

Milan-Naples High-Speed Railway Campania Afragola Station

General information

- ✓ Years: 2000-2001
- ✓ Customer: Italferr S.p.A.
- ✓ Value of work: € 20,000,000

Architectural and structural executive design of the roof in Glulam and glass, of the metal structure arches with a 160 m span and of the foundation plinths; studies for site setup and installation

Characteristics of the project

The Campania Afragola high-speed station features a large vaulted roof that covers the entire series of platforms and houses to the west the high-speed station services and to the East those for normal and local service. The roof is made of Glulam, steel, glass and copper on reinforced concrete plinths.

Steel structures

The vault that covers the station consists of pairs of steel tubular arches with a span of approximately 160 metres. The two side arches have a hollow circular section with an outer diameter of 3000 mm and are connected by hollow circular section steel horizontal transoms with an outer diameter of 1200 mm. The so-called trestle is completed by a triangular mesh bracing made of metal pipes with outer diameters varying from 300 to 350 mm. Overall, the main structure of the roof includes four trestles side-by-side with a succession of heights of

approximately 24, 30, 30 and 24 m.

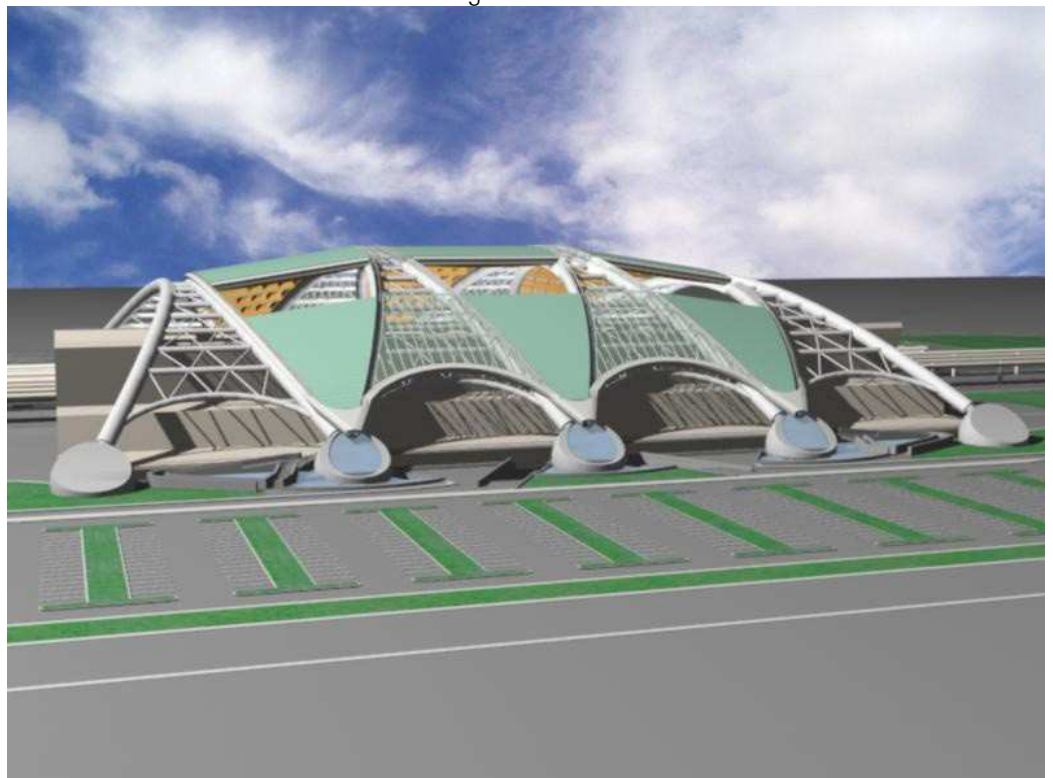
Glulam structures

The laminated wood structure is designed to cover the three spindle-shaped spaces between the four adjacent trestles. Each of the three spaces consists of:

- a first series of beams at varying heights with spans varying from 32 m to 5 m
- a second series of cross beams
- a third series of main purlins
- a fourth series of purlins supporting cover panels.

Glass support structures

The windows cover the space between the pairs of arches that make up the central trestles. They are composed of 1.4 x 2 m rectangular sheets with trapezoidal sheets in the areas towards the ends of the arches. The metal structure supporting the glass consists of trusses spaced at 2 m intervals.



*Three-dimensional model of
Campania Afragola high-speed
station*

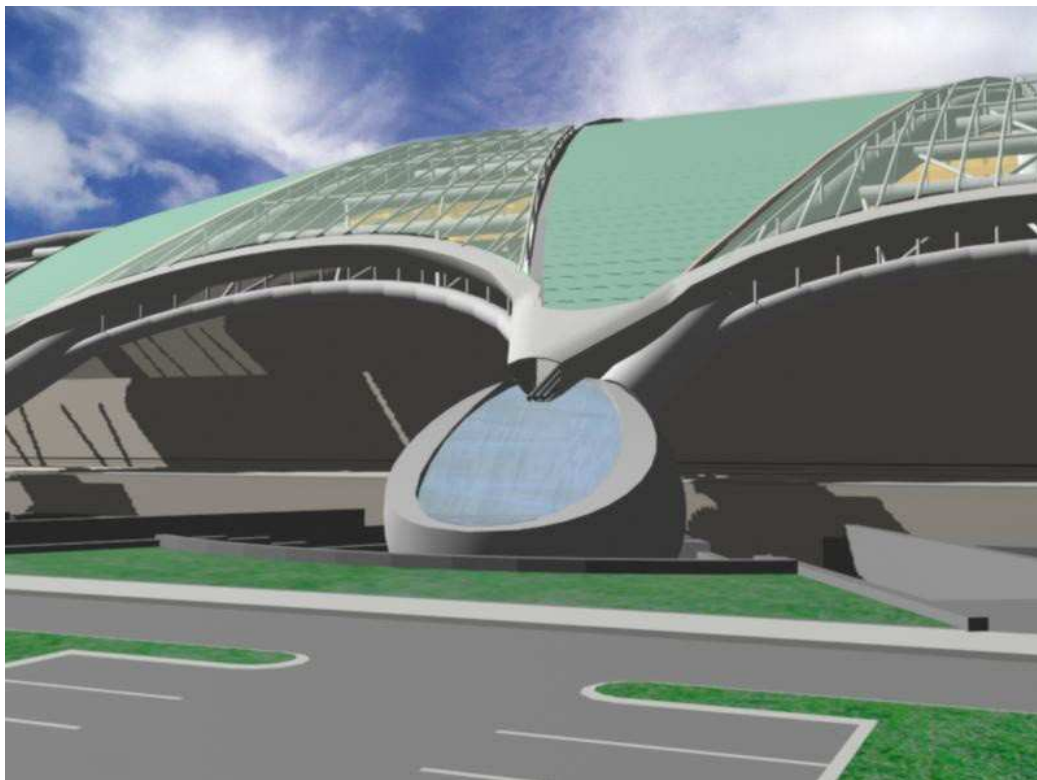
Sidercad S.p.A.
Via B. Bosco 15 – First floor
16121 Genoa - Italy
phone +39 010 54481
fax +39 010 5448865
www.sidercad.it

Base structures in concrete

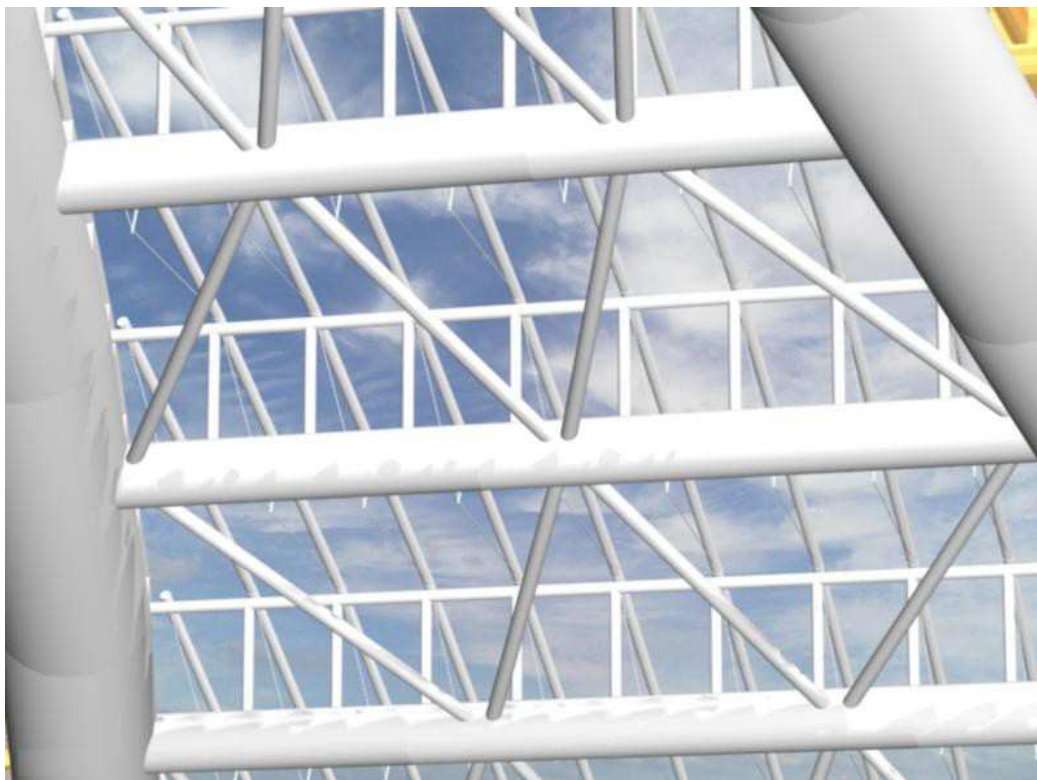
The shape of the plinths is a solid generated by the intersection of a cylinder with a sphere of approximately

6.5 m in diameter.

The bases of the arches have a solid reinforced concrete structure with a height of about 15 m



Detail of the connection of the eaves to the central plinth



View from inside the station of the reticular structure supporting the glass