At-A-Glance

Each sunshade blade required its own calculations to achieve this highly complex, dazzlingly creative system at LAX.

CASE STORY

Midfield Satellite Concourse South @ LAX *Los Angeles, CA*

About the Project

The Midfield Satellite Concourse (MSC) South is an eight-gate, two-story addition to Los Angeles Airport (LAX) spanning approximately 150,000 square feet and extending the West Gates in the Tom Bradley International Terminal (TBIT). This new concourse is part of Los Angeles World Airports' (LAWA) multi-billion-dollar modernization program.

It was constructed with sustainable methods and designed to achieve LEED Silver certification for energy efficiency and environmental stewardship.

Staying true to Los Angeles' reputation as a creative hub, LAX had an ambitious, visually striking vision for sunshades on MSC South. Picture a brise-soleil (French for "sun breaker"), which typically features fins attached to a horizontal projection, extending from a building's facade. Now imagine gently twisting it like a DNA helix. We had never attempted anything similar—and as a company, it's in our DNA to take on new challenges—so we knew we wanted to pursue it.

Challenge

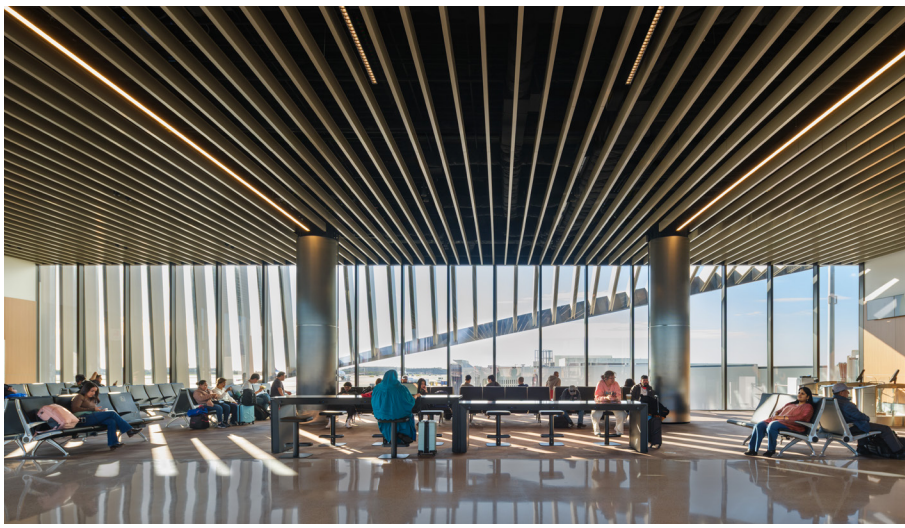
Unlike our twisted blades, which feature extrusions that have each been individually twisted, the idea here was for the entire sunshade system to appear as if it's rotating. Getting the fins' orientation right was extremely challenging.

We needed to isolate the attachment of the system at the very tip of each fin, while also accounting for the force applied to that connection at various degrees of rotation. Gravity pulls down more or less forcefully depending on how horizontal the fin is, which varies from one fin to the next. Plus, every single blade is at a completely different angle.

If these factors didn't seem like a comprehensive enough challenge, remember this project is in California, so seismic activity was a concern. The sunshades needed to withstand seismic activity not only when fully assembled, but also during installation.

All those engineering considerations factored into how we put the product together and how it attaches to the building. "That's kind of what drove the final design—all these little nuanced ideas and things we needed to account for to make sure this thing worked," said Talon Baez, project manager.

To arrive at the solution, we collaborated with vendors capable of extruding large shapes, developed 3D prints, and produced design drawings.



Solution

Our BetterBuilt Studio™ team delivered a custom, extrusion-based system with a unique diagonal twist. The results are huge 24"x6" fins, cantilevered—supported at the top with a round tube. Each fin features a square aperture near the top, rotated slightly from one fin to the next, and slid onto the aluminum tube. The rotation of each aperture determines the fin's projection angle.

Each unit contains 47 fins placed at varying angles. The blades range in length from 11'to 23'-4", elegantly twisting into a wing shape.

On the engineering side, the approach was to design for the worst-case scenario—the heaviest load—and carry that across the entire spectrum of fins. We partnered with Curtainwall Design Consulting (CDC) to ensure every fin ended up in its correct place, at its correct angle. At the very least, we knew the forces applied to a horizontal fin would be more significant than to a vertical one. However, that's offset by length. Accordingly, the horizontal fins are much shorter than the vertical ones.

Notably, the only support for an 18-foot-long, 24"x6" fin at a 30–40 degree angle comes from its top connection to the tube—an impressive engineering solution to withstand significant torque and California's seismic activity. (In fact, a minor earthquake occurred during installation!)

MSC South utilizes innovative off-site construction and relocation techniques, enabling greater flexibility for future needs.

Learn more about BetterBuilt Studio™ →

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