its Engineering Company

BUILDING RETROFIT DEPARTMENT

Brochure

www.its-engineering.com

info@its-engineering.com

The Department

ITS Building Retrofit offers structural engineering services for residential, commercial, civil and industrial buildings and public works. The engineering team specializes in the design and optimization of concrete, steel, wood, and innovative material structures for both new constructions and interventions on existing buildings, such as restoration, enhancement, and seismic upgrading. Particular attention is given to sustainability, integrating technical solutions that respect the environment and ensure energy efficiency. By utilizing advanced systems such as BIM (Building Information Modeling) and CAD platforms, the department ensures complete project control at every stage, from design to execution, regardless of the project's scale. Additionally, the department provides Project Management services and Static Testing, ensuring compliance with current regulations.

Overall, the Building Retrofit Department distinguishes itself for its ability to tackle complex projects, combining interdisciplinary expertise and an innovative approach. The goal is to create functional, safe, and sustainable buildings, harmonizing aesthetics, technical performance, and environmental responsibility.

Services

ITS Building Retrofit develops services starting from a thorough analysis of the project documentation, complemented by targeted on-site inspections to accurately evaluate the activities to be carried out. This logical process is fundamental for the correct design of the intervention, taking into account the sustainability of the project itself.
Thanks to synergy with other departments, ITS provides an integrated approach that covers all construction project phases, ensuring high-quality standards and compliance with current regulations.

01 Structural Planning and Design

Building and structural design for residential, commercial, and service buildings, as well as civil and industrial structures for both private and public clients.
Seismic vulnerability assessments for existing buildings.
Design of interventions for consolidation, seismic upgrading, or improvement.

02 Structural Consultancy

The Department can guide and assist the client in carefully and strategically evaluating the best structural solutions to support architectural and engineering design, ensuring an accurate and sustainable choice of construction methods.

03 Structural Work Supervision and Static Testing

Our team specializes in structural work supervision and is composed of qualified professionals authorized to issue static testing certificates by current structural regulations.

04 Energy Optimization

Implementation of technologies aimed at energy efficiency and environmental sustainability.

05 Seismic Upgrading and Retrofit

Improving the structural safety of existing buildings, with particular attention to seismic regulations.

06 Maintenance and Monitoring

Continuous monitoring of the health of structures, also through advanced technologies and non-destructive testing (NDT).

07 Multidisciplinary Design

Coordination between various engineering disciplines to offer a comprehensive and customized service, with particular attention to interdisciplinary collaboration between architects, engineers, and geologists.

Our Projects

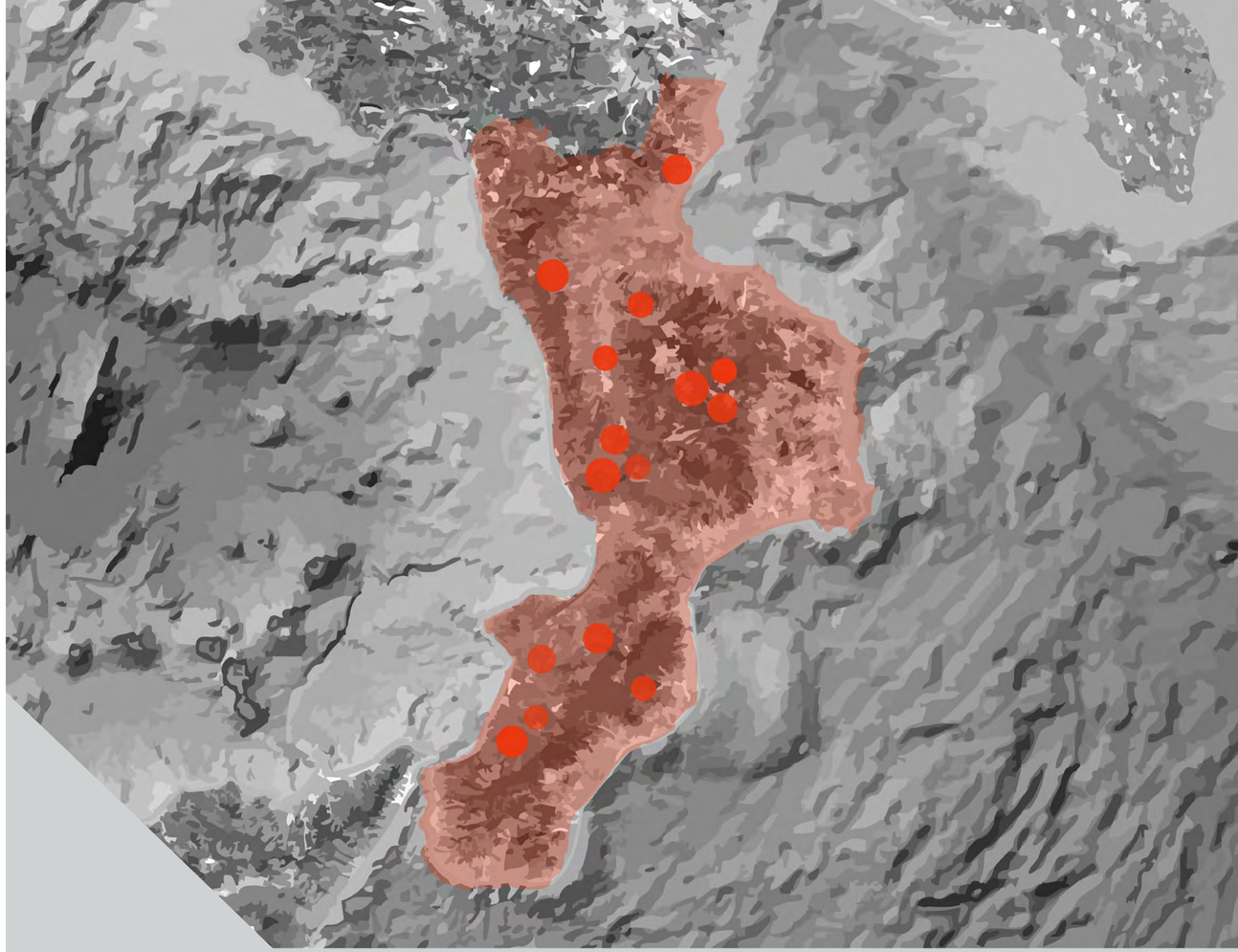
Demanio Calabria

Seismic resilience and enhancement of public heritage in Calabria

Within the framework of Italy's first national tender for the seismic audit of public properties, the Building Retrofit Department initiated a series of strategic interventions on state-owned buildings in the Calabria Region. From May 2021 to December 2022, comprehensive studies and technical investigations were conducted to assess the seismic vulnerability of existing structures, aiming to define targeted strategies for their safety enhancement and valorization.

The project included the preparation and execution of detailed investigation plans, supported by timelines shared with the involved administrations, as well as the performance of on-site testing and surveys carried out by specialized teams, adhering to the highest standards of safety and civil responsibility.

Through the integration of advanced engineering expertise and close collaboration with local authorities, this initiative laid the foundation for a more aware, safe, and efficient management of public buildings across the Calabria region.



Location:	Calabria, ITALY
Client:	Agency of State Property Demanio
Year:	2023 – 2024
Work amount:	-
Categories:	-
Services provided:	Investigations, vulnerability assessments, technical-economic feasibility design for seismic upgrading

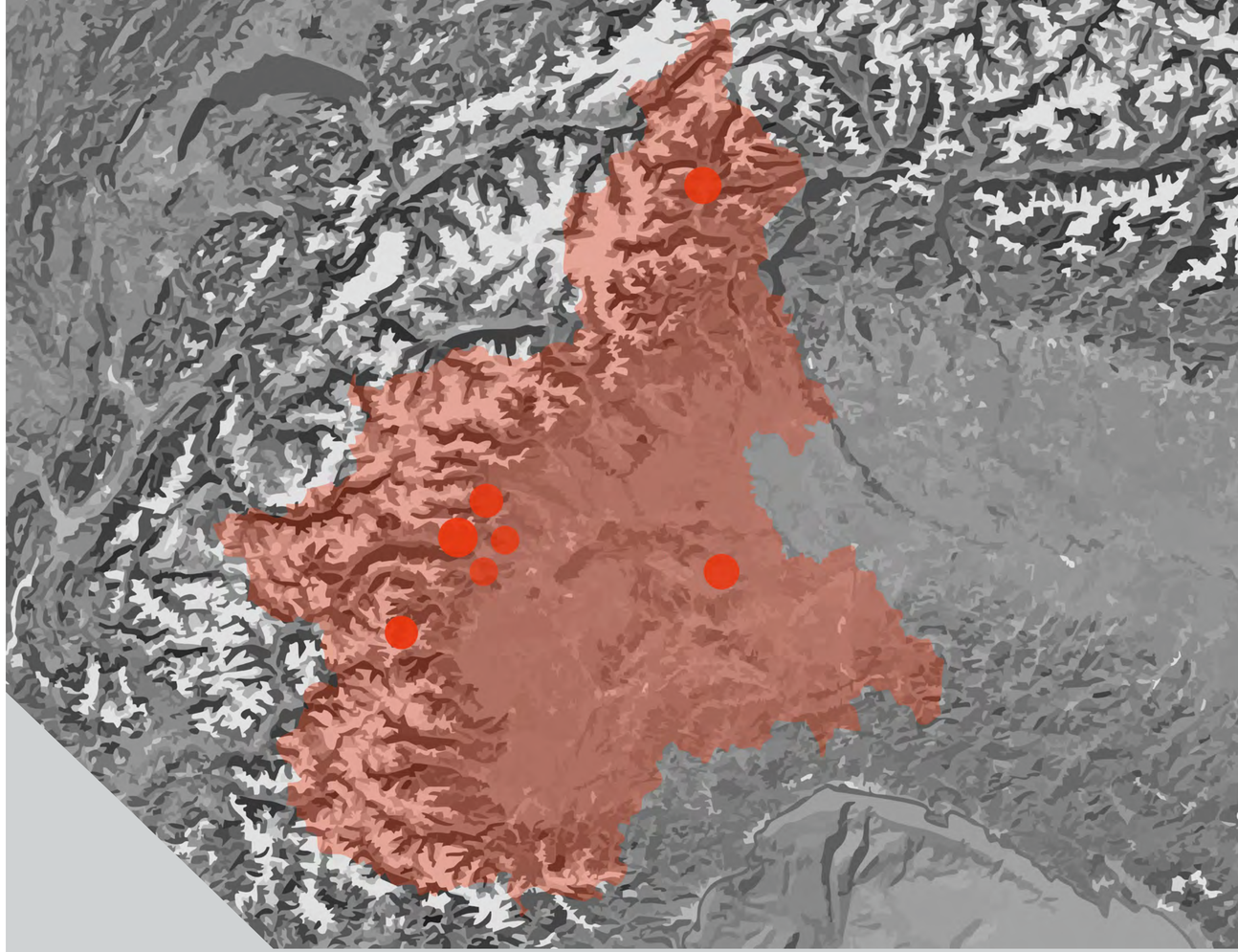
Demanio Piemonte

Seismic resilience and enhancement of public heritage in Piedmont

As part of Italy's first national tender for the seismic audit of public buildings, the Building Retrofit Department launched a comprehensive program targeting state-owned assets in the Piedmont Region. From May 2021 to December 2022, extensive technical assessments and on-site investigations were carried out to evaluate the seismic vulnerability of existing structures, with the goal of developing targeted safety and enhancement strategies.

The project included the development and implementation of detailed investigation plans, coordinated with relevant authorities and supported by shared timelines. Field surveys and in-situ testing were performed by specialized teams, adhering to the highest safety and quality standards.

Through a multidisciplinary approach and close cooperation with local administrations, this initiative laid the groundwork for a more resilient, informed, and sustainable management of public real estate assets across the Piedmont region.



Location:	Piedmont, ITALY
Client:	Agency of State Property Demanio
Year:	2023 – 2024
Work amount:	-
Categories:	-
Services provided:	Technical investigations, seismic vulnerability assessment, feasibility design for seismic retrofitting

Casa Gaspari

Building renovation with the creation of underground garage and accessory rooms attached to the residence

The structural intervention involved the renovation of a main building, divided into a residential unit facing the street and a barn on the mountainside, along with a secondary building, also residential but of a lower height.

The ongoing project includes:

- The construction of an underground garage covering the entire property, preceded by the installation of provisional shoring;
- The demolition of the secondary building and its reconstruction within the lot;
- The renovation of the residential portion of the main building, preserving the external facades, and the barn's demolition, to be rebuilt using cross-laminated timber (X-lam), with a change of use to residential.

Location:	Veneto, ITALY
Client:	Private Client
Year:	2018 - 2024
Work amount:	35,000.00 €
Categories:	-
Services provided:	Executive design, project management

Villa F.A.I.T.

Urban redevelopment and architectural retrofit – Cortina d'Ampezzo

This project is part of one of the most significant urban regeneration initiatives carried out in recent years in the Ampezzo area. It involves the construction of a seven-level underground parking garage beneath Piazza Roma, a new two-story building designated as an art gallery, and the refurbishment and repurposing of the former cable car terminal into private residential units. Additionally, the intervention returns a central public space to the city of Cortina, enhanced by the construction of a new panoramic elevator connecting Via Parco (along the Boite River) to the heart of the town center. Due to its complexity, the project required advanced structural solutions, including the use of the top-down construction method. This technique allowed for the progressive construction of underground slabs concurrently with excavation, ensuring the stability of the perimeter diaphragm walls composed of reinforced bored piles. Given the site's morphology, only three sides of the structure are completely buried, while the valley-facing side is exposed over six levels. This required a careful analysis of horizontal earth pressures, especially on the uphill (monte) side, with the forces redirected to the long sides through composite action between the slabs and perimeter walls. The project also included continuous monitoring of excavation movements and adjacent buildings, employing an observational approach. Provisions were made to install Gewi passive bars, if necessary, to further contain deformation.

This intervention stands out for its high technical and urban value, significantly contributing to the enhancement of Cortina's historic center with an integrated approach combining structural engineering, architecture, and urban functionality.

Location:	Veneto, ITALY
Client:	F.A.I.T. Formule Ampezzane Iniziativa Turistica
Year:	2022
Work amount:	€14,000,000.00
Categories:	-
Services provided:	Preliminary and executive design

Todaro Columns

Monitoring and preservation of a historic heritage landmark

In the heart of Piazza San Marco, the Todaro Columns stand as one of the most iconic and delicate symbols of Venice's cultural heritage. Our intervention arose from the need to monitor their long-term structural stability through high-precision structural and topographic surveying—part of a broader assignment focused on the analysis and protection of bridges along the Grand Canal.

Two survey campaigns were conducted in December 2022 and June 2023, employing a high-precision total station and 3D laser scanning technology. All activities were carried out at strategic times to avoid environmental interference, supported by a thorough analysis of the urban context and the precise placement of benchmarks and targets—crucial for ensuring proper alignment and the accuracy of the point cloud. Data processing yielded highly reliable and consistent results, with a root mean square error (RMSE) below one millimeter. Even in the most critical zones—such as the upper sections of the columns—the measured deviations (approx. 3 mm) fell within the expected margin of instrumental error, confirming the absence of significant structural shifts. A comparative analysis of the two datasets further revealed overall structural stability, with minimal variations within the acceptable range.

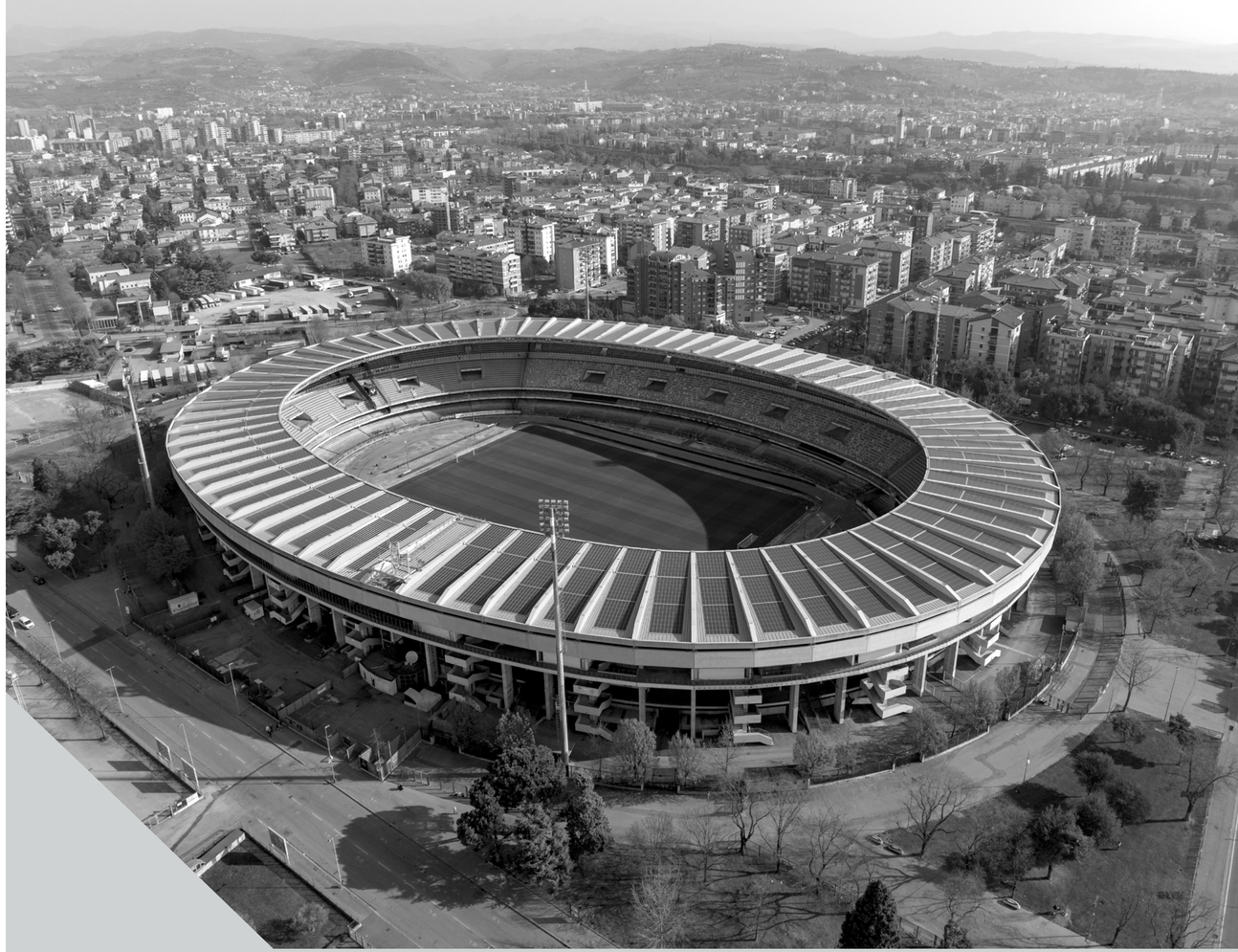
This intervention serves as a concrete example of how modern engineering can engage with history, offering advanced technical solutions in support of long-term preservation. Monitoring is not only about measuring—it's about caring for a structure, honoring its legacy, and securing its future.

Location:	Veneto, ITALY
Client:	City of Venice
Year:	2022
Work amount:	€20,525.00
Categories:	-
Services provided:	High-precision topographic survey, data analysis and comparison, technical consultancy for preventive maintenance planning

Bentegodi Stadium

Regulatory compliance and seismic vulnerability assessment of the Marcantonio Bentegodi Stadium

The project involves the seismic vulnerability assessment and regulatory compliance of the "Marcantonio Bentegodi" Municipal Stadium in Verona, a key infrastructure for the city's sports and cultural landscape. The intervention integrates functional requirements with the morphological, environmental, and landscape characteristics of the area. The project aims to ensure seismic safety, environmental sustainability, and harmonious urban integration. The activities include structural analysis using advanced modeling techniques to assess seismic vulnerability, identifying critical points, and designing technical solutions to enhance seismic resistance while preserving the stadium's architectural integrity. Continuous assistance during the execution phase ensures compliance with quality standards and project timelines. The project adopts cutting-edge technologies, such as Building Information Modeling (BIM), for integrated data management throughout all phases, from design to construction. Additionally, detailed "As-Built" documentation will be produced, certifying each intervention and guaranteeing full compliance with required standards. Upon completion, Bentegodi Stadium will offer enhanced safety for users, meeting the highest regulatory standards and reinforcing its role as a major venue for sports and cultural events in Verona.



Location:	Veneto, ITALY
Client:	Municipality of Verona
Year:	2022
Work amount:	€62,096.48
Categories:	-
Services provided:	Seismic vulnerability assessment

Residential Building Restoration

Renovation and expansion of a residential building in Pezie – Cortina d'Ampezzo

The project involves the functional and structural redevelopment of an existing residential building, with significant internal and external works and the construction of a new underground level. Main works include:

- Construction of a new underground floor beneath the west wing, connected to upper levels by a staircase and lift;
- Installation of a reinforced concrete perimeter crawl space, improving hygienic conditions in the basement and structurally linking the two building wings;
- Construction of a new elevator shaft in reinforced concrete, serving all floors on the west side;
- Structural reinforcement of the second-floor slab, by integrating steel beams alongside the existing timber elements;
- Demolition and reconstruction of the ground and first-floor slabs, replaced with reinforced concrete decks fully supported by new shear walls;
- Addition of a new reinforced concrete structural core, anchored to the foundations and integrated into the existing masonry.

To restore full functionality, safety, and efficiency to the building while preserving its original layout, adapting it to meet modern housing standards, structural codes, and comfort requirements.

Location:	Veneto, ITALY
Client:	Private Client
Year:	2015
Work amount:	€1,086,900.00
Categories:	-
Services provided:	Executive design, work supervision, load testing

Former Ancillotto Spinning Mill

Seismic upgrading and renovation of the former Ancillotto Spinning Mill area, redevelopment of outdoor spaces, and structural adjustment of the chimney stack

The project aims to develop exhibition and service structures for the unique company "Santa Lucia Fiere." The design is focused on a complex building representing industrial archaeology, consisting of the West Pavilion (where manufacturing activities once took place), the East Pavilion (recently built and not part of the original spinning mill structure), and the chimney stack. It involves a renovation and preservation intervention for the reuse of the 6,910.2 m^3 West Pavilion and the construction of a new 3,740 m^3 building that functionally connects the two existing pavilions.

The key themes of the project include the reuse of the West Pavilion, preserving its original construction and semantic features, and the insertion of a new building block, which is subordinate to the pre-existing structures but central to the assigned functions. Regarding the reuse of the West Pavilion, the project includes a careful conservation plan for the remaining characteristic elements, mainly focusing on the masonry partitions and the building's exterior surfaces.

The reuse of the West Pavilion involves using the northern part of the extended wing to create a conference room with a seating capacity of 165. At the same time, the remaining area is equipped with technology to set up exhibition stands on a surface of 580 m^2.

Location:	Veneto, ITALY
Client:	Municipality of Santa Lucia di Piave
Year:	2012 - 2014
Work amount:	€2,016,983.57
Categories:	S.03, S.06, E.17, E.13, E.22, IA.01, IA.03
Services provided:	Technical and economic feasibility study, final design, executive design, safety coordination during the design phase, project management

Ca Giò

Renovation and expansion of a residential building in Pezie – Cortina d'Ampezzo

The project involved the renovation of the residential building "Cà Giò" in Cortina d'Ampezzo and the construction of a new underground volume, which extends almost entirely across the plot.

To create this underground level, the main structures of the existing building were preserved using a temporary steel framework with appropriate bracing, supported by micro piles positioned around the entire external perimeter. This provisional structure allowed for the creation of a basement while keeping the entire existing building suspended. Tosupport the surrounding soil, a retaining system was implemented, consisting of a series of adjacent micro piles combined with inclined tie rods connected to a steel framework reinforced with diagonal struts at the corners.

The above-ground portion features a mixed concrete frame-wall structure, with columns integrated into the perimeter masonry to optimize the internal usable space.

For access to the underground level, a car lift was installed, eliminating the need for a traditional ramp. The garage was designed for maximum manoeuvrability, with only two circular columns supporting a primary beam spanning 9.5 meters, on which the entire northern section of the above-ground structure rests.

The footprint of the underground section is approximately a 27.50 x 21-meter rectangle, featuring 30 cm-thick perimeter concrete walls, along with internal walls and columns of varying shapes and sizes.

Location:	Veneto, ITALY
Client:	Private Client
Year:	2013
Work amount:	€2,500,000.00
Categories:	-
Services provided:	Executive design, construction supervision, measurement and cost accounting, and testing

Le Falorie

Renovation and new construction of the “Le Falorie” residential complex in Cortina d’Ampezzo

The renovation project involves the conservative restoration of an existing building and the construction of a new one, both for residential dwellings. Two underground floors connect these buildings, one as a garage and the other as a wellness centre.
The underground area consists of two floors and is roughly rectangular, with maximum dimensions of about 50 x 30 meters. The above-ground buildings have maximum dimensions of approximately 21.50 x 13.5 x 15.0 meters and 19 x 12.50 x 12.0 meters, respectively. The load-bearing structure is entirely made of reinforced concrete with solid slabs and a mixed wood-steel roof. For the construction of the underground floors, diaphragm walls were executed, consisting of a series of adjacent micro piles made structurally integrated through reinforced concrete curbs and tensioned metal profiles. The foundation structure is of a superficial type, with a slab thickness of 50 cm, locally reinforced with additional reinforcement in both directions, both underneath and on top. Further reinforcement is provided in the area of the columns and shear walls for punching shear. The load-bearing structure is a reinforced concrete frame with a core for the stairs and elevator, formed by reinforced concrete shear walls. The slabs are solid, reinforced concrete, with thicknesses ranging from 15 to 30 cm and maximum spans of 9.0 meters. Additionally, oversized beams were included in the underground section to support the entire upper building, resting on false columns.

Location:	Veneto, ITALY
Client:	DR2 S.r.l.
Year:	2012
Work amount:	€3,200,000.00
Categories:	-
Services provided:	Design and work supervision, load tests, assistance with testing

Former Sant'Artemio Hospital

Construction of the new headquarters of the province of Treviso at the former ONP (Neuropsychiatric Hospital) complex through restoration and urban redevelopment interventions

The Provincial Administration of Treviso, through the restoration of the former Sant 'Artemio Neuropsychiatric Hospital complex, aimed to create a facility dedicated to the new headquarters of the province itself. This operation allowed for the consolidation of its structures in a single area of increased prestige and immediate recognition. At the same time, the project sought to relocate provincial administrative services from the historic center of Treviso while preserving and enhancing one of the most picturesque views of the area. The historical and architectural heritage of the complex was restored and integrated with the expansive green lung of the Storga Urban Park.

The design approach and challenge were characterized by a constant comparison of the choices made with the territorial and environmental needs, focusing on the following themes:

- Architectural and urban redevelopment of the Sant 'Artemio complex, a site of great historical and landscape value
- Study of the new external road system, considering the high environmental value of the context and the presence of numerous hydrogeological constraints
- Development of the internal and external connection systems
- Environmental control and landscape preservation
- Attention to the perceptive and symbolic aspects of the site

Location:	Veneto, ITALY
Client:	Province of Treviso
Year:	2005
Work amount:	€42,585,250.10
Categories:	S.06
Services provided:	Preliminary, final, and executive design, coordination during design and execution phases, project management


COMUNE DI
CORTINA
D'AMPEZZO
(BL)

its
Engineering
Company

Operational offices

Italy
Venice (VE)
Padua (PD)
Cortina d'Ampezzo (BL)
Bolzano (BZ)
Catania (CT)
Rome (RM)
Verona (VR)

Abroad
Tirana (ALBANIA)
Dar es Salaam (TANZANIA)
Toronto (CANADA)

Headquarters

ITS single-member Ltd
Corte delle Caneve 11
31053 Pieve di Soligo (TV)
+39 0438 82082

Share Capital €100,000.00
Tax Code & VAT Number: 02146140260
REA Code: 351225
SDI Code: KRRH689

info@its-engineering.com
www.its-engineering.com

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Engineering
Company