

FEATURE OF TECHNICAL SERVICE

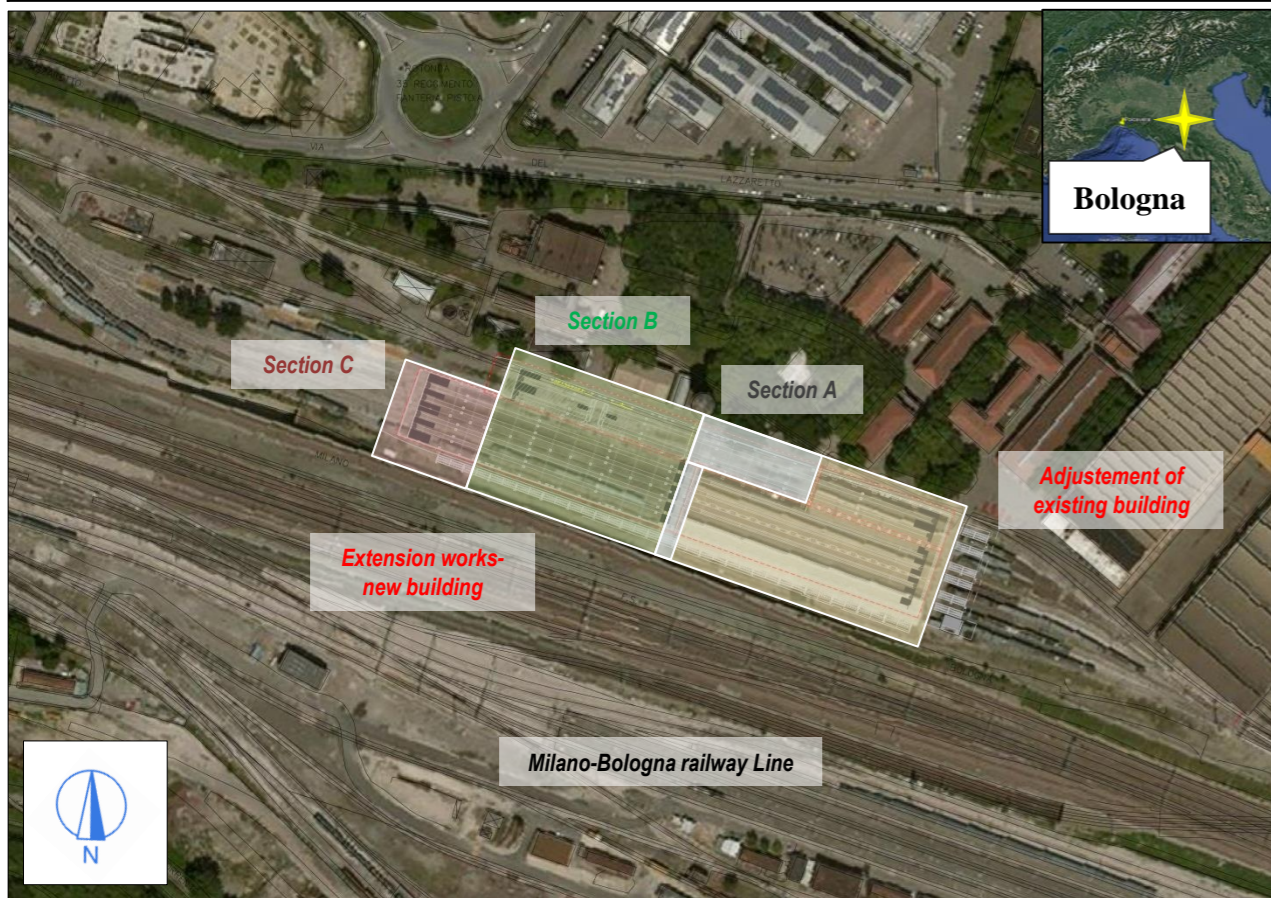
Subject	Support for the drafting of graphic papers, descriptive and calculation reports relating to the Executive Project of the «IMC Building Enhancement (Current Maintenance Plant) in Bologna Central station»	
Carried out by	SGAI Srl of E. Forlani & C.	
Client	ITALFERR S.p.A.	
Service length	2016 - 2017	
Value of works	€ 10'491'066,69	
Categories value	S.03	€ 7'634'438,70
	S.04	€ 2'856'627,99

CIVIL STRUCTURE – Design issues and their resolutions

In order to improve the productivity of the OML plant (Locomotive Maintenance Workshop) in Bologna Centrale station, in Trenitalia was born the necessity to carry out a series of interventions on the IMC building, providing:

- The extension of the existing building, through the construction of an extension of the current «Ale warehouse» of about 140m and the «TD warehouse» of about 150m by pre-factory structures in reinforced concrete;
- The seismic adjustment of the existing building through structural reinforcement;
- The design of the hydraulic system of the portion of the building in extension;
- The hydraulic design of the binary called «plateato» on the ALE warehouse side and the washing stalls under the crate located on the forecourt in front of the facade of the building (Bologna side);
- The design of the structural elements for the support of the equipment facilities within the building under extension;
- The design of the metal frame to support the equipment systems inside the existing building.

The main design problems were encountered in the adaptation of the existing building and in the verification of interference between the plant and technological system at the service of the building, which required careful planning and analysis through the application of the BIM methodology.

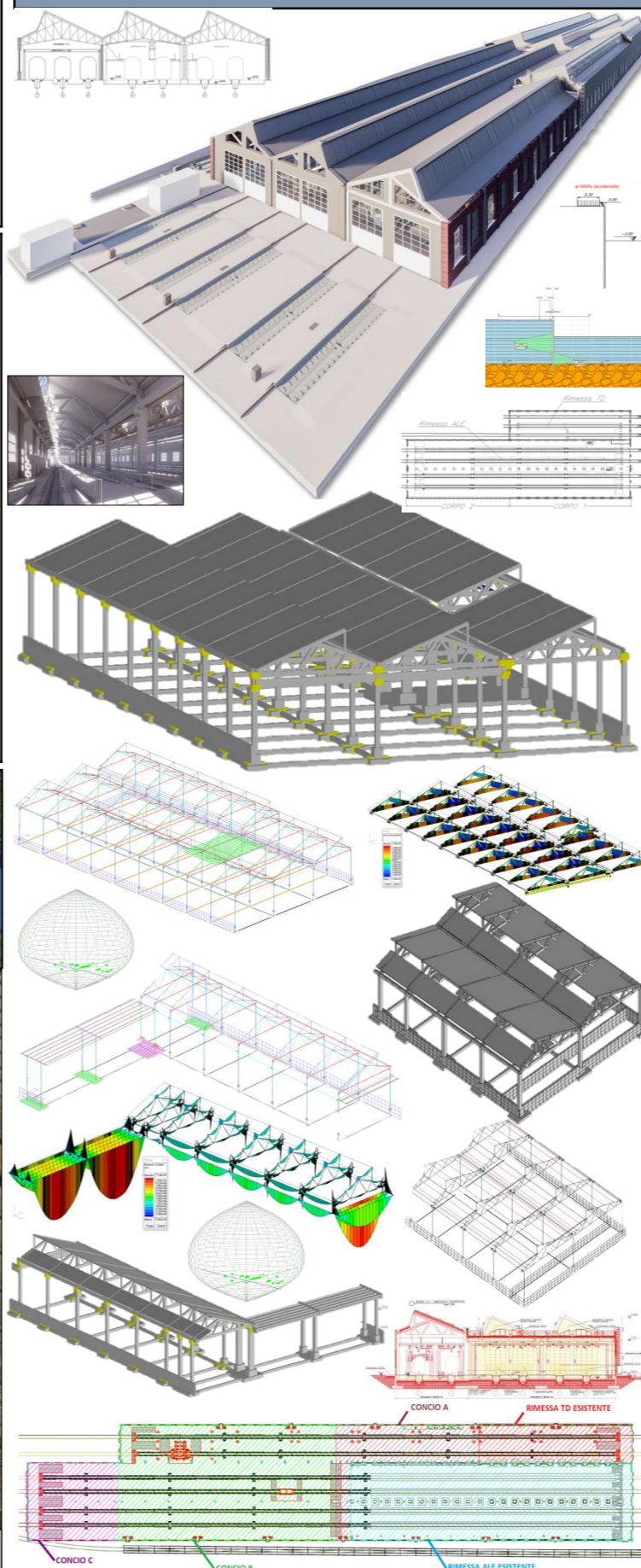


General structural plan

CIVIL STRUCTURE - Computational aspects, simulation, results and checks

The analysis and study of the static and dynamic behaviour of the different temporary structures and buildings was conducted by simulating the structure with 3D finite element numerical model, solved with calculation code PARATIE 6.0 (*CeAS*) and ProSAP (2.S.i. *Software and engineering services*). Architectural detail modeling, interference evaluation, and BIM project management was carried out using REVIT software (*Autodesk Inc.*).

IMC - Architectural and numerical FEM model



IMC – Pre and post intervention architectural and structural renderings



Aerial view of the existing building