Walking on air: the bold evolution of GLASS FLOORS

Senior Editor at Brands and Materials, architect Eduardo Souza explores here the strength, safety and breathtaking beauty of modern GLASS FLOORS - where innovation transforms walking into a thrilling architectural experience. The author holds a Master's degree from Brazil's Federal University of Santa Catarina (UFSC).

Walking on a glass floor is a unique experience that blends awe with a touch of unease. The transparency creates the illusion of emptiness beneath your feet, despite the firm support, generating a visual disconnection that makes each step feel tentative, as if you were floating or crossing an invisible bridge. Although glass is engineered for safety, the mind often associates it with fragility, producing a curious tension between trust and doubt. It's this mix of emotions that makes walking on a glass floor so unforgettable.

STRENGTH AND SAFETY IN MODERN GLASS FLOORING

Modern glass floors are remarkably strong, thanks to advanced materials and manufacturing processes. Typically made from laminated glass -composed of multiple layers of glass bonded with a durable interlayer- they are designed to prevent shattering into sharp fragments. In terms of load capacity, a well-designed glass floor can support weights equivalent to or greater than traditional flooring materials, often exceeding 500 kilograms per square metre or more, depending on the design and application. Step onto a glass floor and you're not just walking - you're floating, suspended between reality and illusion in a thrilling feat of modern design.

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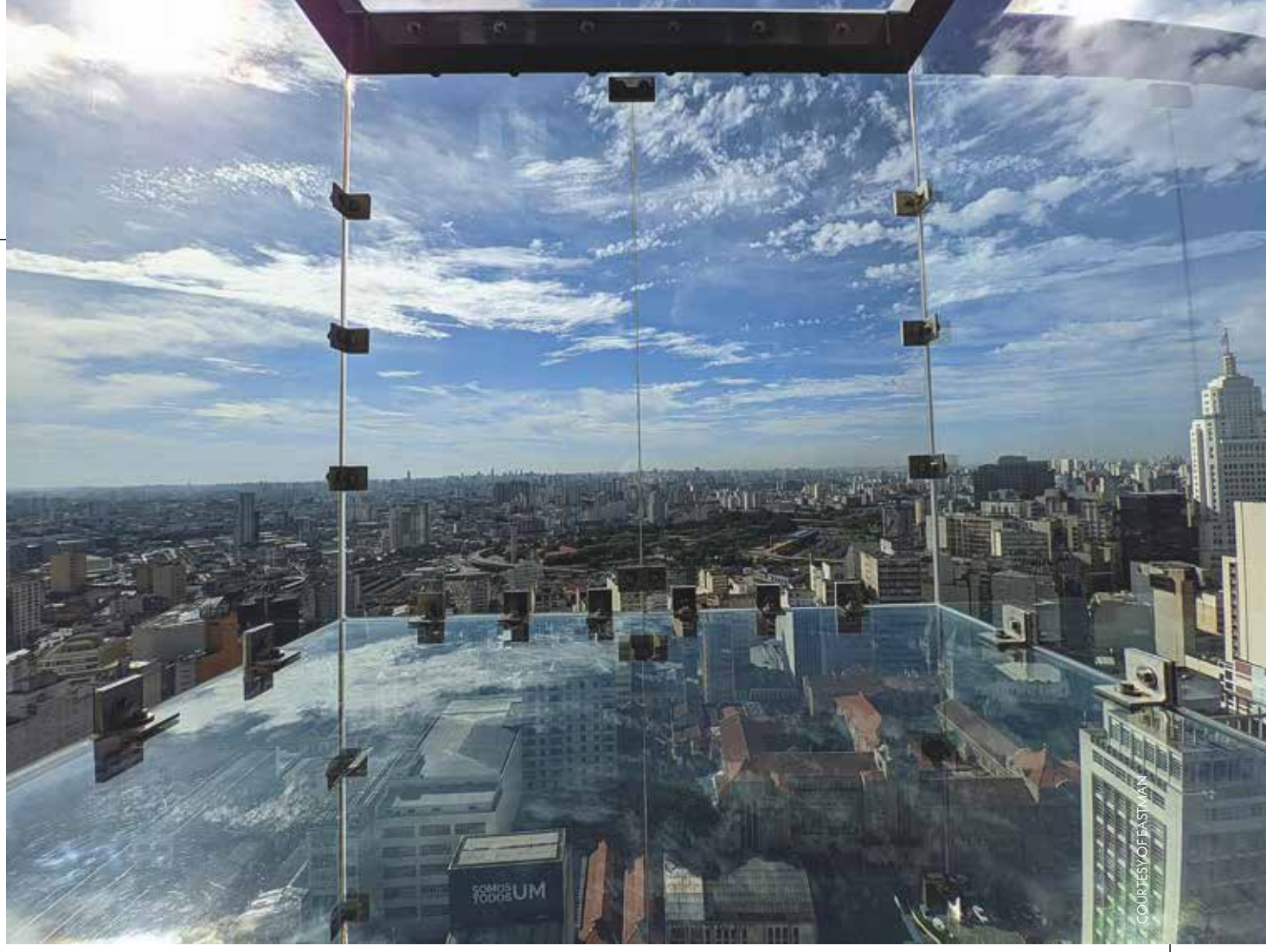

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APPLICATIONS THAT BLEND FUNCTIONALITY AND AESTHETICS

Glass floors are widely used in structures where aesthetics and functionality intersect, allowing natural light to pass through to spaces below. On ship decks, for instance, these floors offer panoramic views of the sea while letting light illuminate interior areas, creating a more open and inviting atmosphere. Additionally, walkways and observation decks are among the most common applications of glass flooring. In these cases, glass transforms the visual experience, enabling visitors to walk over the void, evoking a sense of lightness and floating while enjoying uninterrupted views of the landscape below. The use of glass in such spaces not only fosters a stronger connection with the natural environment but also contributes to a unique and thrilling experience, combining safety with innovative design.

SAMPA SKY: PUSHING THE LIMITS OF ENGINEERING

The Sampa Sky, located on the 42nd floor of Mirante do Vale -the tallest building in São Paulo- is an example of a tourist attraction that blends structural innovation with cutting-edge engineering. Featuring retractable glass platforms that extend up to two metres beyond the façade, the project pushes technical boundaries to offer a one-of-a-kind experience 150 metres above the ground. The platforms are made from Guardian Glass with 10 mm thickness and three layers of ten mm structural Saflex™ PVB interlayers, resulting in a laminated system capable of supporting loads of up to 30 tons. This strength was achieved through a rigorous design and manufacturing process, ensuring structural safety along with high transparency and durability.


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DESIGN, SUSTAINABILITY AND THE VISITOR EXPERIENCE

Additionally, the façade incorporates two layers of 6 mm Guardian Sunlight glass with Saflex Clear


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interlayers, providing extra protection against impacts and weather conditions. Each deck weighs approximately four tons and its technical development took eight months to ensure the feasibility and safety of the retractable system - the first of its kind in the world. Material selection was critical: Saflex PVB interlayers offer intrinsic properties such as solar control, UV protection and edge delamination resistance, ensuring longevity and low maintenance costs. Another notable aspect was the integration of the decks with the existing building, which required engineering solutions to preserve the original façade while maintaining structural stability. The attachment systems use high-precision metal structures designed to evenly distribute the loads applied by the decks and minimize stress on the external walls. The combination of advanced engineering and functional design also considered environmental impact. Saflex PVB interlayers assist with thermal and acoustic control, reducing the building's energy consumption and enhancing visitor comfort. Additionally, the laminated glass was treated to minimize glare and ensure perfect visibility even under intense sunlight. These technical details reflect the project's commitment to delivering a safe, functional and visually stunning experience.

The use of glass flooring transcends aesthetic innovation, offering a sensory and visual experience that merges boldness with safety. The fusion of transparency and the resilience of advanced materials redefines how we interact with spaces, creating environments where the sensation of floating is both an emotional thrill and a technological milestone. Projects like Sampa Sky exemplify how cutting-edge engineering can transform a simple walk into an adventure, pushing technical limits and exploring new dimensions of architectural design. By integrating structural safety, aesthetics and functionality, these installations not only provide breathtaking views but also open new horizons for modern architecture, where innovation meets user experience in unexpected and unforgettable ways.


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