



COMPANY PROFILE

Technology and precision at the service of railway, tram,
and metro infrastructures.



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Technology and precision at the service of railway, tram, and metro infrastructures

Surveys

GIS DESIGN operates with expertise and cutting-edge technologies in the field of topographic surveys for railway, tram, and metro infrastructure.

Already a technical partner of **RFI**, **EAV Spa** (Ente Autonomo Volturmo), **FCE** (Ferrovia Circumetnea), **ATAC Spa**, **INFRA.TO.** and **other** major operators in the sector, we provide specialized support in new project development and interventions on existing infrastructures.

The company holds the following **SOA** certifications:

- **OS20A – Topographic Surveys – Class. II**
- **OS20B – Investigations – Class. II**

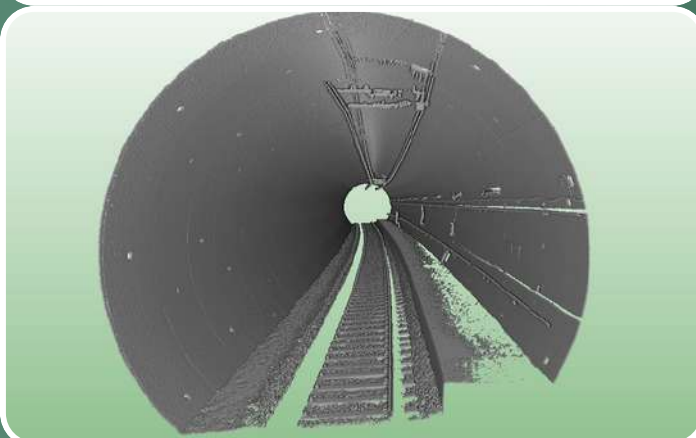
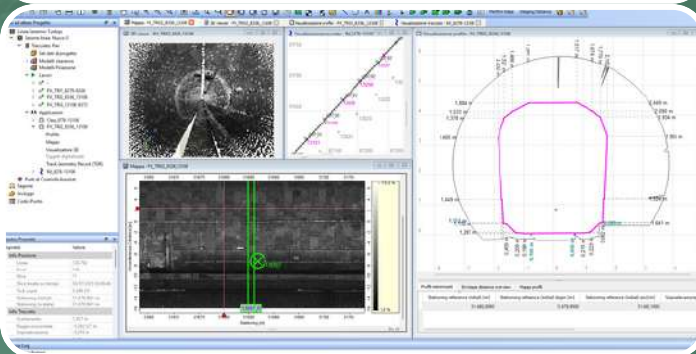
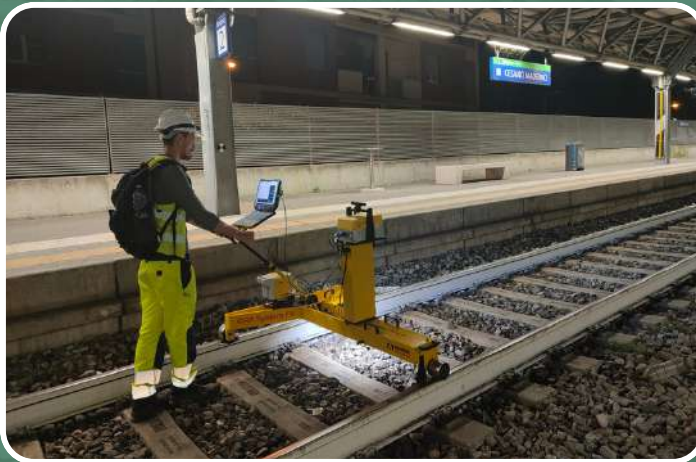
Thanks to an integrated approach and state-of-the-art tools, we support managing bodies, designers, and companies in the geometric and spatial understanding of the infrastructure, ensuring accuracy, efficiency, and interoperability.

Specialized services for the **railway, tramway, and metropolitan sector**:

Surveys in absolute terms:

- Installation and survey of **fixed points** for local geodetic networks
- **Implementation of densification networks, precision polygons** with long and short sides
- Precision **geometric leveling** for altimetric control
- Plan-altimetric framing and georeferencing on official cartographic systems
- Combined use of **GNSS, robotic total stations, and high-precision instruments**

- **Track survey and geometric monitoring**
 - **Leica Amberg Rail IMS 300** system on a railway trolley
 - Dynamic acquisition of the main geometric parameters (**gauge, gradient, alignment, cant, elevation, rail wear**)
 - Compliance checks with safety and maintenance standards
 - Automated data processing and quick technical reporting
- **Surveys for Minimum Obstacle Profile (MOP) verification**
 - Three-dimensional analysis of the **clearance outline** in tunnels, bridges, and constrained sections
 - Verification of interferences between existing infrastructures and clearance profiles
 - Comparison with regulatory profiles and production of dedicated sections and reports
- **Three-dimensional surveys of stations, bridges, viaducts, and tunnels**
 - High-density point **terrestrial laser scanner surveys**
 - Integration with **drone (photogrammetry and Lidar)** for coverage and inaccessible areas



- 3D modeling, section drawings, contour lines, and conservation status mappings
- Ideal for structural verification projects, maintenance, and digital twin
- **Surveys with MMS (Mobile Mapping System)**
 - Dynamic acquisition with **3D Mobile Mapping** mounted on road or rail vehicle
 - Rapid and continuous **surveys of railway corridors, storage areas, yards, and roads**
 - Production of georeferenced point clouds, panoramic images, and digital maps
 - Integration with static and drone surveys for complete and coordinated reconstructions
- **Surveys with MMS (Mobile Mapping System)**
 - Delivery in standard formats: **DWG, IFC, LAS, RCP, shapefile**
 - Compatibility with railway CAD and BIM platforms
 - Customized services for digital workflows and advanced modeling

BIM Modeling and Digital Twin

From the point cloud to the BIM model and the detailed design

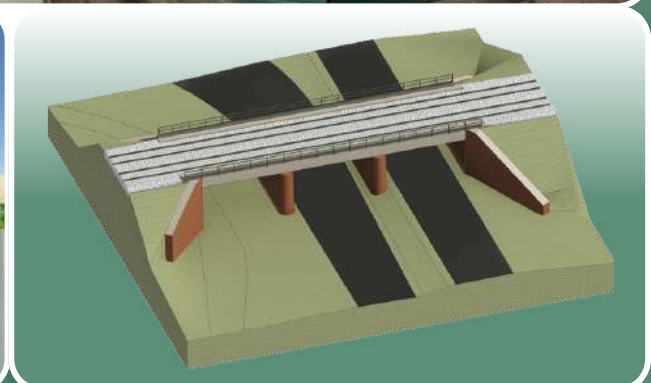
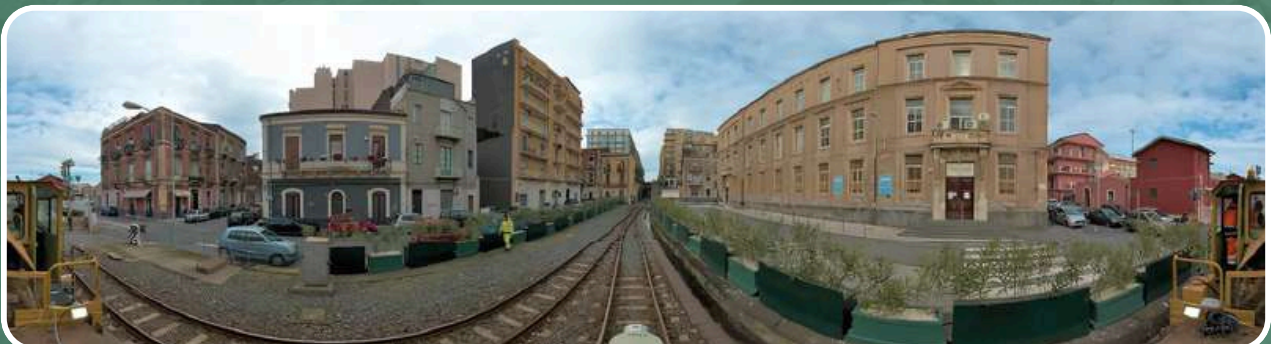
Our experience in surveying is complemented by high value-added services for digital modeling and integrated BIM design in the railway, tramway, and metropolitan sectors. Data, geometries, and infrastructures are transformed into intelligent information models and design solutions ready for every phase of the work's life cycle.

BIM Modeling and Digital Twin

From data to intelligent model

Thanks to proven workflows and interoperable tools, we transform collected data into coordinated digital models, optimized for management and design.

- BIM modeling from topographic surveys and 3D scans
- Creation of railway information models: layouts, tracks, ballast, artworks, armament
- Structural modeling of bridges, tunnels, stations, retaining walls
- Parametric structures with intelligent railway axis
- Digital Twin for simulation, maintenance, and operational management
- Output in IFC, Revit, Civil 3D, Navisworks formats, compatible with CDE environments and collaborative platforms

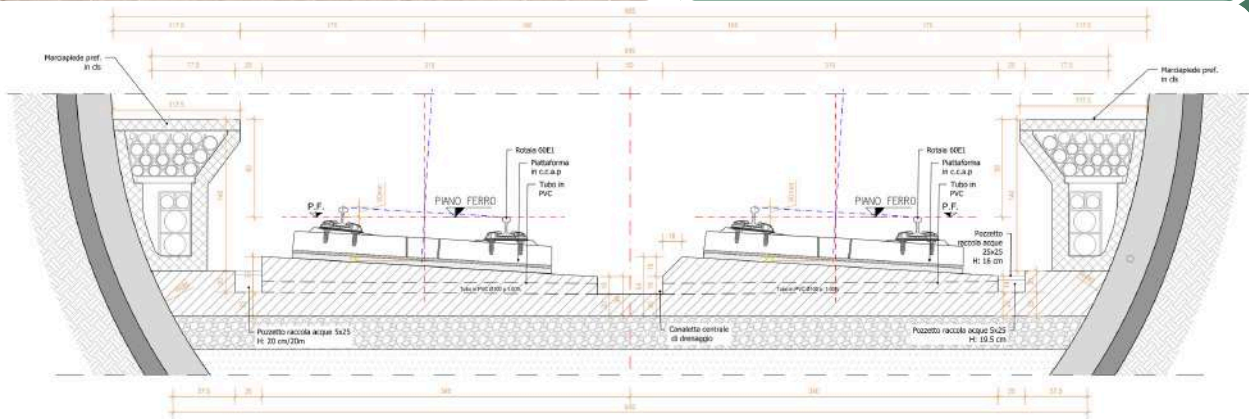
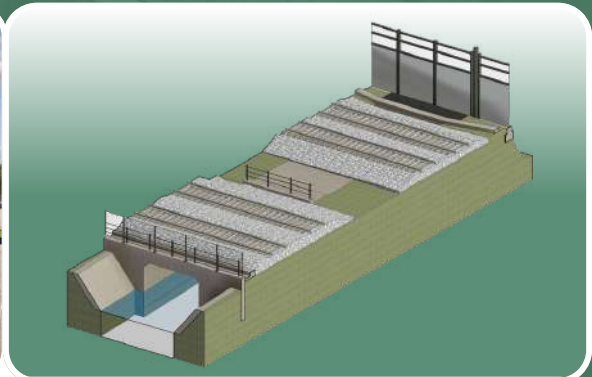


Integrated BIM Design – Railway, Tramway and Metro

From survey to design solution

We support organizations and designers in the construction and adaptation of rail infrastructures, offering a multidisciplinary and fully integrated service.

- Design of railway and tramway routes: graded plans, longitudinal profiles, typical sections
- Adaptation of existing railway routes and geometric verification
- Design of railway superstructure, switches, and turnouts
- Kinematic verification and compatibility with the Minimum Obstacle Profile (MOP)
- Structural design of bridges, underpasses, retaining walls
- Technical documents, metric calculations, and executive drawings ready for validation



Census and inspections of railway bridges, viaducts, and tunnels

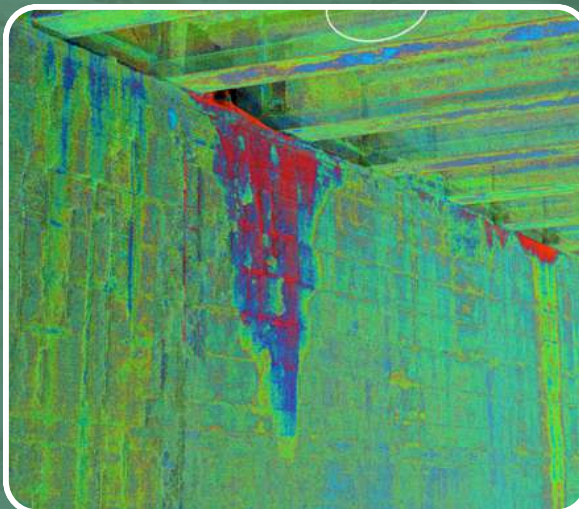
GIS Design is specialized in carrying out inspections on bridges, viaducts, and tunnels, employing qualified inspectors with LEVEL 2 certification and innovative, cutting-edge tools such as drones, laser scanners, MMS, GNSS, and total stations.

These activities not only allow for accurate infrastructure monitoring but also integrate the collected data into subsequent BIM modeling for advanced management.



For years, GIS Design has operated in compliance with the Guidelines for risk classification and management, safety assessment, and monitoring of existing bridges, as well as for investigation, inspection, maintenance, and securing activities of existing road tunnels.

The company has collaborated with major highway and railway entities, including RFI, EAV, FCE, ANAS, Autostrade per l'Italia, Consorzio Autostrade Siciliane, ensuring high quality and precision in the inspection and monitoring operations of the infrastructures.



scheda Ispezione Ponti di Livello 1													
3	Pile	N 1	Strada di appartenenza:		Progressiva km: 69+085		 Mims Società per azioni via S. Maria 10 - 00187 Roma						
	Calcestruzzo		Tecnico rilevatore:		Data ispezione: 15/07/2025								
Codice difetto	Descrizione difetto	Valori	G	Estensione K1	Intensità K2	N° foto	PS	NA	NR	NP	Note		
c.a./c.a.p._1	Macchie di umidità passiva	00	1	U	36	U		U	U	U			
c.a./c.a.p._2	Macchie di umidità attiva	00	3	U	36	U		U	U	U			
Dif. Gen_1	Tracce di scolo	00	3	U	36	U		U	U	U			
c.a./c.a.p._3	Cis dilatato / ammassato	00	3	30	U	U		U	U	U			
Dif. Gen_2	Ritaggi d'acqua	00	2	U	U	U		U	U	U			
c.a./c.a.p._4	Vespai	00	2	U	U	U		U	U	U			
c.a./c.a.p._5	Distacco del copriferro	00	2	U	U	U		U	U	U			
c.a./c.a.p._6	Armatura ossidata/corrosa	00	5	U	U	U		U	U	U			
c.a./c.a.p._7	Lesioni a ragnatela modeste	00	1	U	U	U		U	U	U			
c.a./c.a.p._15	Lesioni in corrispondenza staffe	00	2	U	U	U		U	U	U			
c.a./c.a.p._8	Fessure orizzontali	00	2	U	U	U		U	U	U			
c.a./c.a.p._9	Fessure verticali	00	2	U	U	U		U	U	U			
c.a./c.a.p._10	Fessure diagonali	00	5	U	U	U		U	U	U			
c.a./c.a.p._16	Staffe scoperte / ossidate	00	3	U	U	U		U	U	U			
c.a./c.a.p._11	Lesioni attacco pilastri	00	3	U	U	U		U	U	U			
c.a./c.a.p._23	Rottura staffe	00	4	U	U	U		U	U	U			
c.a./c.a.p._17	Armatura longitudinale deformata	00	5	U	U	U		U	U	U			
c.a./c.a.p._12	Riprese successive deteriorate	00	1	U	U	U		U	U	U			
Dif. Gen_3	Danni da urto	00	4	U	U	U		U	U	U			
Dif. Gen_6	Fuori piombe	00	5	U	U	U		U	U	U			
Ril/Fond_1	Scalzamento	00	5	U	U	U		U	U	U			
Ril/Fond_5	Movimenti di fondazione	00	5	U	U	U		U	U	U			
c.a./c.a.p._13	Lesioni da schiacciamento	00	4	U	U	U		U	U	U			
Dif. Gen_4	Lesioni caratteristiche zone appoggio	00	3	U	U	U		U	U	U			
Eventuali note													





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Ingegneria Costruzioni Colombrita



Gis Design



GIS DESIGN

Design – Surveys – Investigations



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