

SKIN IN THE GAME: RATIONALISING COMPLEXITY AT CHASE CENTER

Sanjeev Tankha, AIA, and Gustav Fagerström, ARB at Walter P Moore, explain how digital modelling was at the forefront of their work at Chase Center.

Serving as a year-round sports and entertainment venue in Mission Bay, San Francisco, **Chase Center** is a new 11-acre mixed-use development featuring an 18,000-seat, multi-purpose arena for the six-time **NBA** Champion **Golden State Warriors**.

The development also includes two office buildings, over 20 retail and restaurant locations opening over the first year of operation, and 3.2 acres of open space including a large, multi-function outdoor plaza fronted by a jewel box pavilion that also serves as an indoor-outdoor TV studio.

The \$1.4 billion development officially opened with a ribbon-cutting ceremony

on September 3, 2019, hosted its first concert on September 6, and its first Warriors game played in San Francisco since 1971 on October 5 against the **Los Angeles Lakers**.

The new venue represents a major milestone and turning point for the Warriors franchise. Joe Lacob, Warriors co-executive chairman and CEO, said at the ribbon-cutting: *“Today is the beginning of an exciting new era for the Warriors and our franchise. We’ve officially transitioned from a basketball team to a sports and entertainment company with this incredible state-of-the-art arena.”*

ENVELOPING AN ICON

Owners envisioned the “Madison Square Garden of the West” and desired all sides of the arena to be “forward-facing,” meaning that the structure should be aesthetically welcoming from every angle — a challenge for the design team.

Working with architects **MANICA Architecture** and **Kendall Heaton, Walter P Moore** provided enclosure engineering with waterproofing and parking consulting services for the iconic arena, office buildings, retail, and gatehouse.

The ambitious arena is clad with a complex, metal-perforated rain screen

Chase Center Exterior Northeast Corner
Image credit: Jason O’Rear Photography



skin and large glass-clad atria at the plaza and waterside entries.

The skin of the arena was designed as a complex multi-layered surface that intersects and offsets, creating unique folds and hoops that allow LED lights to highlight the façade.

These surfaces are clad with three different primary materials: insulated glass for the atria, Neolith Sintered Stone panels for the base of the building, and a pearlescent white painted metal panel for the majority of the surface area that gives the arena its signature look.

What at first appears to be a somewhat irregular enclosure is actually anything but. To make the most efficient use of materials and budget, the engineers rationalised the façade’s geometry by designing standard and modular units of eight feet by three feet for both the metal and glass panels.

From there, “mega-panels” of eight feet by 24 feet were configured and pre-assembled off-site to promote efficiency of shipping, fabrication, and installation, thereby cutting down on schedule and conserving materials.

With the introduction and assembly of mega-panels, what would have been almost 3,000 individual panels then became approximately 600 mega-panels, significantly reducing construction time.

Once the modular approach and panelisation strategy were set, the overall outer form and geometry went into more than three months of design iteration to optimise the design and engineering of the systems and reduce the surface area and cost.

DIGITAL MODELLING

This was possible only through an internally developed digital workflow and advanced 3D modelling process set forth by Walter P Moore.

Form, surface area, and resulting costs were developed and tracked in real time until an equilibrium was achieved between design and budget.

Holding the owner’s and architect’s vision paramount, the engineers at Walter P Moore set out to formulate the optimal panel configuration that would deliver the vision and achieve efficiency.

The digital and parametric modelling process allowed exponential potential geometric configurations of the skin surface and panel layout to be visualised and considered — the process of optioneering that is not

available using traditional BIM (Building Information Modelling) methods, but is bespoke to Walter P Moore’s Enclosure Practice’s every-day processes.

The result: an efficient, repetitive modular system that showcases a very complex geometry and precisely meets the design vision of the design team.

Walter P Moore engineers designed lightweight structural “hoops” that transfer the gravity and lateral loads from the façade to the primary structural columns, allowing the 360-degree “forward-facing” façade panels to create the form of the exterior façade while floating outside and remaining detached from the weather wall barrier.

The weather wall was optimised for acoustical, water, and thermal performance as an efficient and easily constructible skin that was tight up against the arena structure.

Walter P Moore’s waterproofing team carefully detailed and oversaw the construction of these performance-related aspects of the façade.

Once the final enclosure design was approved, Walter P Moore took the parametric model a step further to

provide construction engineering services, delivering construction documents and fabrication-level digital models to the construction and fabrication team. The process was a natural progression of exchange of high-fidelity digital information that had already been created in the design stages that precisely communicated the complex geometry and assembly of each panel and mega-panel.

The modelling effort reduced complexity and eliminated significant risk that typically appears later in the design and construction phases of comparable projects.

Through digitally advanced workflows, the design process enabled the team to rationalise and modularise with unlimited iteration.

Additionally, it afforded standardisation of materials and simplified construction techniques, which resulted in an economical, efficient, and ultimately successful project. ■

CHASE CENTER	
Team Players	
Location	Mission Bay in San Francisco, California
Opening Date	September 6, 2019
Construction Cost	US\$1.4 Billion
Owner	Golden State Warriors
Operator	Golden State Warriors
Capacity	18,064
Architect	Manica Architecture, Kendall Heaton, Architect of Record; Design & Gensler Sports, interiors
General Contractor	Mortensen Clark, a Joint Venture
Structural Engineers	Magnusson Klemencic (Foundations & Superstructure)
Facade Engineering & Waterproofing	Walter P Moore
Services (MEP) Engineer	Smith Seckman Reid Inc.
Videoboards	Samsung/Prismview
Landscape Architect	SWA Group
Parking Consultant	Walter P Moore
F&B Concessionaire	Bon Appetit & Levy
Major Tenants	Golden State Warriors
Amenities	
Arena will host over 200 events annually including concerts, family shows & corporate events; 136 suites include 44 between upper & lower bowl, 32 Courtside Lounges & 60 Theatre Boxes on sidelines on top of suites ring; Mass transit Includes easy access stops via Muni, Bay Area Rapid Transit (BART) & Caltrain, plus a light rail Arena stop & new subway line will link the arena & UCSF to downtown.	