

Business Analysis of Prona-Grad Ltd.

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This case study delves into the business trajectory and evolution of Prona-grad Ltd., a civil engineering firm founded in Zagreb, Croatia in 2010. Initially focused on the legalization of unauthorized building constructions, the company rapidly expanded its services to encompass energy certification, property valuation, design, project supervision, and completion works, all underpinned by a functional organizational structure. Specializing in high-rise constructions and infrastructure projects, Prona-grad employs advanced software and a collaborative approach to deliver secure and economically viable homes that satisfy investor's comfort and aesthetic needs. Prona-grad's financial assessment showcases consistent revenue growth, with funds strategically invested in the company's expansion and development. The company's success story presents a promising case for practitioners and researchers in the field of civil engineering, exemplifying a commitment to excellence and innovative solutions that generate value for real estate stakeholders.

Keywords: business strategy, business analysis, civil engineering, financial assessment

COMPANY BACKGROUND AND EVOLUTION

Initially established as a one-person engineering office, Prona-grad Ltd. primarily focused on the legalization of unauthorized building constructions. The enactment of the new law led to a surge in demand for building legalization, prompting Prona-grad to rapidly expand its workforce.

During its first years of operation, Prona-grad concentrated on building legalization while simultaneously broadening its scope of services. The company incorporated offerings such as energy certification, property valuation, structural analysis, design, project supervision, and completion works. As a result of increased business volume, Prona-grad relocated its office in 2014 from Zagrebačka Cesta to Gornje Vrapče, where it remains today.

At present, Prona-grad caters to a diverse clientele, including individual citizens, investors, public enterprises, architects, and collaborative ventures with other engineering firms. The company's design office is a one-stop solution for all engineering projects, encompassing design and professional supervision services under the umbrella of an integrated design approach. Furthermore, Prona-grad actively participates in the distribution of specialized civil engineering software to facilitate the work of industry professionals.

FIGURE 1
COMPANY PRONA-GRAD LTD. LOGO



ORGANIZATIONAL STRUCTURE OF THE COMPANY

The term “structure” encompasses a multitude of meanings, including composition, configuration, methodology, formation, and organization. The multifaceted nature of the term underscores its significance in various contexts, particularly for businesses.

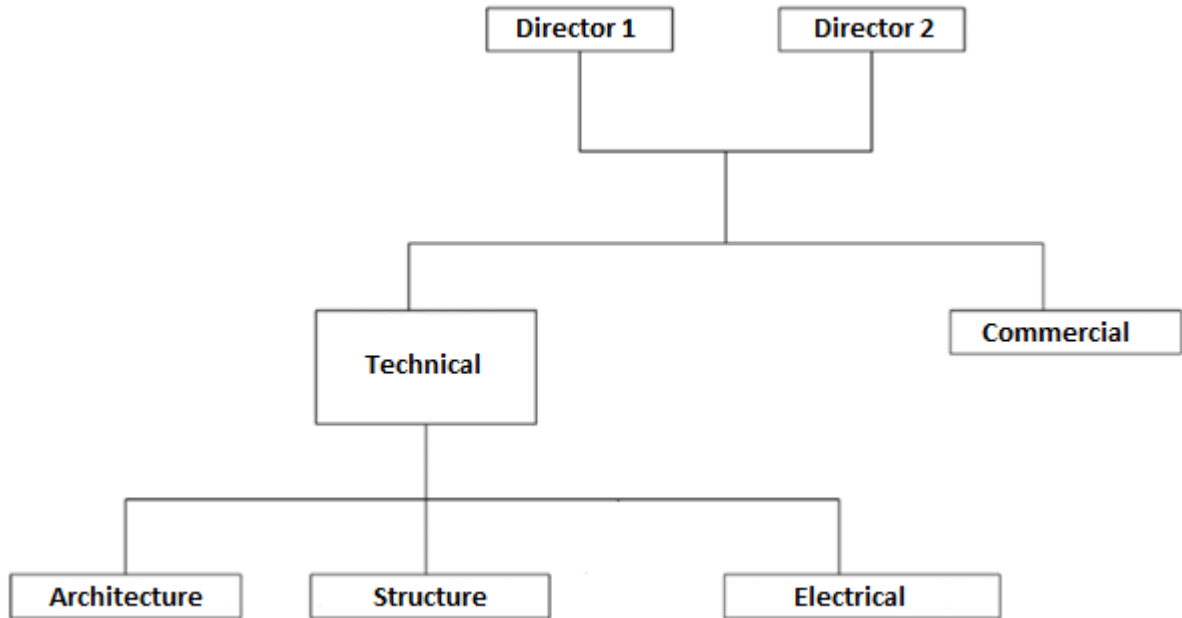
Each organization, such as a company, possesses its own unique structure or composition, characterized by a system of internal connections and relationships. Prona-grad is categorized as a micro-sized enterprise, employing fewer than 10 individuals and reporting an annual turnover or balance sheet below 2 million EUR. As noted by Darrel E. Owen, even the smallest organizations likely possess a well-defined organizational structure, clearly delineating the hierarchy of authority. Prona-grad has two directors, who also serve as owners, causing an overlap between management and governance functions. The company’s structure is depicted in a figure provided below.

The illustration in Figure 2 reveals a functional organizational structure, which enables a high level of specialization and division of labor, rational utilization of space and equipment, and flexibility in structuring, among other benefits. The company is divided into two main departments: technical and commercial. The commercial department is responsible for core business functions such as procurement, human resources management, sales, and finance. The technical department, on the other hand, focuses on engineering design and supervision.

Within the engineering design domain, the department covers architecture, structural engineering, water supply and sewage systems, electrical engineering, mechanical engineering, and other engineering projects. The professionals responsible for design also oversee project execution. By centralizing all necessary projects in one office and implementing an integrated design approach, Prona-grad facilitates seamless coordination among various disciplines.

Prona-grad’s organizational structure is highly adaptable within the technical department, often contingent upon the projects and linked to the completion of specific tasks. This type of structure is referred to as a project-based organizational structure, which is temporary in nature, with the project team disbanding once the project concludes. At present, Prona-grad employs seven full-time staff members and three student workers.

FIGURE 1
ORGANIZATIONAL STRUCTURE OF PRONA-GRAD LTD.



BUSINESS STRATEGY

Prona-grad Ltd. specializes in delivering comprehensive building design and professional supervision for construction projects. The firm primarily focuses on high-rise constructions but also undertakes various infrastructure projects, including bridges, roads, stormwater management systems, water supply and sewage infrastructure, parking facilities, pedestrian pathways, public lighting, transformer substations, and transmission lines. Collaborating with a diverse group of architects, Prona-grad facilitates the development of complete documentation for future structures. The company's engineering services aim to ensure cost-effective and secure buildings while collaborating with architects to achieve functional and aesthetically pleasing designs. This approach caters to all investor requirements and promotes economic efficiency in construction.

Prona-grad is committed to enhancing societal quality of life by delivering high-quality work on its projects, such as residential buildings, roads, and public spaces. The company's goal is to improve user satisfaction and create added value for society. During recent earthquakes affecting Zagreb and central Croatia, Prona-grad was actively engaged in providing resources and assistance to citizens. The firm's director, who also serves as the president of the Association for Technical Design, was vocal in the media, emphasizing the importance of mandatory building inspections, which are currently underutilized. These inspections help ensure that building adaptations and reconstructions do not compromise structural stability and resilience.

In terms of the Association's future initiatives, the focus is on advocating for legal regulations in construction and public procurement, promoting services provided by the Croatian Chamber of Economy (HGK) to its members, addressing unfair competition, enhancing education, and encouraging member collaboration in both domestic and international markets.

Emphasizing the importance of digitization and technological advancements, Prona-grad recognizes their potential to drive growth not only for their firm but also for the entire construction industry. However, they are aware of the current underdevelopment of digitization within the sector. To effectively implement integrated planning, Building Information Modeling (BIM) or digital integrated planning is crucial. BIM represents an innovative digital design process encompassing all features of a building in a central data

model. Information from all design stages is consistently recorded, updated, and documented, enabling accurate cost predictions for construction and the building's life cycle. Presently, the company has achieved level 2 of BIM implementation and aspires to reach level 3. Level 3 BIM integration entails creating and sharing fully integrated models through a collaborative process across the entire project life cycle.

FIGURE 2
YELLOW NOTE GIVEN TO A BUILDING AFTER A POST-EARTHQUAKE INSPECTION
(TEMPORARILY UNUSABLE)

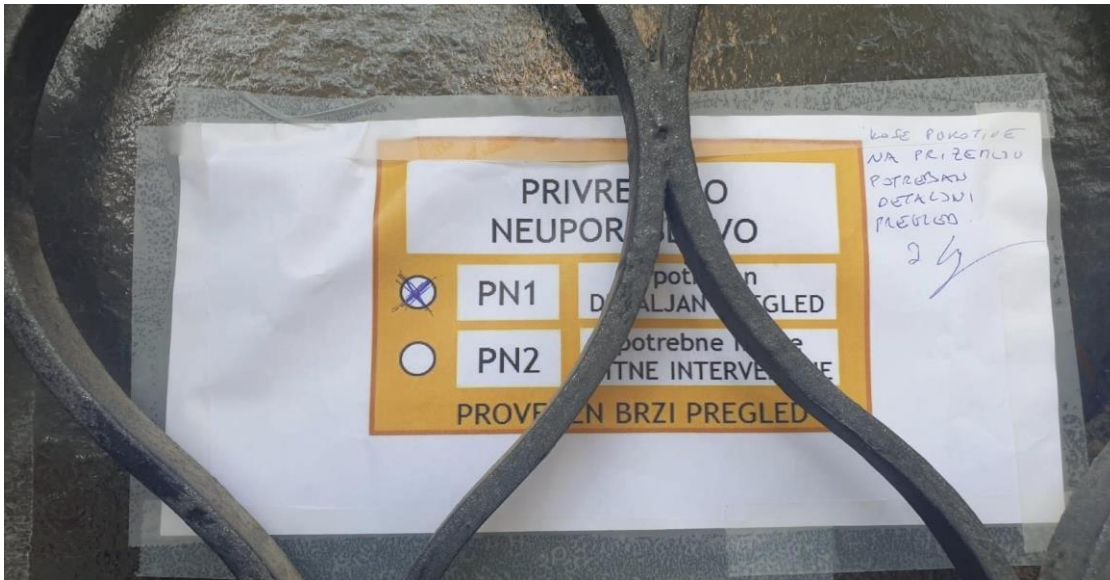
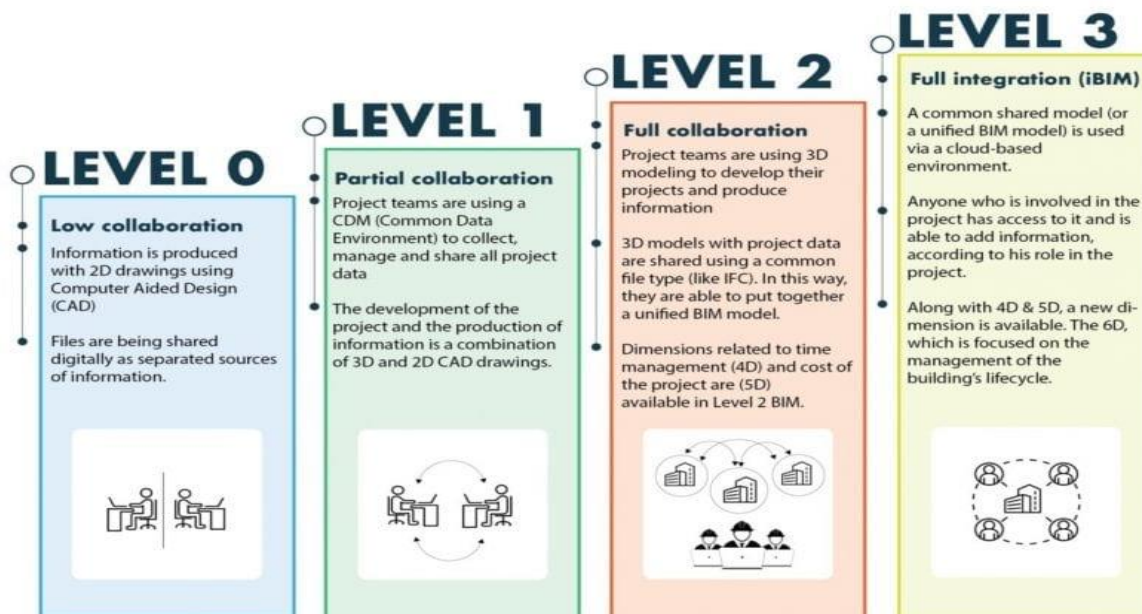


FIGURE 4
BIM IMPLEMENTATION LEVELS



FINANCIAL ASSESSMENT

A financial assessment is the consolidation of fiscal data with the aim of recognizing economic patterns, setting financial strategies and guidelines, devising prospective financial plans, and pinpointing potential projects and investments (Economic Dictionary, 2021). This process also involves the application of various techniques to transform data from financial statements into management-relevant information.

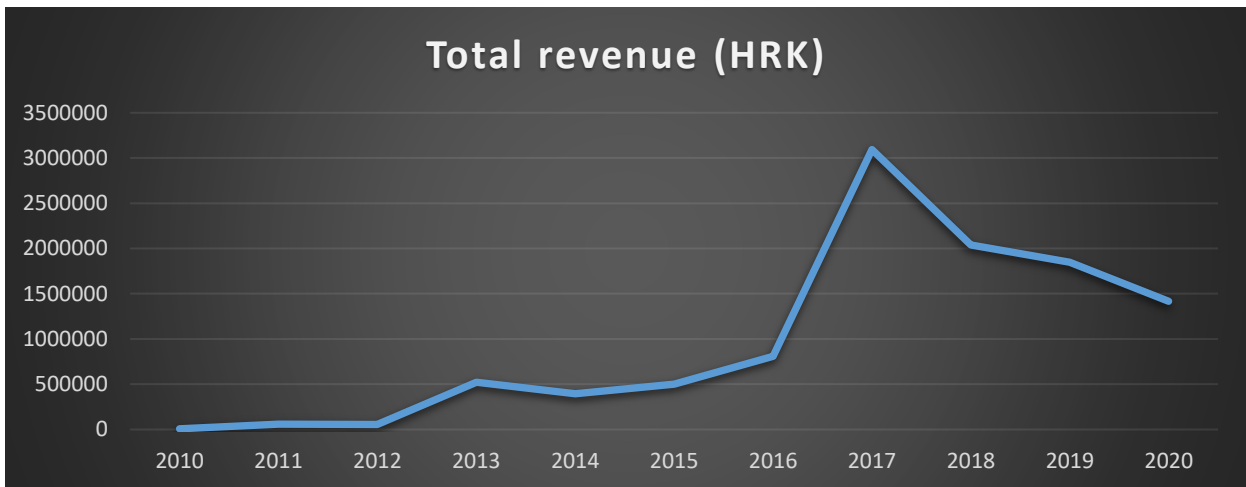
The objective of financial assessment is to ascertain the stability, liquidity, and profitability of the company being examined. In pursuit of this goal, the analyst scrutinizes diverse financial data. The analysis is centered around key financial statements, as dictated by the Accounting Act, which include:

- Balance sheet (statement of financial position)
- Income statement
- Statement of comprehensive income
- Cash flow statement
- Statement of changes in equity
- Notes to financial statements

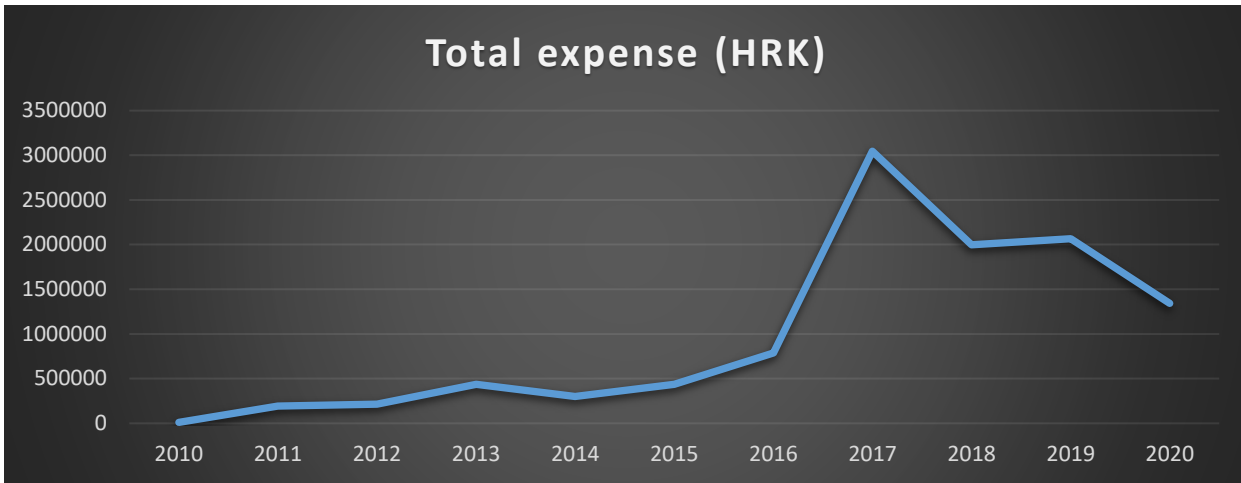
The main purpose of conducting such an analysis is to gain a comprehensive understanding of the company's financial standing. The outcomes of the financial assessment can inform economic decision-making for a wider audience of information users (Economic Dictionary, 2021).

Figure 5 and 6 exhibit the total revenues and expenses of the company, while Chart 7 illustrates the company's profit or loss from its inception in 2010. Prona-grad Ltd. experienced losses for its initial three years before turning profitable in 2013. The highest profit was recorded in 2014, totaling 94,653 HRK. The company sustained consistent profits in the subsequent years before encountering its most significant loss in 2019.

FIGURE 5
TOTAL REVENUE OF COMPANY PRONA-GRAD LTD.



**FIGURE 6
TOTAL EXPENSE OF COMPANY PRONA-GRAD LTD.**



**FIGURE 7
PRONA-GRAD LTD. PROFIT/LOSS**



GLOBAL OPERATIONS

Prona-grad has established itself as a highly capable firm in the Croatian market, with a portfolio of projects executed throughout the nation. While the bulk of the company’s activities occur within Croatia, it also extends its services to create project documentation for engineering firms within Croatia and across Europe, including Germany and the United Kingdom. Their offerings encompass the development of static calculations and designs for various engineering structures, such as bridges (both railway and road), buildings, and other infrastructure projects. These services are delivered with reliability, accuracy, and adherence to agreed-upon timelines.

The company prepares calculations and designs in accordance with construction standards HRN EN 1990-1999 and the respective national annexes of the client’s country. Calculations are conducted using Radimpex Tower (BIM, IFC) and LUSAS (BIM, IFC) software packages. In addition, Prona-grad produces detailed and precise execution drawings for formwork and reinforcement, utilizing Radimpex ArmCAD

(2D) and Nemetschek Allplan (3D, BIM) software packages. Within Croatia, the firm also offers a range of additional project documentation services.

FIGURE 3
REINFORCEMENT DESIGN IN ALLPLAN SOFTWARE

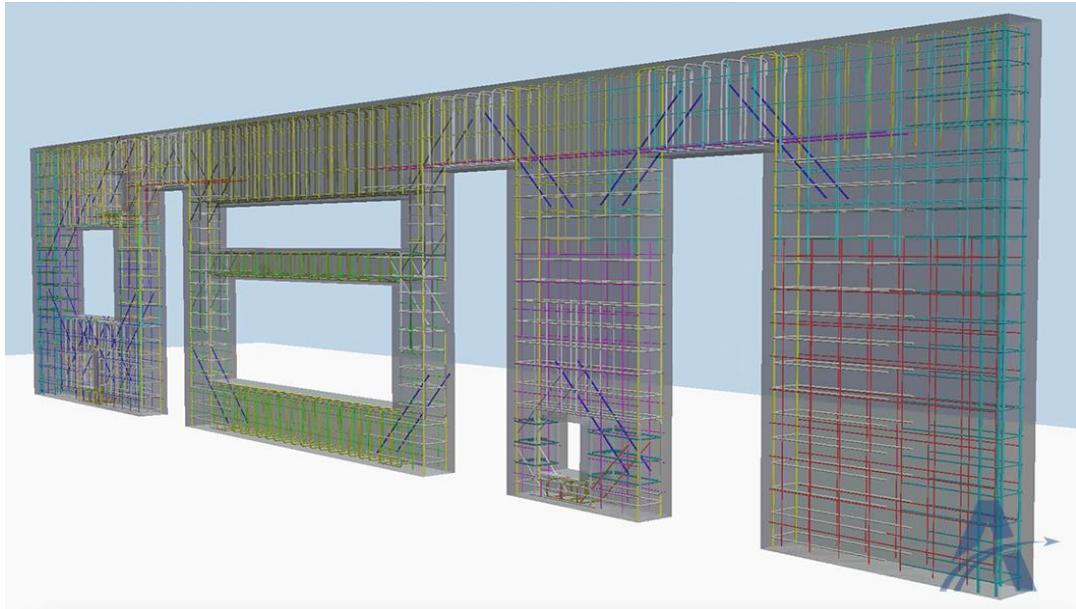
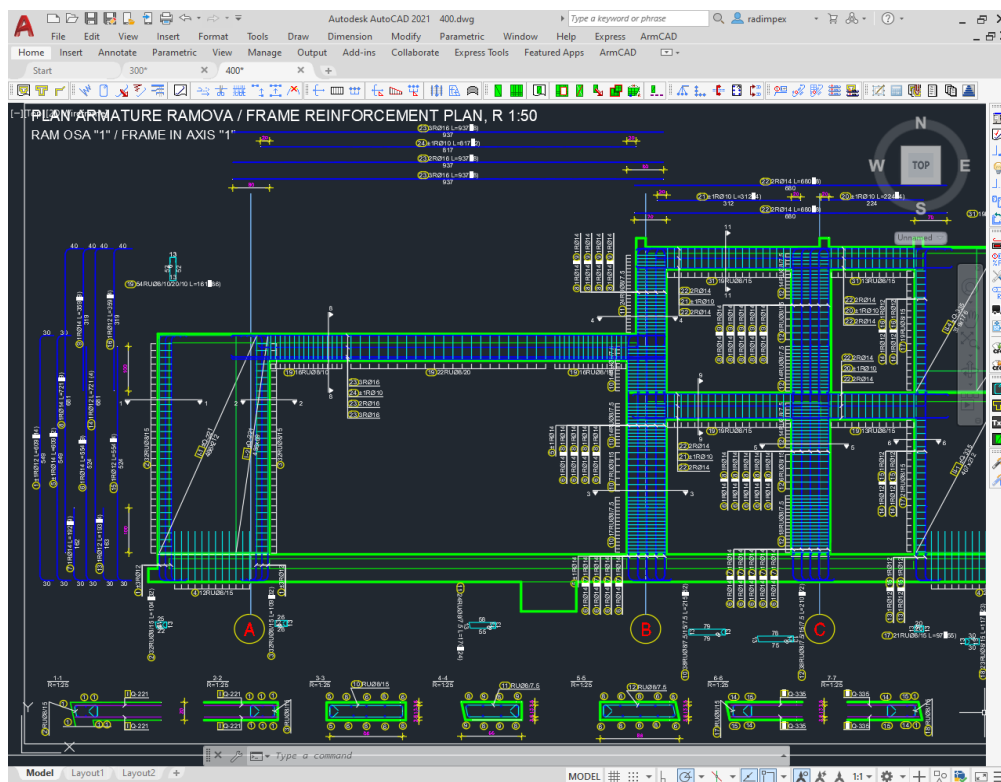


FIGURE 4
REINFORCEMENT DESIGN IN ARMCAD SOFTWARE



Prona-grad is an authorized distributor of LUSAS software, which is employed for designing, analyzing, and evaluating a wide array of structures, from simple beams to complex suspension and cable-stayed constructions. LUSAS features an extensive selection of algorithms for numerous calculations, including linear static, earthquakes, soil-structure interaction, large displacements, prestressing, post-tensioning, and fatigue. The software caters to various industries, such as automotive, aerospace, defense, manufacturing, and general mechanical sectors. LUSAS Academic is designed exclusively for educational organizations, offering unrestricted access to most LUSAS calculation modules and no model size limitations for educational and research purposes.

EXEMPLARY PROJECTS

FIGURE 5
PRONA-GRAD PARTNERS



The company has collaborated with diverse public organizations (City of Zaprešić, ŽUC, City of Sisak, Varkom), both domestic (ABC ing d.o.o., issadesign visual4you, Kopgrad studio d.o.o.) and international engineering and architectural firms (AECOM, IDOM), and private businesses (Sofra, Tango Communications, OIV). Moreover, Prona-grad has built strong relationships with numerous private investors and individual clients. Below are some notable projects completed by Prona-grad.

Villa Čiovo, Trogir

Prona-grad developed end-to-end documentation for this project on behalf of a private investor, ranging from the conceptual to the execution stages, while also overseeing the construction process. The project was created using Allplan BIM software, with the images below displaying the 3D visualization and the finished structure.

**FIGURE 6
3D VISUALISATION OF VILLA ČIOVO PROJECT**



**FIGURE 12
FINISHED VILLA ČIOVO PROJECT**



Seaside Villa Near Dubrovnik

This villa project, situated close to Dubrovnik, posed significant challenges due to the steep terrain. Prona-grad was responsible for the entire documentation process, from conceptual to execution phases. The project was designed using Allplan BIM software, and the images below showcase the 3D visualization.

FIGURE 13
3D VISUALIZATION OF VILLA NEAR DUBROVNIK



These examples represent just a fraction of the projects undertaken by Prona-grad d.o.o. The company also specializes in designing various engineering structures, roads, bridges, halls, and more.

CONCLUSION

The financial reports indicate that Prona-grad has consistently increased its revenue since its establishment. These funds are strategically invested in the company's expansion and development, resulting in a limited or non-existent total profit. Prona-grad's unique approach to sustainable construction, utilization of advanced solutions, and sophisticated software, coupled with its collaborative efforts with architects, has resulted in the delivery of secure and economically viable homes, while also satisfying the comfort and aesthetic needs of investors. These findings demonstrate Prona-grad's commitment to excellence in the field of civil engineering and its mission to deliver innovative solutions that generate value for real estate stakeholders. As such, Prona-grad's success story presents a promising case for practitioners and researchers in the field of civil engineering and beyond.

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