FEATURE OF TECHNICAL SERVICE

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Subject	Executive design of railway alignment (ACT Line) and civil works related to new «Medio Padana» railway Station AV (in Reggio Emilia) – High Speed-Capacity Line (AV/AC) Torin-Naples, Milan-Bologna section
Carried out by	ATI SGAI Srl of E. Forlani & C. – RPA Srl (Main Agent) – SETECO Ingegneria Srl
Client	CIMOLAI S.p.A.
Service length	2009 - 2013
Value of works	€ 60'801'871,03
Categories value	S.03 € 14'066'071,86 V.02 € 2'154'933,64

CIVIL STRUCTURES - Design issues and their resolutions

The areas subject of the intervention are located near the urban area of Reggio Emilia, more precisely to the north of the A14 motorway in the Mancasale locality, extending for about 8000m². Given the strategic location of the site, a new railway station will be built reserved for High Speed lines, called «Medio Padana». During the executive and constructive planning, the different structural works of foundation of the covering structure were studied, the works in elevation in c.a. and the structures connected to the new railway platform. The foundations of the different portals are deep, consisting of foundation piles drilled in c.a. with a diameter of 1 m connected by a plinth with a thickness of 1.5m; under each plinth there are 8 piles with a depth of between 35 and 40m. The major design problems were encountered in determining the position of the foundation piles, which was determined by trying to minimize the interference with the existing poles of the Mancasale viaduct.

The railway platform is supported on the two sides in the outermost part by metal box girders with a slab collaborating with the extrados (which in turn rests on metal uprights) and in the inner part by walls in c.a. connected by wall beams also in c.a. The width of the platforms is about 6m, while the overall length is about 483m.

MEDIO PADANA STATION – FEM modelling, structural frames of fondations and elevations
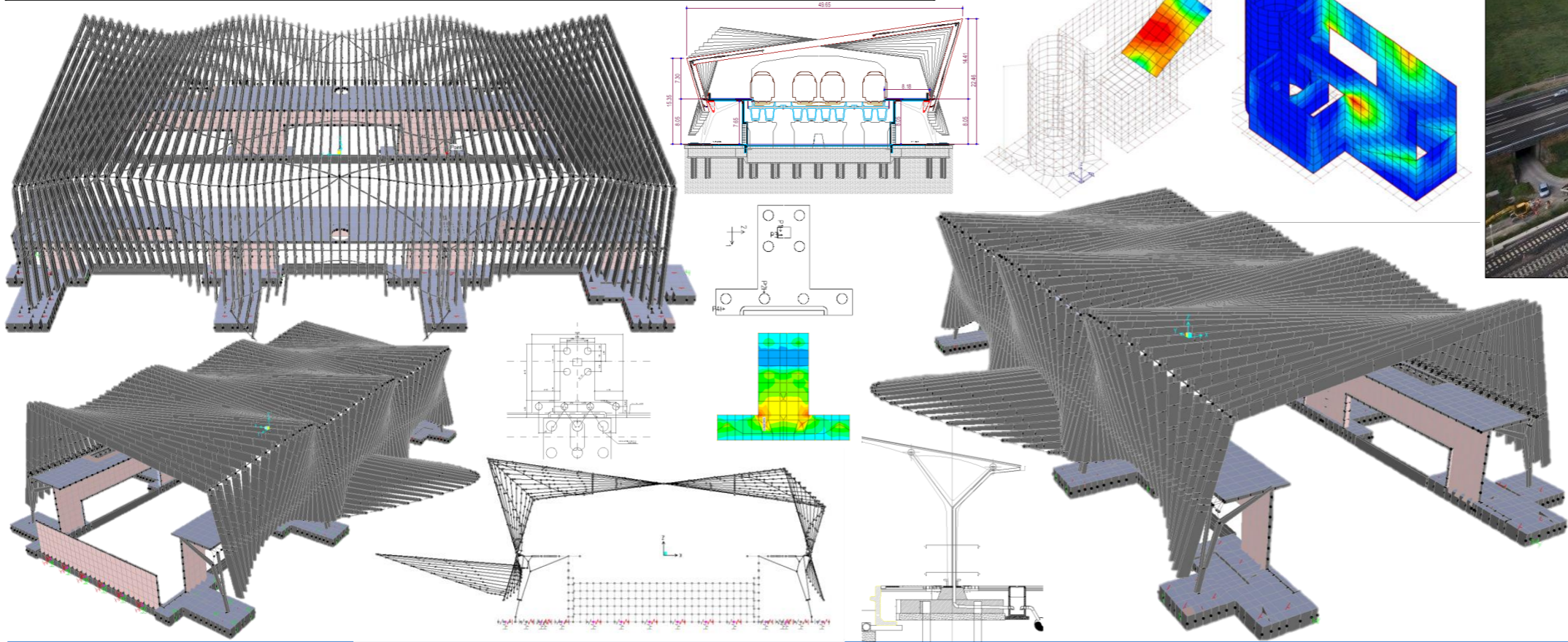

CIVIL STRUCTURES – Computational aspects, simulation, results and verifications

The analysis and study of the static and dynamic behavior of the various temporary structures and buildings was carried out by simulating the structure with a 3D finite element numerical model, solved with the calculation code PARATIE 6.0 (*CeAS*) and with SAP 2000 (*CSi Computer & Structures , Inc .: "SAP2000 Integrated Software for Structural Analysis and Design" Ver. 8.2.*).

MEDIO PADANA STATION - FEM modeling
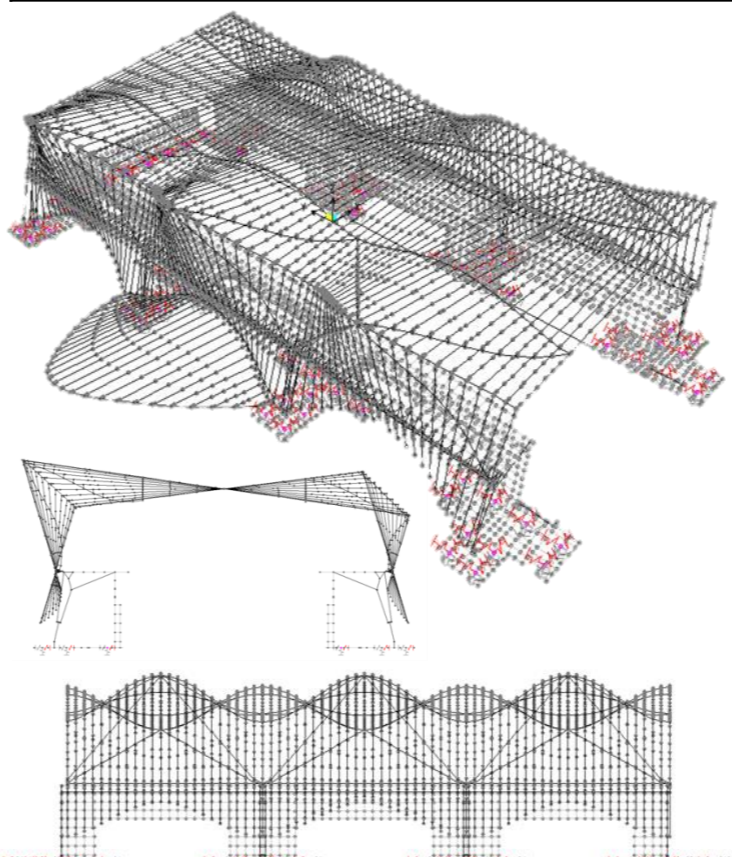
MEDIO PADANA STATION – Constructive phase and works progress
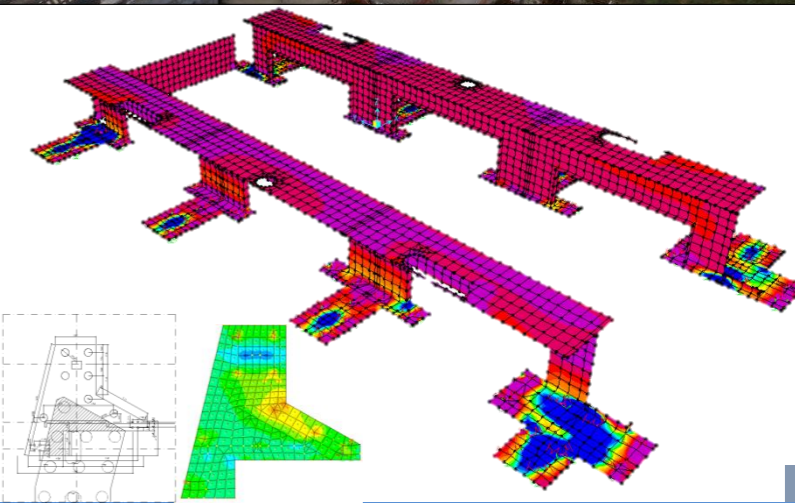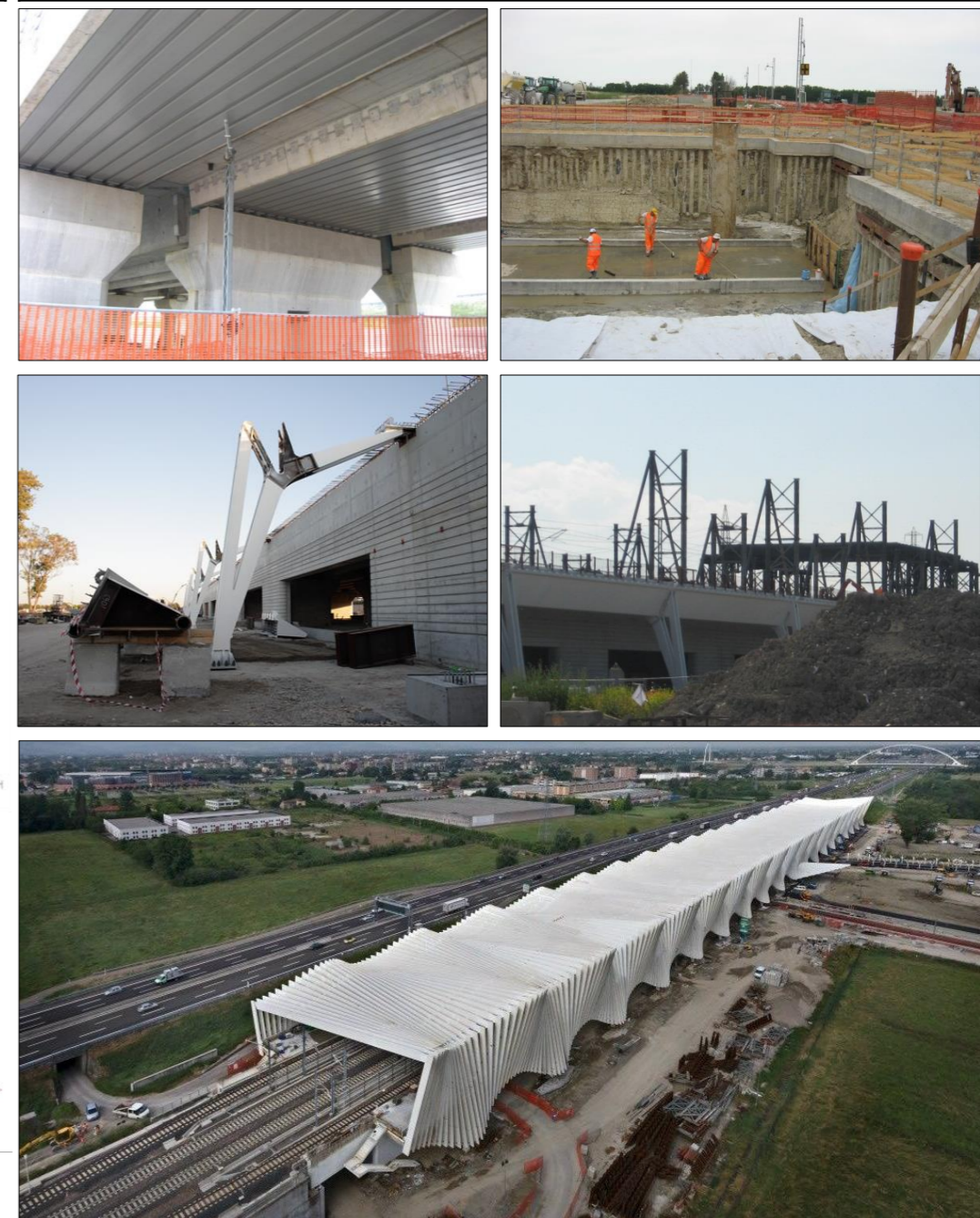
CIVIL AND INDUSTRIAL STRUCTURES

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