

The Grande Arche Panoramic Lifts at La Défense



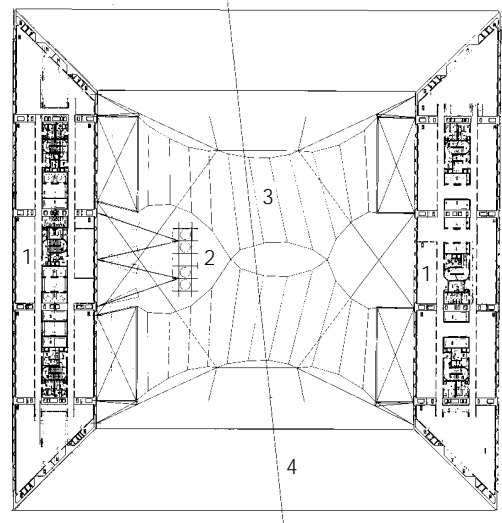
THE GRANDE ARCHE PANORAMIC LIFTS

The construction of the Grande Arche panoramic lifts required that the architect, François Deslaugiers, carry out highly detailed technical studies in order to respect the initial project design by Spreckelsen, winner of the competition.

This complex and unique building called on the extreme qualities of stainless steel to meet the structural constraints at the same time providing the necessary levels of lightness and transparency. To escape from the

concept of the lift shaft, the metal structure is designed as a series of superimposed boat masts. All the details required to ensure its structural stability are designed to be as slender as possible, with the intention of reinforcing the overall web-like appearance. Because of its durability (reduced maintenance needs and good long-term resistance) and structural qualities, stainless steel was the obvious for the architect.

The Grande Arche has an external lift bank providing a direct connection between the esplanade and the roof level, which is open to the public.



- Standard floor plan
- 1 Offices
 - 2 Lifts
 - 3 Clouds
 - 4 West-east axis towards the Louvre museum

To successfully meet these requirements, a new austeno-ferritic grade containing 22% chrome, 6.3% nickel, 3% molybdenum and 1.5% copper was developed. Given the technical constraints, this steel provided a number of characteristics essential to the structure:

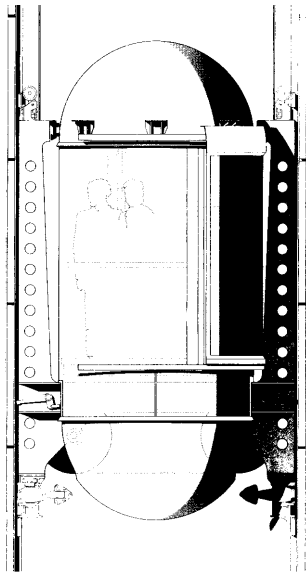
- a high elasticity limit (around 500 N/mm²) associated with an equally high fatigue strength,
- a relatively low thermal expansion coefficient (lying halfway between that of carbon steels and that of austenitic stainless steels) which met fire-resistance requirements.

It was nevertheless necessary to develop expansion systems for the entire structure, which, however, would operate within certain set limits.

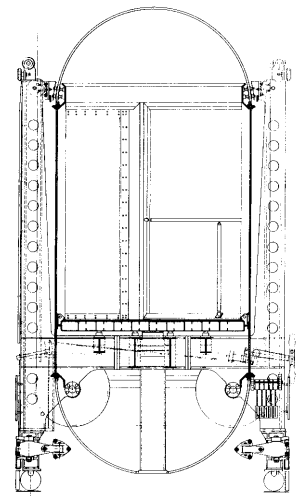
The project made use of a wide range of stainless steel finishes, with the masts constructed from electrolytically polished sand-blasted cast elements and the other elements provided with a brushed finish.



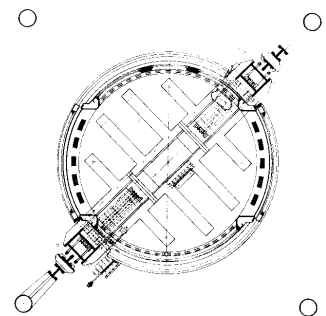
The minimalist web-like metal lift cage structure ensures a panoramic view from the cars.



Elevation, section and plan of a lift car



The design of this particularly lightweight and transparent lift bank was based on the high performance provided by stainless steel.





The panoramic lifts are "duolifts" – an innovative design idea that has the advantage of not requiring counterweights and increasing the overall transparency of the system.

Although standard austenitic stainless steel is used for the cars, the detailing and installation tolerances had to be absolutely perfect to assemble the different parts and ensure the quality of the finishes.

There was no question as to the material to be used for this project, "... there were quite simply no other solutions, given that we wanted to avoid painted finishes and ensure these particularly demanding structural qualities" (François Deslaugiers).

The window-like effect of the Grande Arche is enhanced by the shimmering silhouette of its external lifts.



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