



Le Phare—one of several new skyscrapers planned for the business district known as La Défense, on the outskirts of Paris—would redefine the city's skyline. The tower's unconventional appearance is due in part to its multiple facade systems, each expressly designed to conserve energy on a particular side of the building. The sheer north side, for example, receives relatively little direct sunlight, so its glazed glass facade exposes the interior to as much natural daylight as possible. The other sides of the building, however, are wrapped in a second, curvilinear skin, a stainless steel mesh intended to block much of the direct solar radiation yet preserve the views from inside the building.

BUILDINGS

Paris Skyscraper to Rival Eiffel Tower

THE BUSINESS DISTRICT known as La Défense, on the northwestern outskirts of Paris, is probably best known for its most prominent structure, la Grande Arche. Now another iconic building is planned for the area that promises to be noteworthy not only for its distinctive appearance but also for its height. At 300 m, it will be the tallest building to be constructed in Paris since the Eiffel Tower.

One of several new skyscrapers planned for the district, the tower—to be named le Phare—is far from a conventional office building. One factor that influenced the structure's unique design is the irregularly shaped and densely crowded site, explains Charles Lamy, the project manager for the structure's architect, Morphosis, which

is based in Santa Monica, California. On one side, a major highway abuts the site, and below grade lies a busy train station. Further complicating matters, a large pedestrian bridge bisects the site, slicing straight through the building's footprint.

To accommodate the existing structures, the new building's base will resemble a tripod. Two legs of the tripod will contain occupied space, while the third, which will consist of a grid of diagonal steel beams, will function only as a structural support. This arrangement will create a 24 m wide, 30 m tall void at the base of the building through which pedestrian traffic can continue to flow. A bank of escalators will convey visitors from a ground-level pavilion to the building's main lobby, which will

be located on the ninth floor. There the legs will merge into a single, asymmetrical tower that will first widen before narrowing toward the top.

Because one side of the building will be directly above the train station, transferring vertical loads to the foundations will be a complex undertaking, says Jean-Marc Jaeger, who heads the complex structures division of SETEC TPI, the Paris-based structural engineering firm that is working on the project. Most of the building will rest on a 2.8 m deep concrete raft founded on a layer of limestone located some 20 m beneath the ground elevation. Vertical loads from the portion of the tower that will be situated above the train station, however, will be transferred to a small number of piles that will descend through the station.

With respect to structural framework, the building is a hybrid, notes Jaeger. The structural framing for most

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