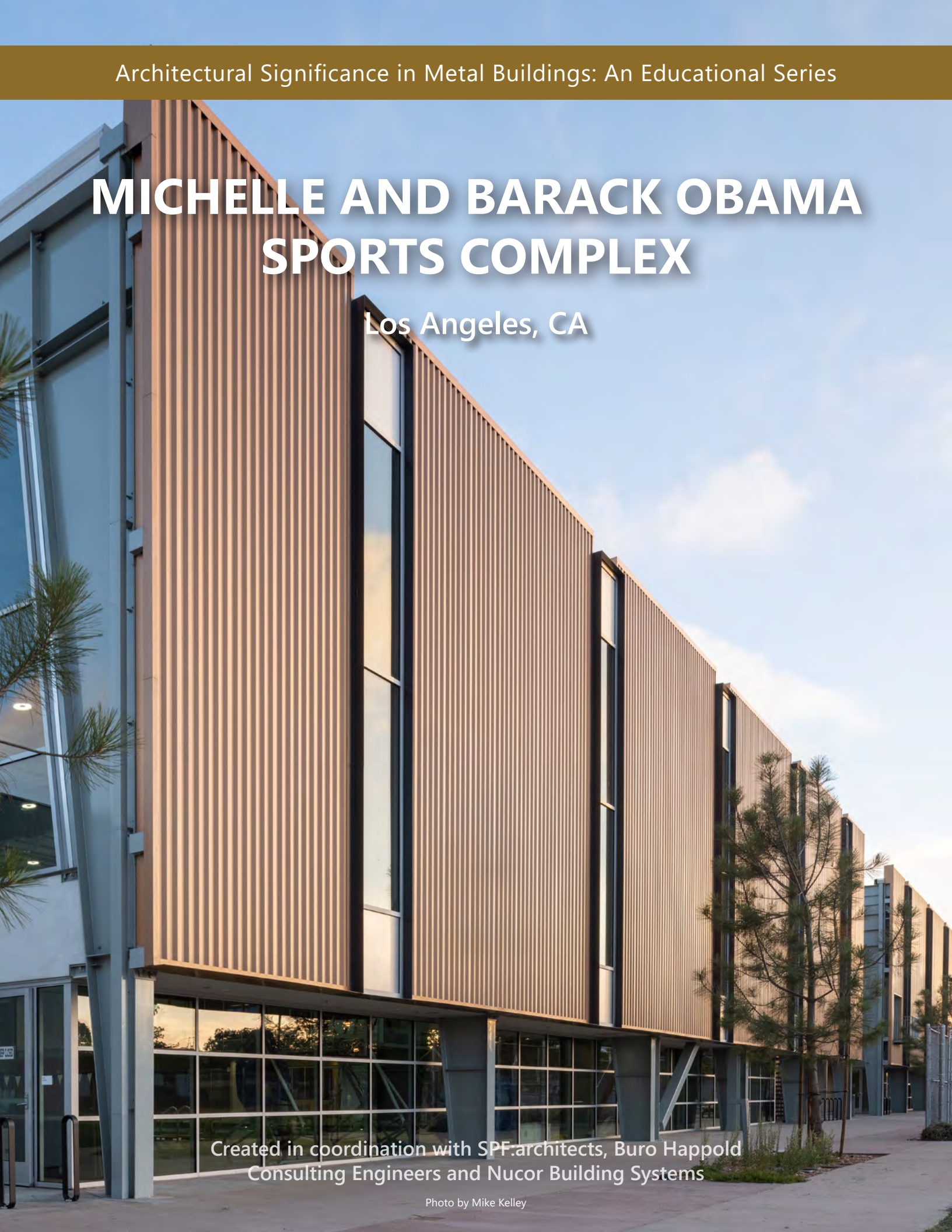
MICHELLE AND BARACK OBAMA SPORTS COMPLEX

Los Angeles, CA



Created in coordination with SPF:architects, Buro Happold Consulting Engineers and Nucor Building Systems

Photo by Mike Kelley

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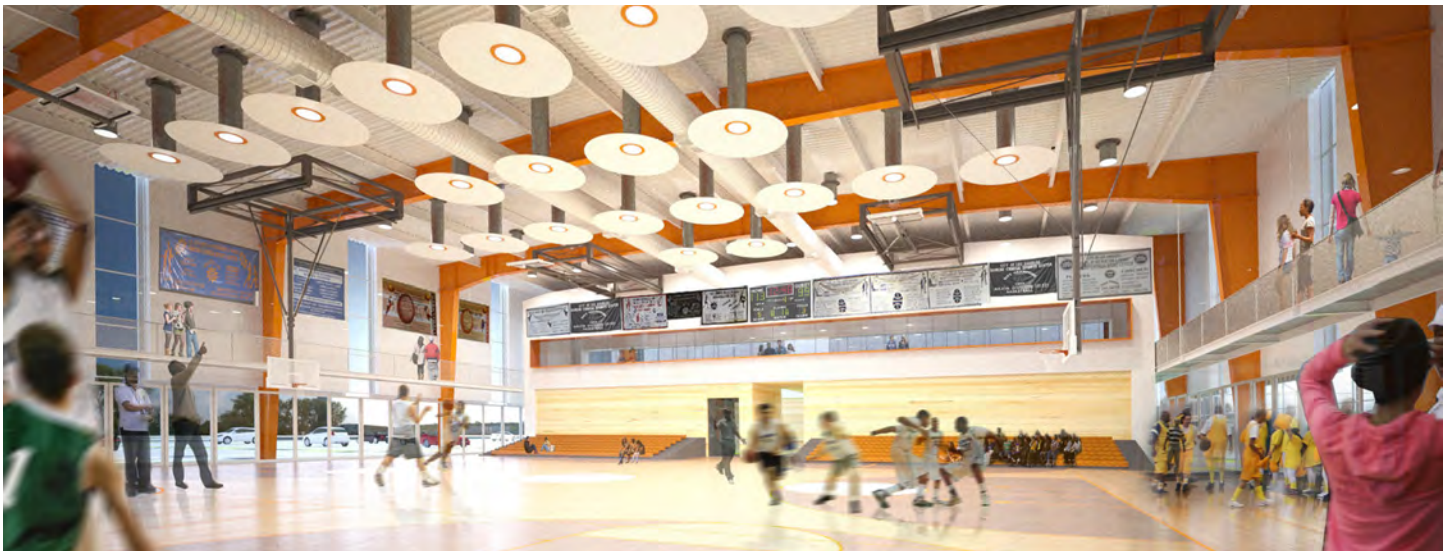


PROJECT **DETAILS**

Building: Michelle and Barack Obama Sports Complex

Location: Los Angeles, California

Client/Owner: City of Los Angeles, Department of Recreation and Parks

Size: 40,000 square feet (2 buildings)

Budget: $50 million

Completion: 2022

Metal Building Manufacturer: Nucor Building Systems

Architect: SPF:architects (SPF:a)

Engineers: Buro Happold Consulting Engineers (mechanical, plumbing, structural, sustainability)
Tetra Tech (civil)
V & M Electrical Engineering (electrical)

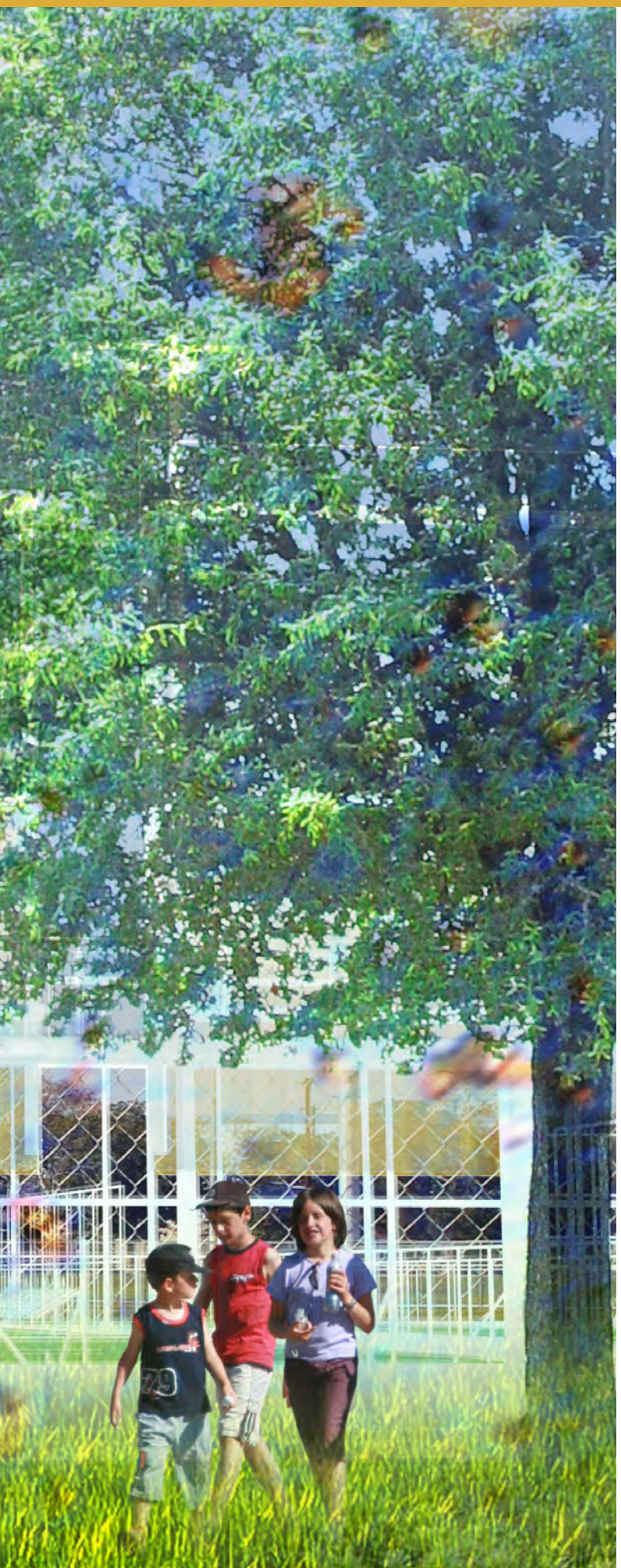
Landscape Consultant: Hood Design Studio

General Contractor: Pinner Construction

Erector: Pre-Fab Builders Inc.

Images courtesy of SPF:architects


TICKETS
TICKETS



"**Equity matters**, and a community's access to safe recreation spaces and facilities—and the condition of them—are key indicators of health equity and community investment. In South Los Angeles, there is a shortage of park space and assets that allow community members, especially children, to thrive. It is the City's responsibility to create and maintain public spaces that are welcoming, safe, and inspiring to all—and the Michelle and Barack Obama Sports Complex at Rancho Cienega Park is poised to be a great new amenity for South Los Angeles at-large."

- City of Los Angeles District 10 website (District 10, n.d.)

Image courtesy of SPF:architects

PROJECT **DESCRIPTION**

The Michelle and Barack Obama Sports Complex (Obama Sports Complex) at Rancho Cienega Park fills an important need in South Los Angeles for quality public recreation and fitness amenities to serve a population of approximately 100,000 people.

Image courtesy of SPF:architects

The 24-plus-acre park contains a variety of buildings, outdoor sports areas and an extensive infrastructure network to support community activities. To better assist the historically underserved population, the LA District 10 Council and the City of Los Angeles Dept. of Recreation and Parks worked to define a solution to enhance and expand existing services. Rather than planning a simple update of the existing structures and infrastructure, the city put the challenge before the design community, soliciting innovative design approaches through a design competition format. Three teams participated in the competition and the project was ultimately awarded to SPF:architects/Buro Happold Consulting Engineers for their metal building solution.

The chosen design meets the community's needs through the addition of two buildings: a 20,225-square-foot structure that houses an Olympic-size indoor pool and bathhouse and a 16,232-square-foot gymnasium that accommodates two high school regulation basketball courts, a mezzanine walking track, a fitness annex, a multi-use community room and staff offices.

Portrait of American tennis players and sisters Venus Williams (left), 11, and Serena Williams, 9, as they pose beside the fence at the Compton tennis courts, South Central Los Angeles, California, April 20, 1991. They had just completed a training session with their father and coach, Richard Williams. (Photo by Paul Harris/Getty Images)

Historical Context

The Obama Sports Complex at Rancho Cienega Park is a tribute to the former president and first lady. In 2007, presidential candidate Obama held his first Los Angeles-area campaign rally in the park, which puts this location into historical context. Prior to its connection to the 44th president, the park had gained notoriety because tennis icons Venus and Serena Williams received tennis training at the complex when they were children.

Community Engagement

The design competition format that resulted in the selection of the SPF:a-led team included an initial community involvement component. The three design teams that submitted concepts presented their ideas to community members and stakeholders who then commented on the design alternatives and provided input into which elements and ideas would effectively meet the needs of the individuals who would use the facilities. Addressing community and programmatic concerns upfront was a critical component in project planning.

"As we engaged in outreach discussions with the local community, we realized that the plea for facilities was far larger than what the competition proposal called for. We recognized that the most important thing we could bring to the design was 'more'—and more for less money." (SPF:a, n.d.)

-SPF:a

"We have a state-of-the-art facility here. We have a responsibility to give our kids every opportunity that they deserve and this facility will do just that." (10, L.A. 2022)

-Herb Wesson, Los Angeles City Council Member, District 10

Community charrettes allowed residents to give invaluable insight to the design team through dialogue, brainstorming and whiteboard exercises. Comments shown to the right reflect actual community input during the charrette process.

Overview

Design began in 2018 and construction was completed in 2022. While the timeline may appear extended for a project of this scope and size, the team deliberately scheduled program elements to be completed in a phased approach. The goal was to assure minimal disruption to normal park events and activities. The project team also orchestrated deliveries and construction so that full park closure would not occur during any portion of the construction activities. According to SPF:a, this was "of great concern to the Obama Sports Complex leadership, as many buildings have received considerable upgrades in recent years and leadership did not want to see any closures."

Design Priorities

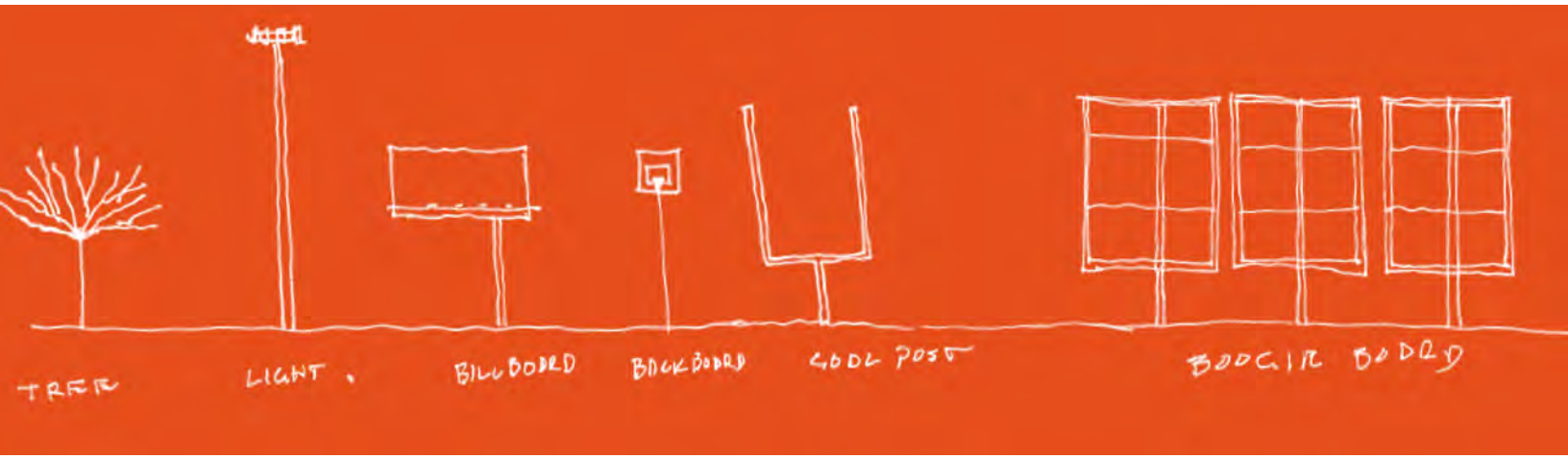
Design activities were spearheaded by Siddhartha Majumdar, AIA, project manager and senior associate with SPF:a. His role was particularly significant since SPF:a was recommending a building solution that was far from typical for the firm. "We had only designed one metal building structure in the past," says SPF:a founder Zoltan Pali, FAIA. "An aircraft hangar at Van Nuys Airport." SPF:a was the only firm participating in the competition to propose a metal building solution. "Our experience with the Van Nuys hangar was very important because of what we learned. We were able to make a bigger building but do it in a more cost-effective way. We could see that the more space the better—the pool could be bigger; we could accommodate two courts instead of one; we could get more square footage and give constituents more of what they wanted."

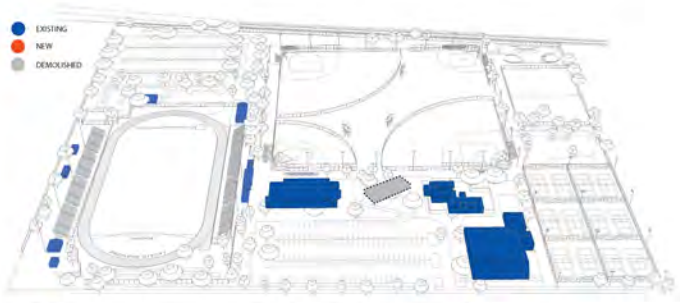
Pali notes that initial bidding and ongoing cost impacts required careful upfront planning. "Working with this building type, you have to design it so that not just one manufacturer can be utilized," he explains. "All metal building suppliers have slightly different methodologies. [Before the building manufacturer was chosen] we had to create bid documents. We had to make choices and be as generic as possible, but specific enough to cover all the bases. It was a very difficult project but an interesting project and process."

Architect's Statement

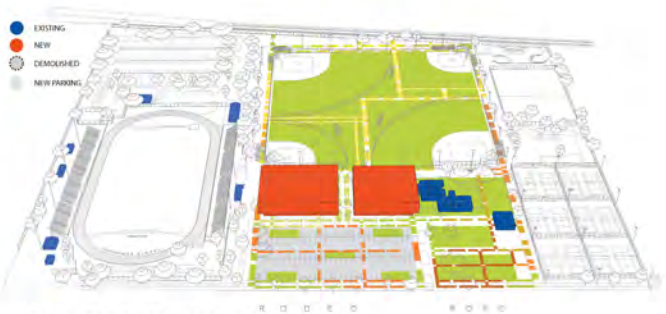
Pali explains that he and his team first were inspired by the elements inherent in a recreation park.

"What are the things that are architectural elements?" he remembers pondering. "Goal posts, backboards and basketball hoops, scoreboards—all of these elements are essentially on one pole with a box on it. That created a visual in my mind. When you look at the building, you have columns of steel and girder frames. Skin would be between those elements. I shifted them halfway, creating a vertical look with a box on it; in between each bay is a slice of window. The panels provide glass all the way around so you can see in from outside and vice versa. [Such an element] is very rare in these facilities. It looks like the building floats off the ground. Most metal buildings look heavy and stout—I wanted to express its lightness."

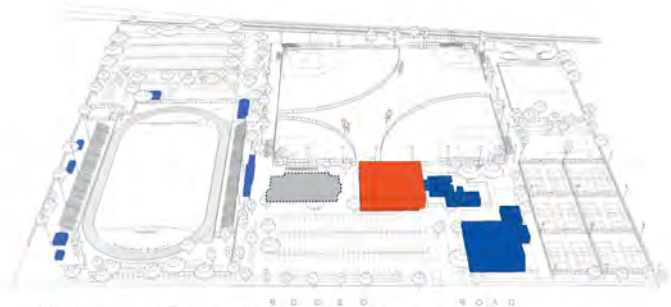




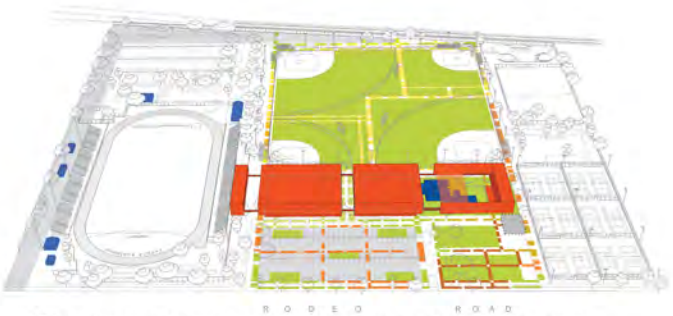
1 REMOVE EXISTING BATHROOM FACILITIES



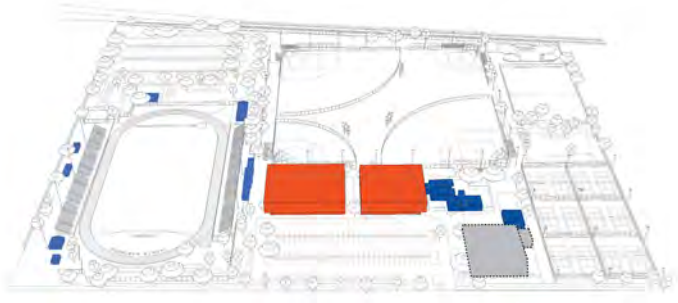
6 PHASE I LANDSCAPE



2 CONSTRUCT NEW GYM FACILITY , EXISTING GYM REMAINS OPEN
3 REMOVE EXISTING GYM , DISMANTLE GYM FLOOR , USE AS PANELING AT NEW GYM



7 NEW TENNIS CENTER , STADIUM CONCESSIONS, CHILD CARE CENTER



4 CONSTRUCT NEW POOL
5 CONVERT EXISTING POOL INTO STORMWATER RETENTION CISTERN

8 PHASE II LANDSCAPE

Images courtesy of SPF:architects

PROJECT **GOALS & OBJECTIVES**

1. Create facilities that epitomize energy efficiency and concern for the environment.

The project's basketball wing is one of the first Net Zero Energy (NZE) buildings built by the city of Los Angeles. An audit of performance data certifies that a building harnesses energy from the sun, wind or earth. One hundred percent of a building's energy needs on a net annual basis must be supplied by on-site renewable energy and no combustion is allowed.

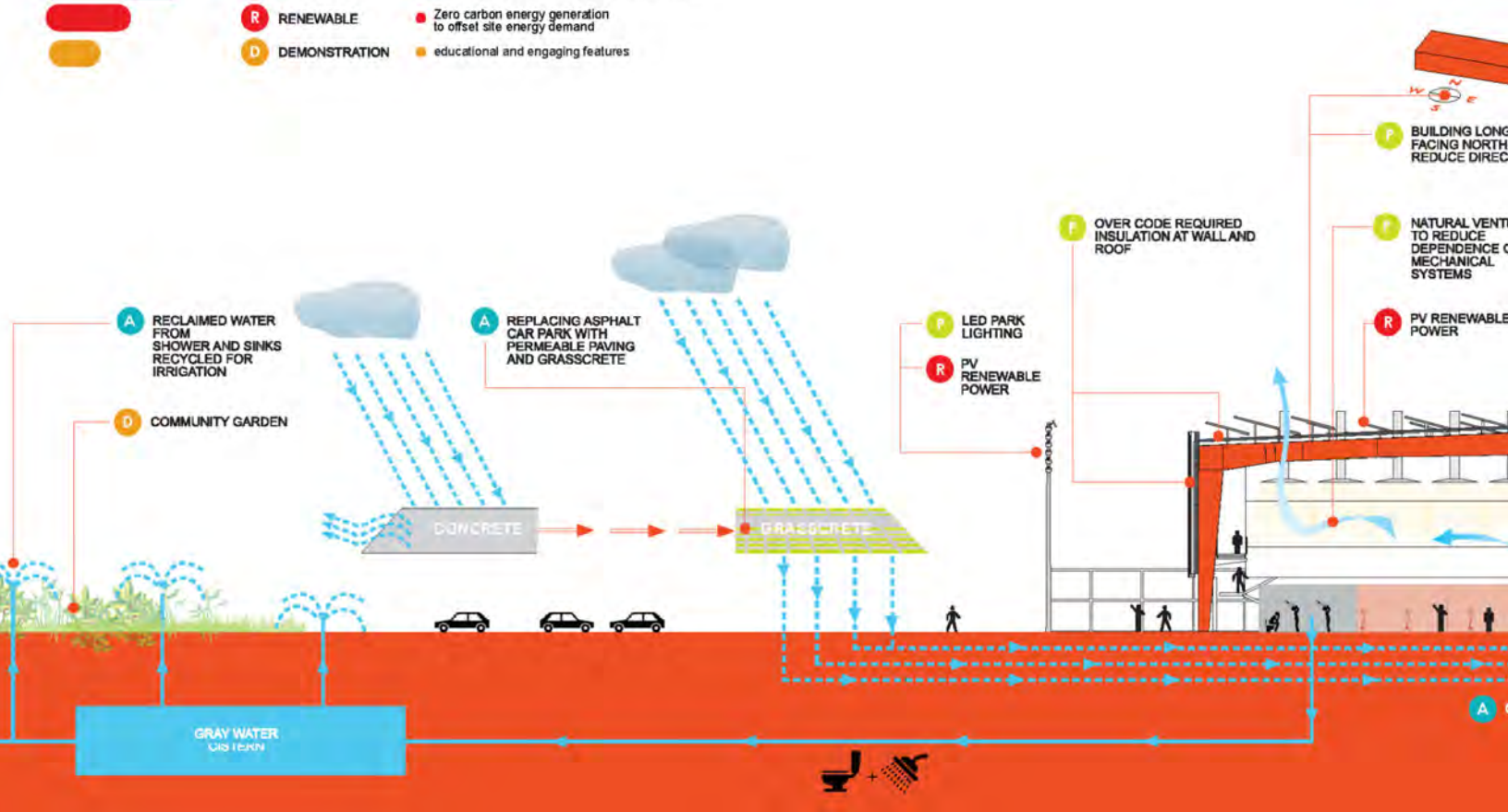
The facility incorporates passive energy features including extensive daylighting through solar tubes, natural ventilation and geothermal heating. A rooftop photovoltaic solar array is capable of generating more than 13% of the building's energy requirements. North and south operable walls open to provide natural ventilation and increase the area inside the gym building.

An existing swimming pool was decommissioned and reused as a storage tank that allows rainwater to be repurposed for irrigation, further improving the project's sustainable credentials. A higher-than-standard number of electric vehicle charging stations support the use of eco-friendly transportation, and bike racks promote alternative transit use via the nearby Metrolink. A robust greywater reuse and stormwater infiltration system further supports the environmental mandate.

The owner is also seeking LEED Silver certification through the U.S. Green Building Council.

2. Ensure design and construction processes are managed in such a way as to assure the scope of services will be established early on and that changes will be minimal.

According to Phil Skellorn, a senior structural project designer with engineering firm Buro Happold, one of the greatest challenges with most



"We are in a high seismic zone with a tall building and long spans so the metal building elements are on the larger end of what is typical. Getting those pieces shop fabricated, shipped to site and site assembled within the allocated schedule was interesting to observe."

-Phil Skellorn, a senior structural project designer with engineering firm Buro Happold

Photo courtesy of Nucor Building Systems

building design projects is most often related to project coordination. "With metal buildings, our experience is that we try to set the design criteria and, as the supplier is under contract, try to prevent any disturbance to the supplier's design going forward," he says. The setting of the design criteria typically happens early in the design, when there will inevitably be some unknowns as the concept is developing. "This creates a balancing act in setting an appropriate amount of contingency in the criteria to allow for design flexibility and lessen the impact of any changes to loads, materials, etc. that could alter the criteria—while ensuring the end product is still as optimized as possible."

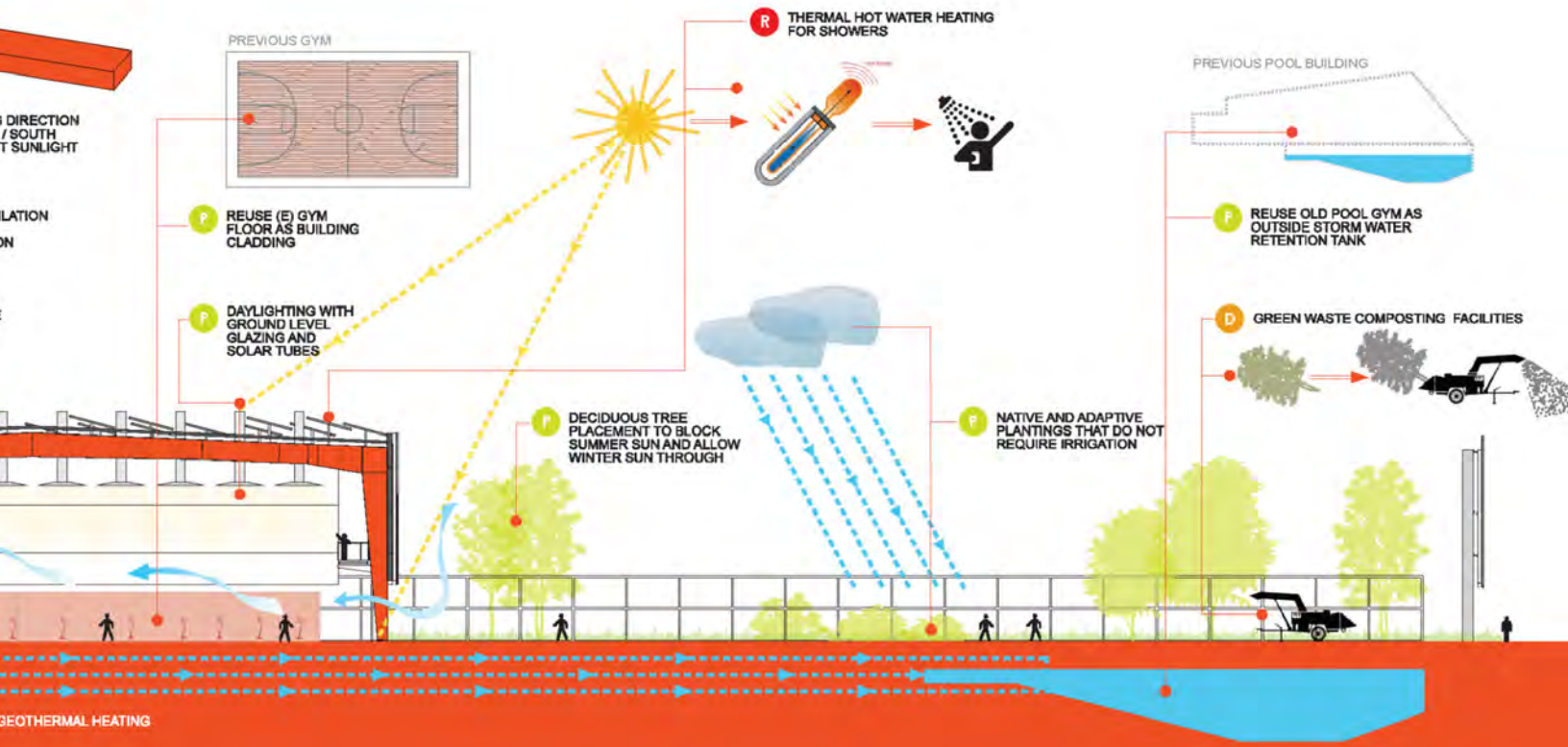
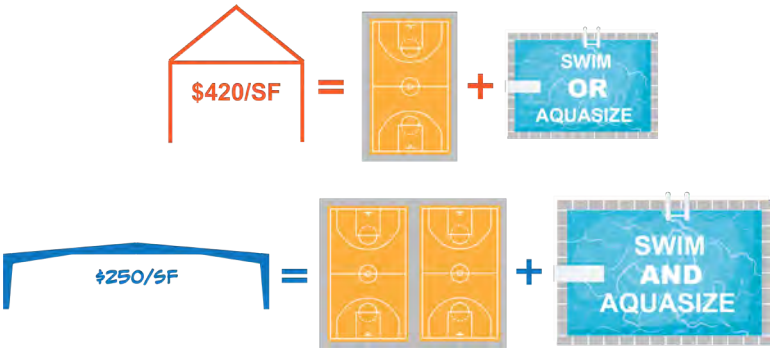


Image courtesy of SPF:architects

Photos and images courtesy of SPF:architects

3. Create buildings that are optimized to provide the most effective layout and structural design.

The pool and gymnasium buildings offer exceptional flexibility and opportunity to maximize space while keeping costs in line with a very tight budget. Skellorn explains the frames that form the metal buildings are highly optimized to provide an efficient means



of achieving long-span, column-free spaces. "Metal building frames will often be created from built-up tapered sections that have a depth that varies with the moment and shear demands on the system," he says. "As a structural engineer, it is always interesting to see the form following the function and allowing the minimum use of material to achieve a design—with the important benefits of reduced cost and embodied carbon."

4. Design to accommodate lateral drift.

To maintain an optimized solution with metal buildings, it can be customary to allow for larger drift limits than traditional building construction. When building systems are drift controlled, relaxing the criteria can allow for significant savings in steel tonnage. Skellorn says that, normally, in industrial settings this is not an issue where envelope systems are more forgiving. However, for this project, the designers were dealing with signature architectural glazing, various cladding packages and architectural volumes protruding through the façade. "All of these systems needed to be carefully coordinated and detailed to allow the building to move unimpeded during seismic/wind events," he says. The engineers were careful to avoid impact on the façade system components while maintaining support of the façade system itself. He says that the solution included capture plates that the façade system would slot into.

Photos courtesy of SPF:architects

This allowed the façade to remain stationary and the structure to move around it during a lateral drift. Architect Pali expands on this thought. "Rigor and math were not the challenge," he says. "The issue was detailing; getting the quality, for example, of how the flashing comes to meet the metal. Special details are what make a project like this intriguing. Keep in mind we had to include offices, lockers, event centers, two structural systems—and the building moves during a seismic event. We provided detailing with sliding joints, a two-story element, offices, gym lockers, etc. The connections need to allow 7 inches of movement and the shell of the building moves differently than components housed within it."

5. Plan carefully to take into account difficult soil conditions.

Pali explains that one extremely important design consideration involved the condition of the soil. The part of Los Angeles where the park is located is swampy and the site is on bedrock and below grade. The complexity required input from various civil and structural engineers. To secure the buildings, the foundations sit on a series of piles located under each footing to support building loads under such porous conditions.

RELEVANCE FOR STUDENTS

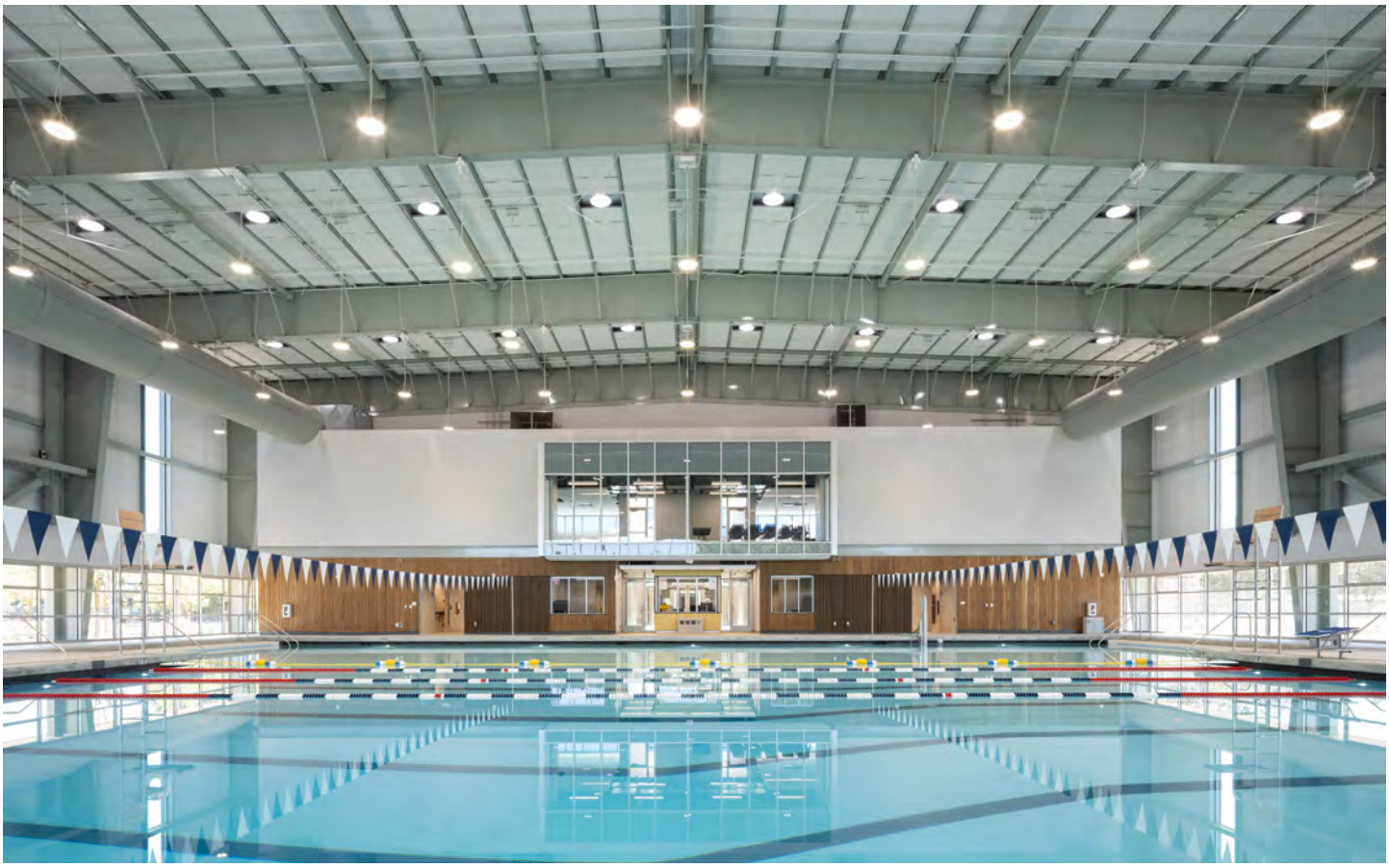
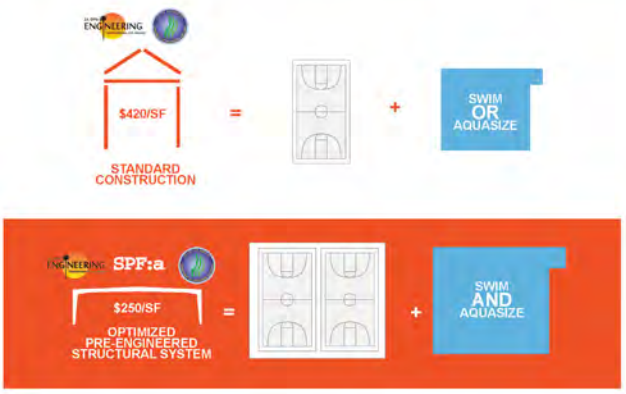
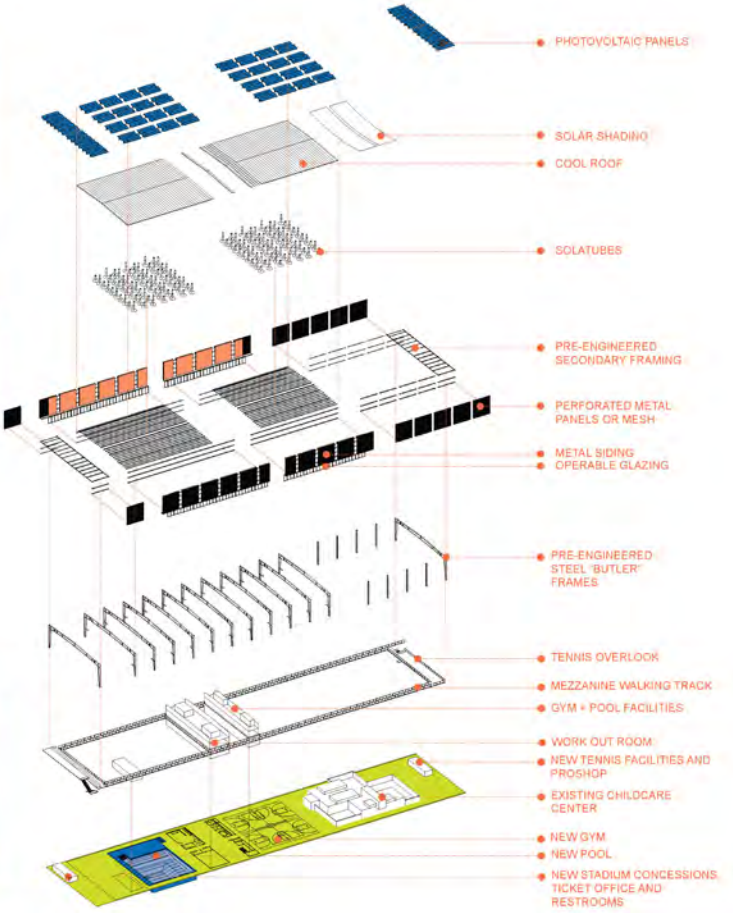


Photo by Mike Kelley

Skellorn recommends that students will become successful designers if they think holistically about buildings. He says that the earlier you develop an appreciation for the design of buildings as a whole—encompassing the various architectural, structural, mechanical, sustainability, client, operator, visitor and builder requirements—the more creative and forward-thinking your design solutions can be. When designs are reactive rather than pre-emptive to challenges, they can become compromised in their delivery, he says. "The best way of becoming a holistic building designer is to listen and communicate effectively, and ask questions early to uncover needs, limits, necessities, wants, etc. Such investigation will help you to come up with integrated design solutions that satisfy or exceed the project's expectations. Being pre-emptive helps with all aspects of the job," he comments.

"Communicate. Coordinate. Design. Deliver." Pali adds. "The thing that makes it worthwhile is working with the [metal building] system; try to take and use it and put it together in a new way. Look at it as building blocks with infinite options. Create a composition unique to your project—unique to what you want to express. Once you've done that, work to achieve simplicity and elegance in the detailing—how are doors inserted, how do windows interact? Bring the best out of the system visually and from a performance perspective as well. It's limiting. Remember that, as Orson Welles famously said, 'The enemy of art is the absence of limitations.'"





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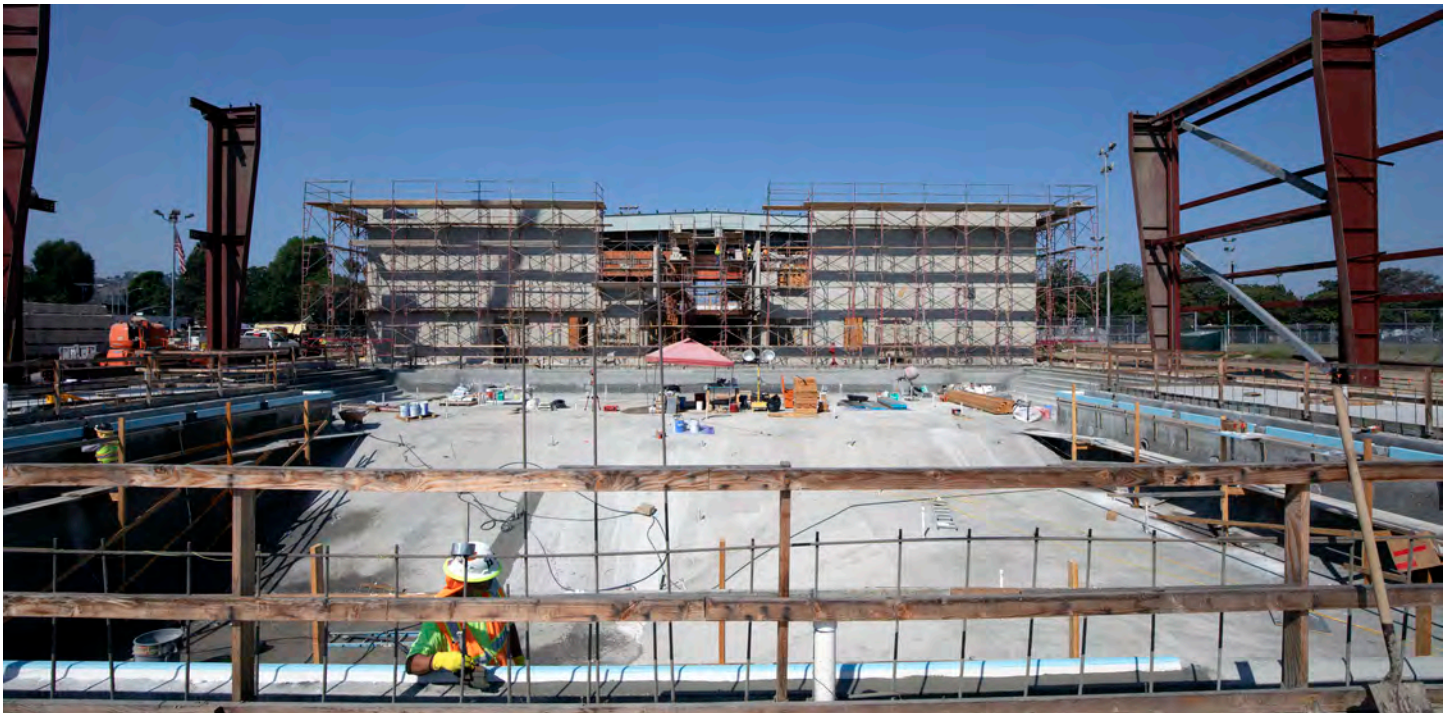

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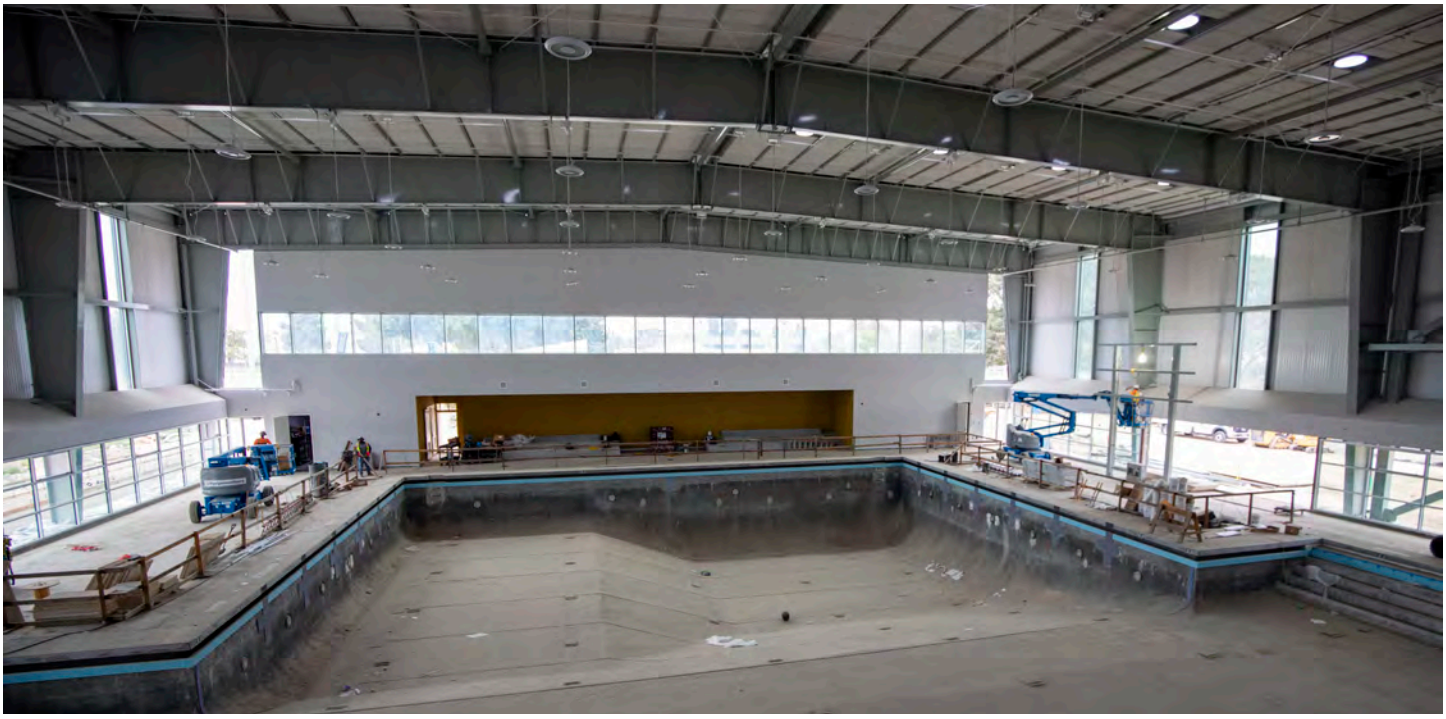

Photo courtesy of Nucor Building Systems

Practical Application

1. The indoor pool facility requires special attention due to the amount of humidity and condensation that can become detrimental to the building itself and to user comfort. Download the **Condensation Fact Sheet** (MBMA, n.d.) produced by the Metal Building Manufacturers Association. After reading about vapor barriers, determine how you would best insulate a metal building that contains a pool.

2. Windows, translucent panels and skylights are evaluated as to their impact on the energy efficiency of the building envelope. Designers take into account the geographic location (e.g., climate zone), type of fenestration element (e.g., window or skylight), the glazing material (e.g., plastic or glass), the framing material (e.g., metal or non-metal), the ratio of glazed area to wall or roof area, the orientation (e.g., north or non-north facing), and for skylights, whether a curb is utilized with the assembly. Looking at the Obama Sports Complex photos and drawings, analyze the energy efficiency of the fenestration system.

Photo by Mike Kelley

3. Metal building systems account for about a third of all low-rise (1-2 stories) nonresidential market structures as measured by the Metal Building Manufacturers Association. What are five reasons that would explain why metal buildings capture such a large portion of market share?

4. The architects chose a metal building system as the best solution to meet the design needs of this project. Explain why other common low-rise construction systems, such as tilt-up concrete, masonry or conventional steel framing, would not meet the design needs as well.

5. Investigate the overall process of fabricating pre-painted metal for use in building design and construction and describe how advances in pre-painted metal have enhanced aesthetic options and improved performance of metal building systems. Also assess their functional contributions as they contribute to green and sustainable design, including protection of human health.

Photo courtesy of Nucor Building Systems

Photo courtesy of SPF:architects

RESOURCES/RELATED READING

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Video Resources

Over 50 videos highlighting metal building architecture, engineering, design and application can be accessed at www.youtube.com/mbmamedia. We recommend you begin your educational process with the following programs:

- How It's Made: Metal Building Innovations Are Revolutionizing Low-Rise Commercial Construction
- How It's Built: Metal Building Construction Raises the Bar for Low-Rise Commercial Structures
- An Introduction to Metal Building Systems
- Metal Building Systems 101

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For additional information about the educational programs available through the Metal Building Manufacturers Association, visit www.mbma.com and www.mbmaeducation.org or speak directly with MBMA General Manager Tony Bouquot at tbouquot@thomasamc.com.

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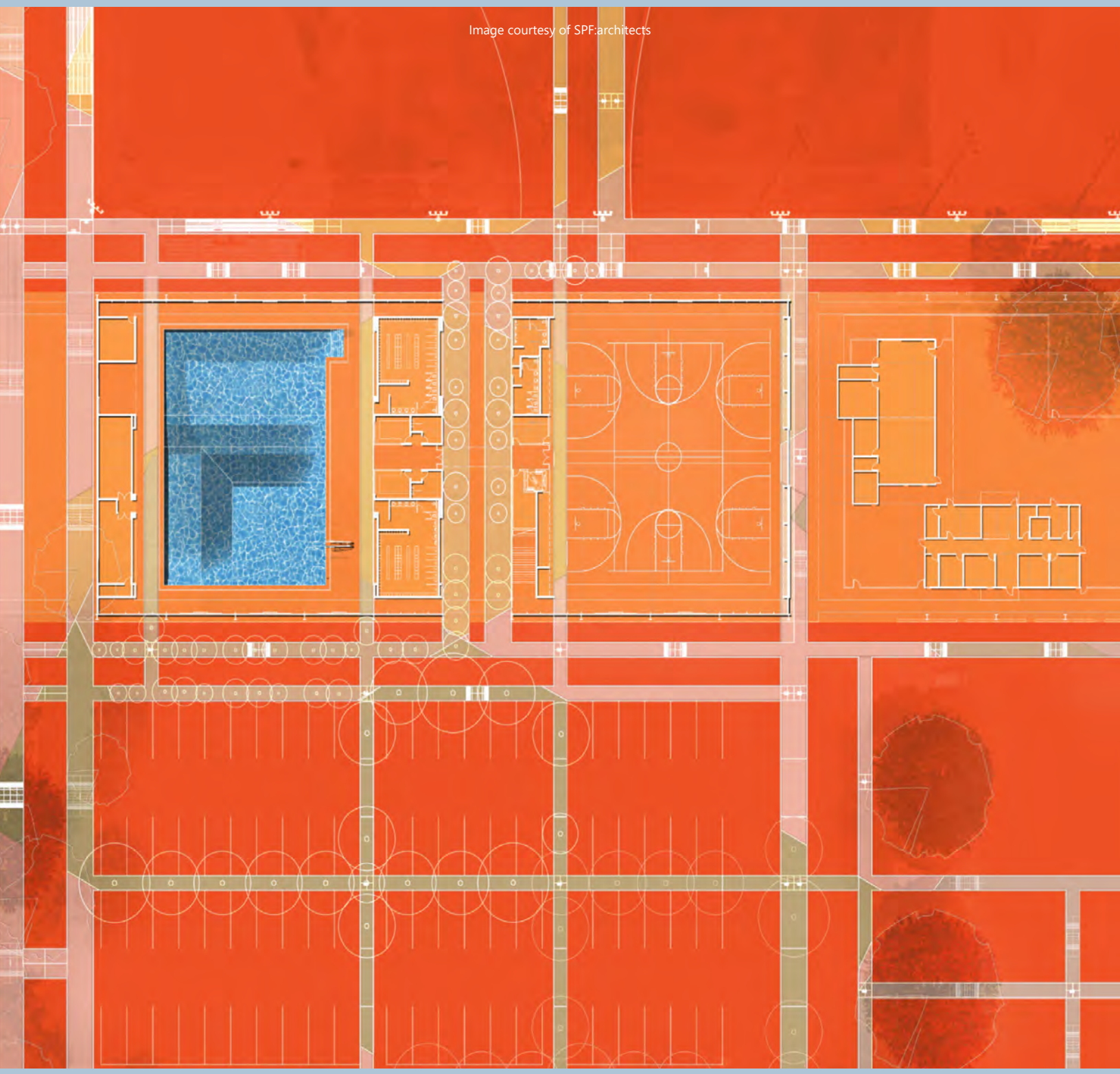

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