

No. 1.

WALL PANEL TECHNOLOGY



20
25

P R E beton



market 
C S O P O R T



Welcome

PREFABRICATION IS NOT ONLY A FAST AND EFFICIENT CONSTRUCTION METHOD, BUT HAS ALSO BECOME SYNONYMOUS WITH QUALITY, PREDICTABILITY, AND SUSTAINABILITY.

The purpose of this publication is to summarize the advantages of using prefabricated reinforced concrete wall panels and to provide a comprehensive overview of the benefits this modern technology offers – from concept to completion.

As a general contractor, Market Építő Zrt. ensures smooth and high-quality project execution, so that buildings constructed with prefabricated reinforced concrete products consistently meet the highest standards.

Founded in 2020, PREbeton Zrt., as a member of the Market Group specializing in prefabricated structures, combines outstanding production capacity, state-of-the-art technology, and rigorous quality control to guarantee that every single panel adheres to the most stringent requirements.

We believe that prefabricated wall panels not only offer faster and more cost-effective construction solutions but also enhance design flexibility and contribute to the long-term value retention of buildings.

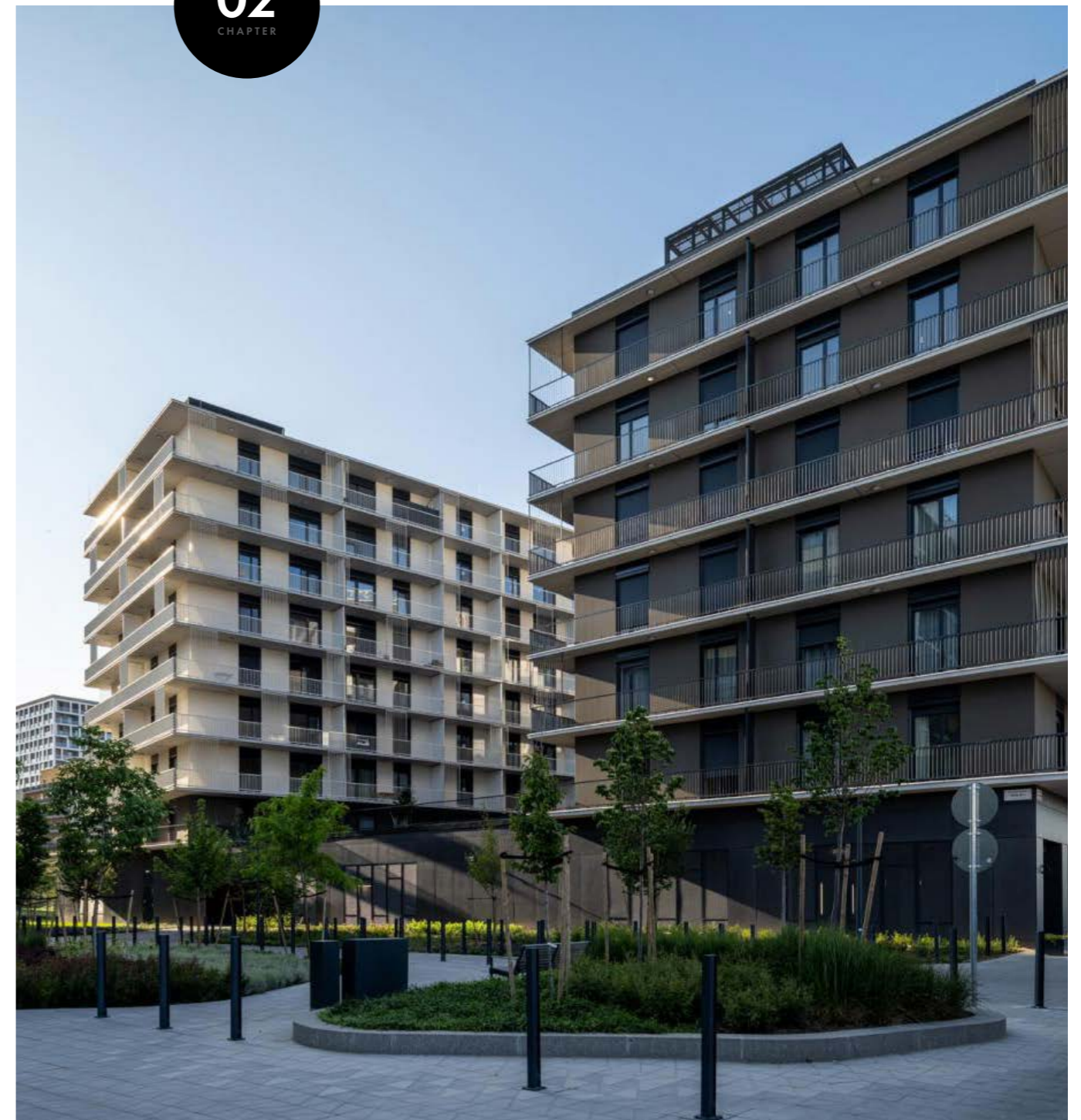
We hope that this publication provides you with useful information and serves as inspiration for our future collaboration.

Thank you for placing your trust in us!



SCHEER Sándor
Market Group CEO

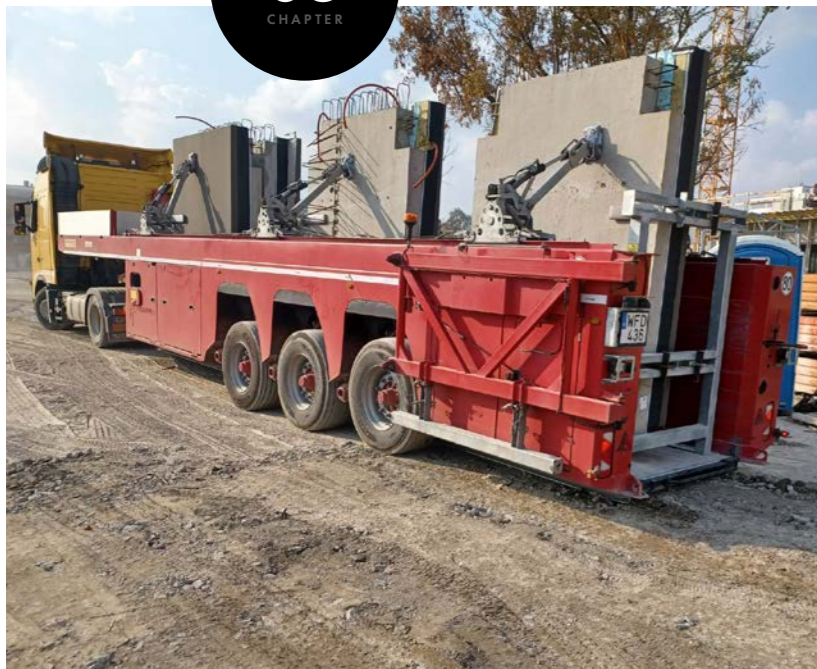
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Imprint

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Company

QUALITY YOU CAN BUILD ON

PREbeton Zrt. has been a leading player in the Hungarian construction industry for over five years, providing reliable and modern solutions in the production of prefabricated reinforced concrete elements. The company is headquartered in Budapest, while its high-tech manufacturing facility has been operating at the Erdőtélki site since 2020.

PREbeton Zrt. is a member of the Market Group, which guarantees high quality, stability, and expertise.

With a team of more than 150 employees and over 300 subcontractors, the company achieves annual revenues of several billion forints. Leveraging this significant pool of experts and continuous technological innovation, it ensures its market competitiveness, consistently staying one step ahead of its rivals.



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The Building Material of The Future

CONCRETE HAS BECOME ONE OF THE MOST IMPORTANT BUILDING MATERIALS OF OUR TIME AND WILL CONTINUE TO PLAY A DECISIVE ROLE IN THE CONSTRUCTION INDUSTRY.

Among its many advantages, its durability and versatility stand out, allowing it to be used in a wide variety of structures, from skyscrapers to bridges and residential buildings. Precast concrete elements enable fast and efficient construction, while also taking into account environmental and economic considerations. Precasting in a factory environment allows for stricter quality control, resulting in fewer errors and repairs on site.



Smaller Footprint, More Conscious Future

CEMENT PRODUCTION IS RESPONSIBLE FOR 8-10% OF GLOBAL CARBON DIOXIDE EMISSIONS, SO EVERY KILOGRAM SAVED IS SIGNIFICANT.

Saving cement not only reduces environmental impact, but also offers economic benefits: fewer raw materials, lower energy consumption, smaller ecological footprint. PREbeton Zrt. is working on conscious design and innovative solutions to create more durable, sustainable buildings for future generations.



The Basis of Livable Spaces

THE USE OF PREFABRICATED STRUCTURES IS BENEFICIAL NOT ONLY FROM THE POINT OF VIEW OF CONTRACTORS, BUT ALSO FROM THAT OF END USERS.

Usability and human-centered design mean that every detail of a building's design prioritizes the needs of the people who live, work, or use it. Precision manufacturing enables functional space planning and ergonomic solutions, ensuring the creation of comfortable, well-ventilated, bright, and energy-efficient spaces. Prefabrication does not impose any restrictions to individual requirements; on the contrary, it supports the creation of buildings that are not only durable, but also livable and lovable.



Accuracy, Speed, Reliability

AT PREBETON, THE HIGH LEVEL OF MECHANISATION USED IN MODERN MANUFACTURING GUARANTEES EXCEPTIONAL ACCURACY, CONSISTENT QUALITY AND FASTER PRODUCTION CYCLES.

Automated processes reduce the possibility of human error, optimize material usage, and enable the production of elements with complex geometries. Mechanized systems ensure stable and predictable production, helping to meet deadlines and execute projects cost-effectively. In addition, workplace safety is improved, and the environmental impact of manufacturing is significantly reduced.



Efficiency Right From the Drawing Board

IN THE CASE OF PREFABRICATED STRUCTURES, IT IS CRUCIAL THAT PLANS MUST TAKE MANUFACTURING AND INSTALLATION CONSIDERATIONS INTO ACCOUNT FROM THE OUTSET.

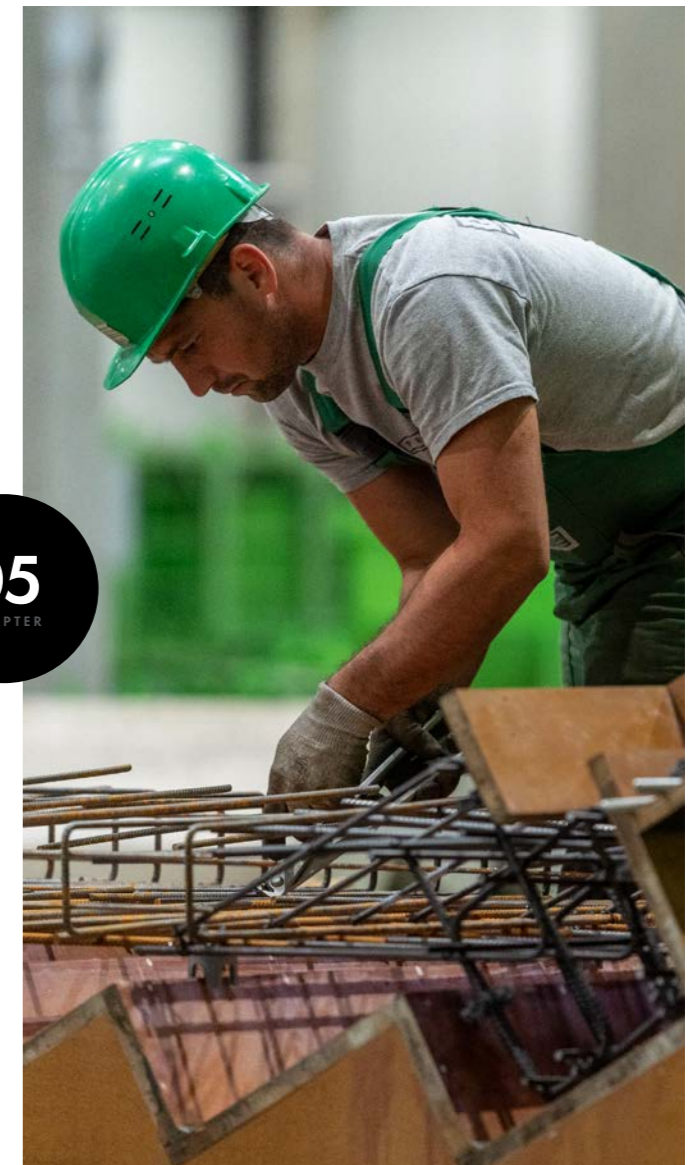
Optimization for manufacturing means that architectural and structural designs are prepared to integrate efficiently into production processes, avoiding unnecessary modifications, time losses, or additional costs. This not only increases the accuracy and speed of production but also facilitates smooth implementation and simple, logical installation of the elements. Optimized design makes the entire project lifecycle more efficient, from concept to handover.




Digitalization in Manufacturing

DIGITALIZED DESIGN AND MANUFACTURING PROCESSES ARE REVOLUTIONIZING CONSTRUCTION AND MAKE IT POSSIBLE TO DOUBLE THE SPEED OF CONSTRUCTION.

Wall elements are entered into the digital database as soon as the offer is prepared, allowing design and manufacturing teams to process them immediately when an order is received. This accelerates production processes and simplifies subsequent logistics and element tracking. The robotized and CAD/CAM-based manufacturing methods used at PREbeton enable the production of buildings under design to be carried out as quickly and optimally as possible, reducing human error and optimizing the overall manufacturing workflow.



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The Art of Panel Construction

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A LITTLE HISTORY

THE HISTORY OF PREFABRICATED REINFORCED CONCRETE DATES BACK TO THE EARLY 20TH CENTURY, WHEN INDUSTRIALIZATION CREATED AN INCREASING DEMAND FOR QUICK AND ECONOMICAL CONSTRUCTION.

Panel technology gained momentum especially after World War II, when rapid and mass housing construction solutions were needed during reconstruction. Residential buildings constructed using panel technology appeared throughout Europe, including Hungary, and gradually transformed over time and developed into a sophisticated, modern branch of architecture. Today, prefabrication provides not only quantitative but also qualitative answers to contemporary architectural and engineering challenges.

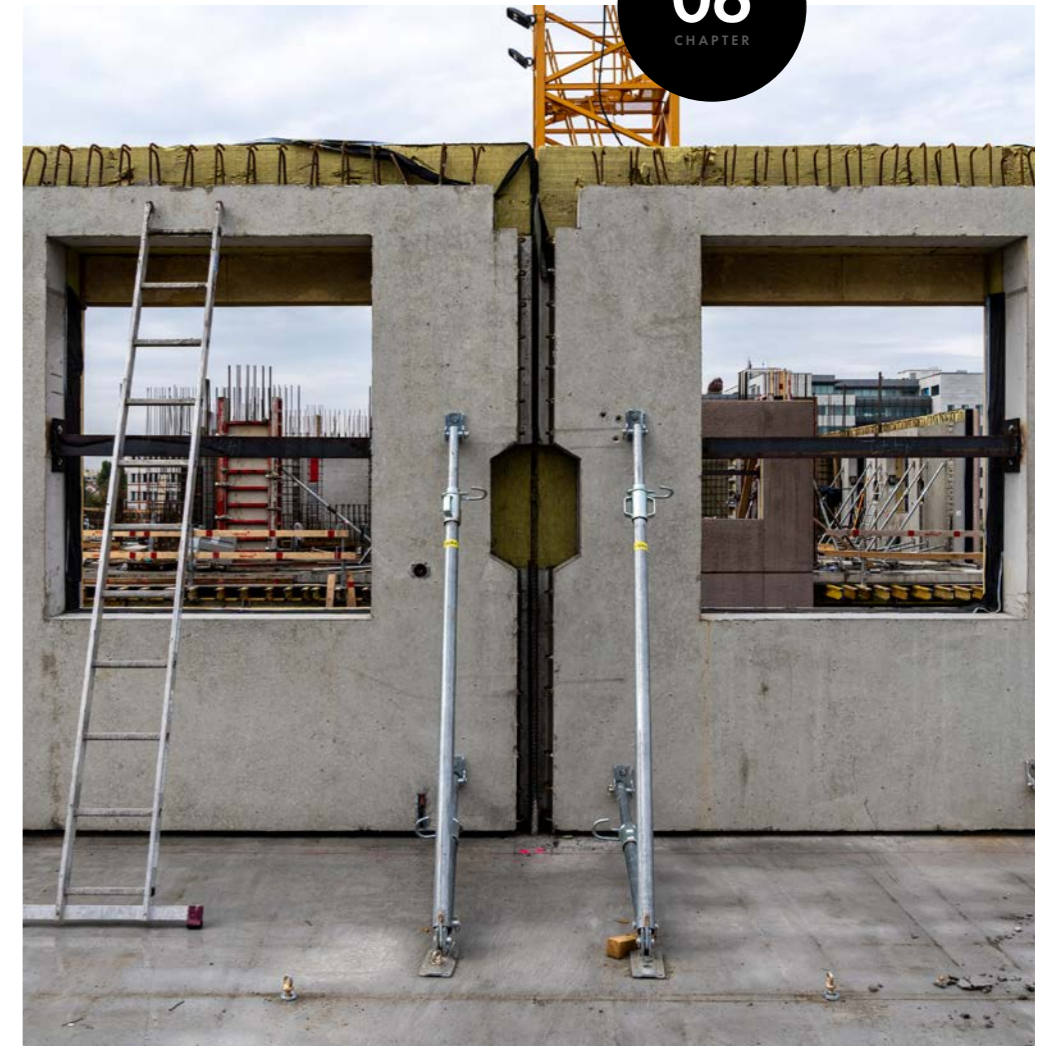
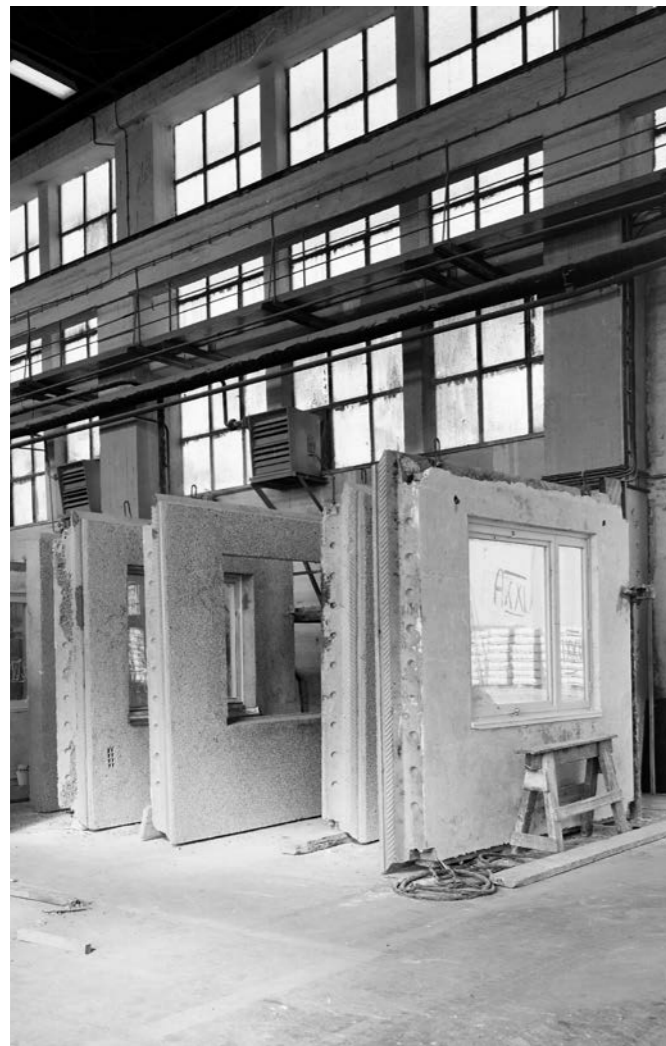
WHY PREFABRICATION?

ONE OF THE BIGGEST ADVANTAGES OF PREFABRICATION WITH REINFORCED CONCRETE PANELS IS FAST AND EFFICIENT CONSTRUCTION.

Building elements are manufactured under factory conditions using automated or semi-automated systems, which allows for precise dimensioning, high-quality surfaces, and precise fittings. This manufacturing method provides much more predictable results than on-site monolithic structures and greatly reduces the time and financial risks associated with the project.

Another key advantage of prefabrication is rapid on-site assembly. Since the panels arrive at the construction site ready-made, the labor requirements are minimal, resulting in shorter construction times, less on-site noise and dust, and lower logistical requirements. This is particularly advantageous in densely built-up urban environments.

The technology also offers environmentally friendly solutions: less material is wasted during factory production and materials are easier to recycle. Waste production is reduced at the construction site and transportation can be optimized. In addition, reinforced concrete panels have excellent thermal and sound insulation properties, contributing to the energy efficiency and comfort of buildings.



The Path to Affordable Buildings

BRIDGE + WALL PANEL

For higher storey heights or more complex architectural solutions, framed wall panels can be replaced with multi-part prefabricated structural elements.

FULL-HEIGHT WALL PANELS

Full-height wall panels significantly accelerate construction: no on-site formwork, concreting, or façade scaffolding is required.

SUSPENDED PANELS

In areas where the use of monolithic structures is unavoidable, suspended panels can be used to cover these parts of the building, ensuring a uniform architectural appearance.

LIFT SHAFT WALLS

Elevator shafts, which form the internal stiffening core of buildings, can also be constructed using prefabricated lift shaft walls sized and manufactured according to project requirements.

FLOORS

Prefabricated floor elements eliminate the need for full-floor formwork, resulting in significant time and cost savings during construction.

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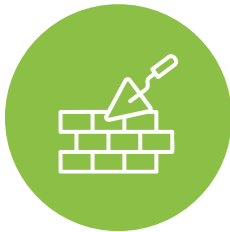
FRAME STRUCTURE

The internal layout and even the entire structural system of a building can be realized using prefabricated columns and beams.

FRAME STRUCTURE

The internal layout and even the entire structural system of a building can be realized using prefabricated columns and beams.

Traditional Construction Method



SPACE REQUIREMENTS

Traditional construction methods require a significant amount of space on the construction site. Often, an on-site concrete batching area or the continuous presence of concrete delivery trucks is necessary.

MACHINE STORAGE

During construction, special space must be allocated for storing equipment and machinery which further increases the required site area.

CONSTRUCTION TIME

Traditional methods generally result in longer construction times as concreting and structural work must be carried out on site.

NOISE AND WASTE

On-site construction typically generates more noise and a considerable amount of waste, due to the need for material processing on site.

LABOUR REQUIREMENTS

A larger number of skilled workers and manual labor is required, which increases construction costs.

PROFESSIONAL EXPERTISE

Traditional construction relies heavily on specialized craftsmanship, adding complexity to project management.

OCCUPATIONAL SAFETY

On-site work involves greater safety risks, requiring more extensive safety measures and supervision.



Prefabricated Construction Method



READY-MADE ELEMENTS

Prefabricated sandwich wall panels are delivered with built-in insulation, mechanical systems and interior surfaces already completed at the factory.

QUALITY CONTROL

Factory production allows for strict quality control, ensuring consistently high construction standards.

JUST IN TIME DELIVERY

Prefabricated elements can be delivered "just in time", optimizing the construction workflow and minimizing on-site waiting and storage needs.

FAST INSTALLATION

Prefabricated wall elements can be installed quickly, reducing overall construction time — often by up to 50%.

COST EFFICIENCY

Prefabrication reduces labor demand and onsite waste resulting in lower overall construction costs.

VERSATILITY

Prefabricated wall systems can be used in a wide variety of building types, including offices, hotels, social facilities, correctional institutions and dormitories.

ENVIRONMENTAL PROTECTION

Factory-controlled production reduces on-site waste and environmental impact, as processes and material usage are optimized and easier to control.

Budapart_BRF

The first

BUDAPEST

BudaPart district
BRF residential building

Year of competition
2022

Designer
Studio A4 Iroda Kft.

Facade wall panel
9451 m²

Total volume
1695 m³

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Budapart_BRF

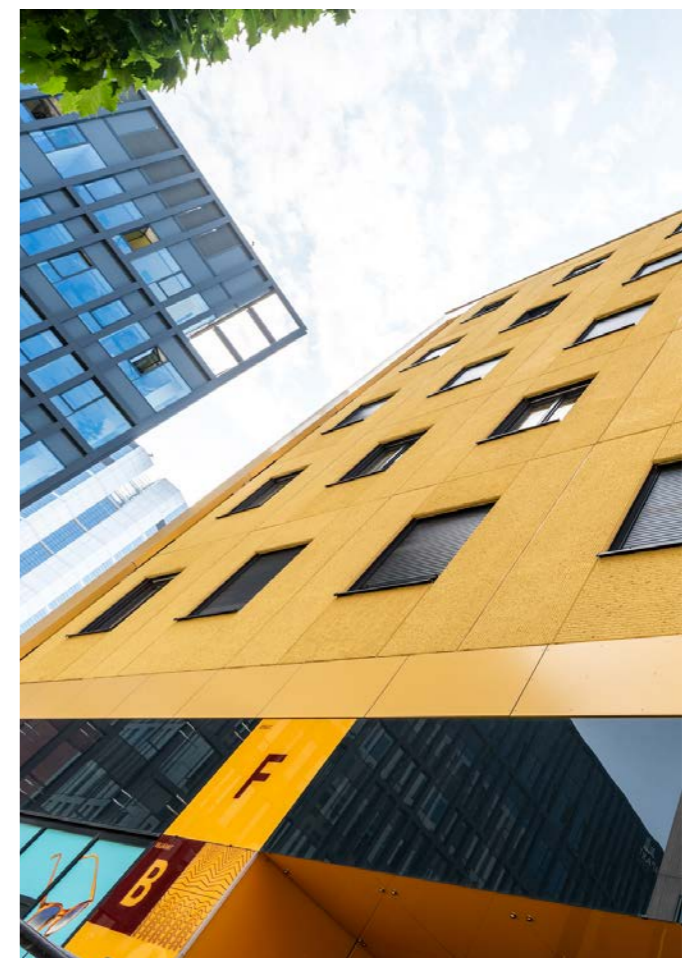
BRF PREMIUM APARTMENTS

BUDAPART BRF IS A MODERN, PREMIUM RESIDENTIAL BUILDING IN THE BUDAPART DISTRICT OF BUDAPEST, LOCATED ON THE SHORES OF LÁGYMÁNYOSI BAY, NEXT TO KOPASZI-GÁT.

The building's approximately 9,400 m² facade was constructed entirely from prefabricated sandwich panel elements, designed according to the manufacturer's technical specifications based on structural plans. More than 1,300 sandwich panels cover the exterior of 185 apartments across 8 floors. The color and pattern of the panels integrate seamlessly into the modern surroundings.

The balconies on the upper floors are made of prefabricated reinforced concrete slabs, and the stair structures of the three staircases were also manufactured using prefabricated reinforced concrete technology by PREbeton Zrt.

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Sustainable Construction



Quality of Living

High-quality residential buildings and well-designed public facilities ensure a high standard of living.

MAXIMIZE ↑



Planning Efficiency

Careful and well-considered planning can save resources while also increasing the long-term value of properties.



Working Conditions

Providing proper working conditions ensures employee satisfaction.

MAXIMIZE ↑



Building Lifespan

With the right materials and top-notch construction expertise, the building's lifespan can be maximized.



Waste

Precise planning and thoughtful execution minimize construction waste.

MINIMIZE ↓



Emissions

Production-optimized and mechanized processes reduce emissions.



Energy Consumption

Minimizing energy use reduces costs both during construction and throughout the building's operation.

MINIMIZE ↓



Costs

The adoption of high-quality construction systems supports long-term sustainability.



Budapart_BOG

Where work and relaxation meet

BUDAPEST

BudaPart district
BOG Office and Hotel Building

Year of transfer
2022

Designer
Középülettervező Zrt.

Facade wall panel
7428 m²

Total volume
1739 m³

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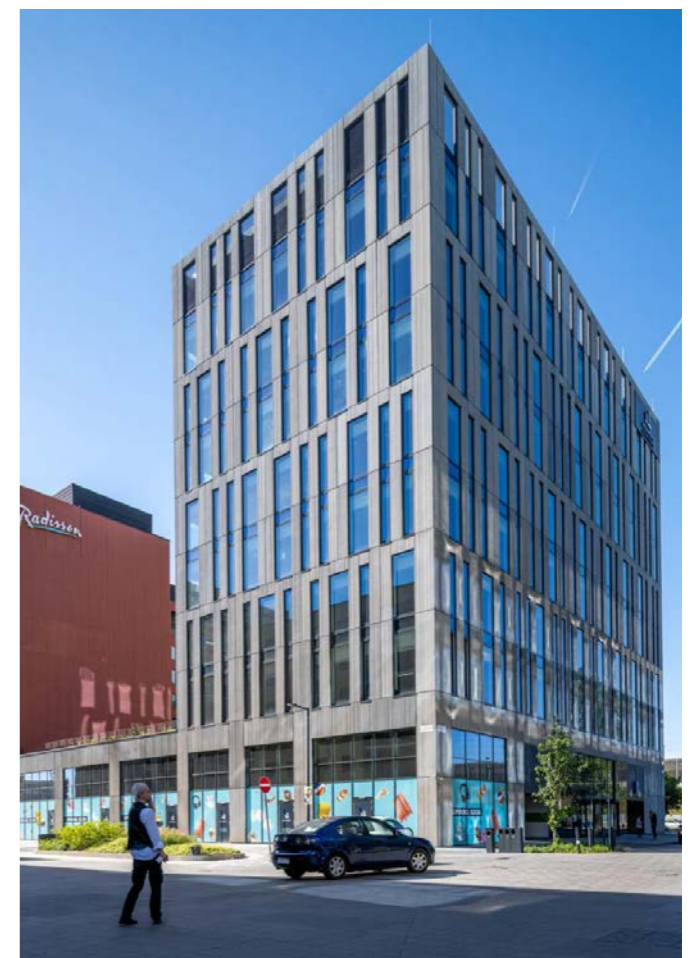
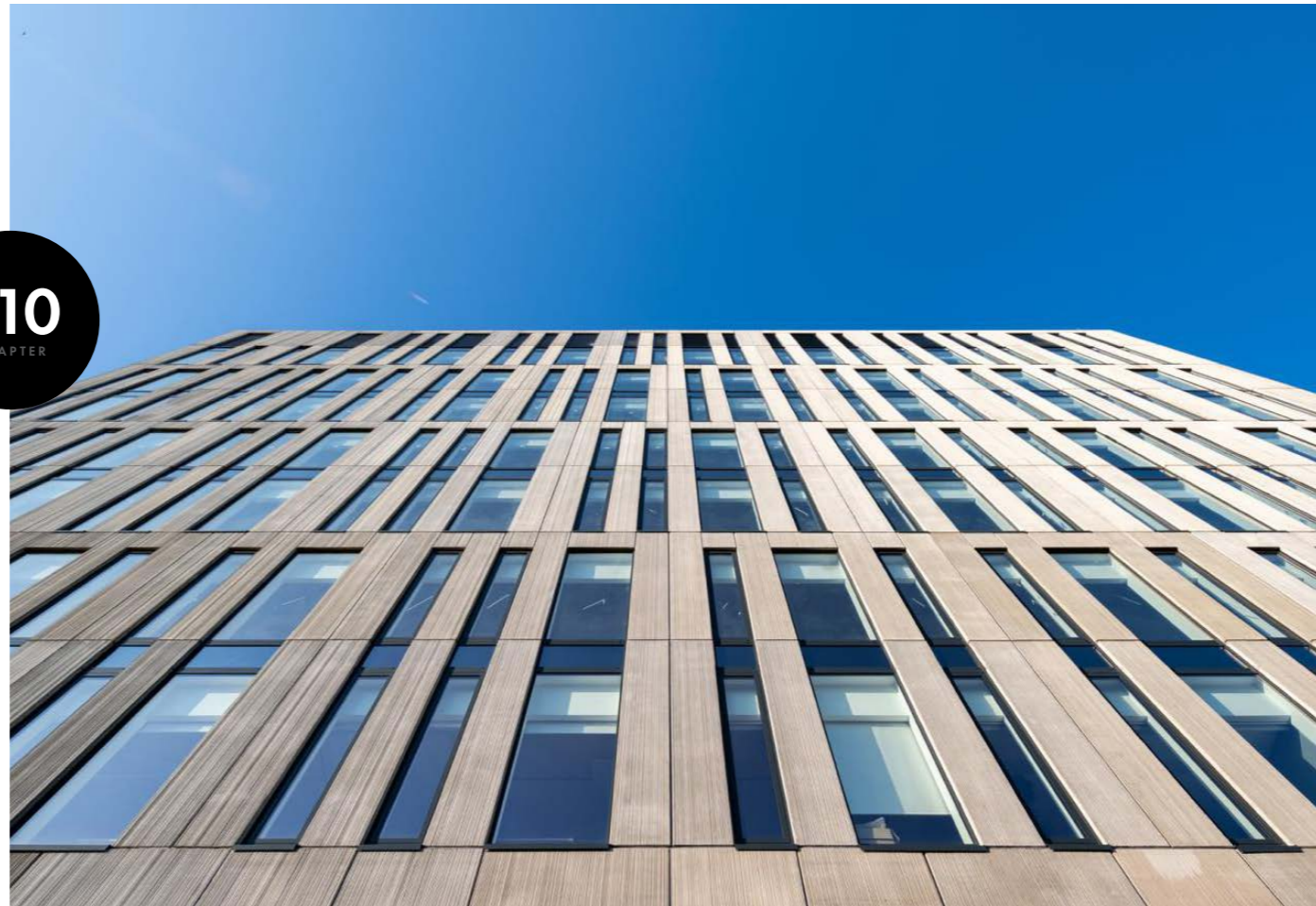


Budapart_BOG

BOG

THE BUDAPART BOG BUILDING WAS BUILT AS PART OF THE BUDAPART DOWNTOWN DEVELOPMENT, LOCATED NEAR KOPASZI-GÁT IN BUDAPEST'S 11TH DISTRICT.

The building consists of two functional units: an office building and a hotel.



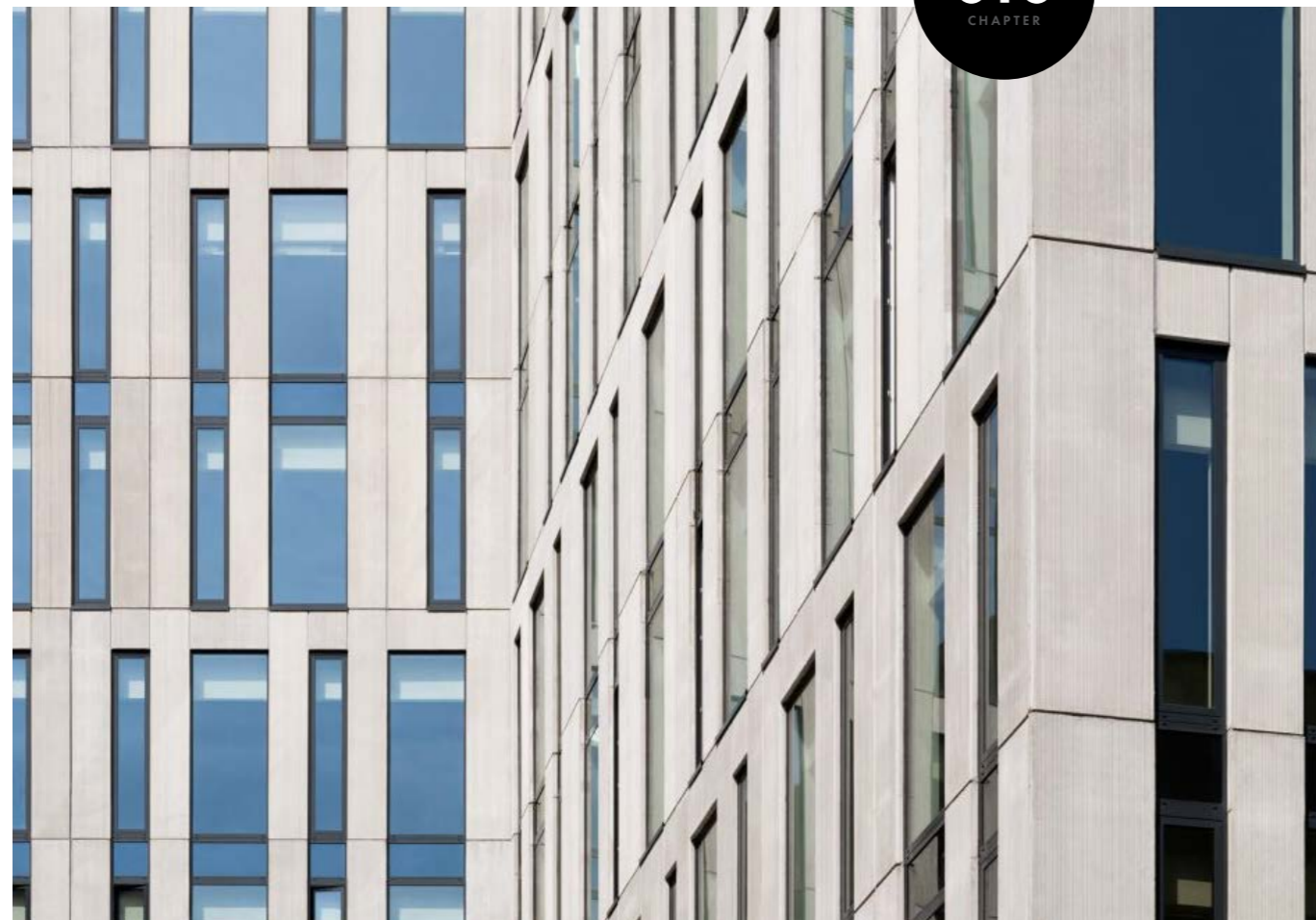
The Office

ON THE 8TH FLOOR OF THE OFFICE BUILDING, COVERING APPROXIMATELY 9,900 M², THERE ARE 297 MULTIFUNCTIONAL, MODERN OFFICE SPACES BEHIND 3,461 M² OF PREFABRICATED SANDWICH PANEL CLADDING.

The color and patterned design add a vibrant accent to the new district. The balconies on the upper floors are prefabricated reinforced concrete slabs, while the inter-floor pillars and beams, as well as the staircases, were also produced using prefabricated reinforced concrete technology by PREbeton Zrt.



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The Hotel

THE 4-STAR HOTEL WELCOMES TRAVELLERS WITH 198 ELEGANT ROOMS AND SUITES.

The building's facade features over 250 prefabricated sandwich panels, covering approximately 2,980 m², designed according to the manufacturer's technical specifications based on structural calculations.

The color and patterned design were created to meet the client's requirements.

Radisson Hotel Budapest is located in the BudaPart district, directly adjacent to the Kopaszi-gát.

The hotel opened on 19 October 2023, as Hungary's first Radisson-branded property.

Number of rooms:
198 (174 standard and 24 superior)

Room types:
Modern, comfortably furnished rooms, ideal for both business and leisure stays.

Restaurants and bars:
The Shanghai Kitchen restaurant on the ground floor serves Asian fusion cuisine, while the rooftop Skybar welcomes offers cocktails and light meals.

Conference rooms:
Six versatile event spaces are available, accommodating up to 180 guests.

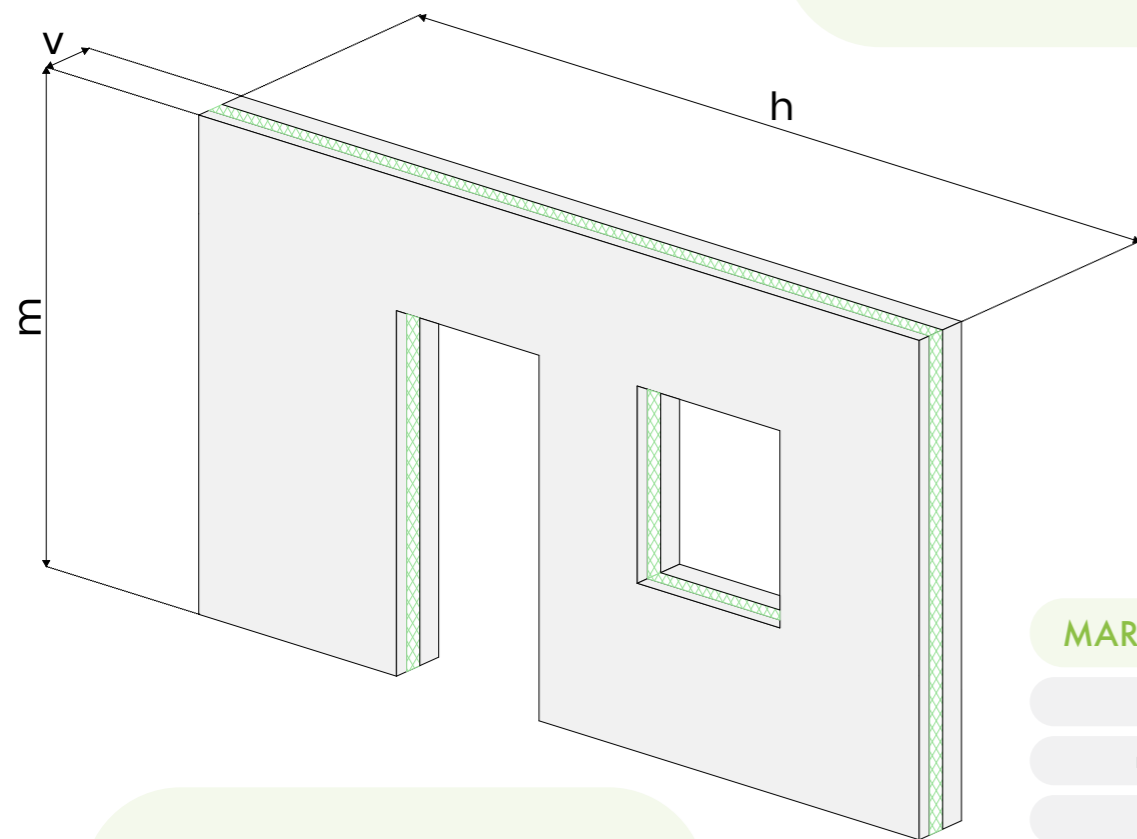
Fitness room:
A fully equipped gym is accessible 24 hours a day for hotel guests.



Load-Bearing Wall System

SIZE AND THICKNESS

Depending on the type, panels can range from 70 mm to over 500 mm in thickness, and their length and height can be adjusted to the requirements of the project.



MARKING SIZE

h	max. 10 m
m	max. 3,8 m
v	max. 75 cm
bk	16-30 cm
hsz	2-20 cm
kk	7 cm

SPECIFIKATION

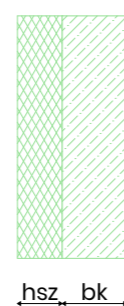
Prefabricated wall panels are modern, industrially manufactured building elements that enable fast and efficient constructions.

These panels are typically composed of multiple layers, including a load-bearing structure, thermal insulation, and a cladding layer.

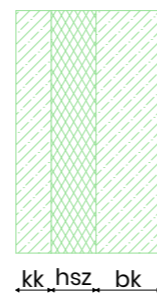
SINGLE LAYER WALL



DOUBLE-LAYERED WALL



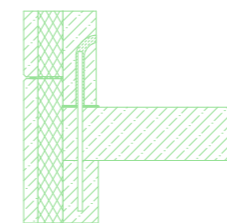
THREE-LAYER WALL



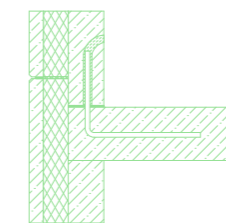
Ceiling Connection

WALL PANELS AND CEILINGS – WHETHER PREFABRICATED OR MONOLITHIC – WE HAVE NUMEROUS SOLUTIONS FOR CONNECTION DESIGN.

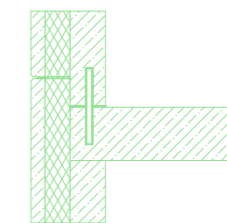
Reinforcement anchored to wall



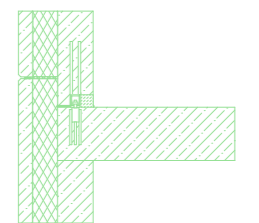
Reinforcement anchored to slab



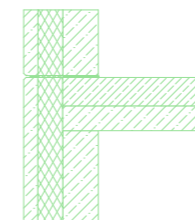
Reinforcement anchored to slab



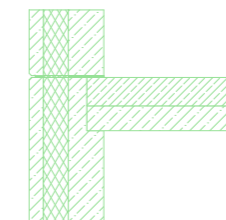
Wall shoe connection



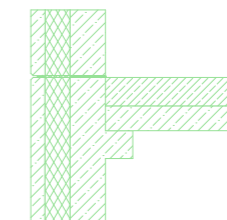
Zipper joint reinforcement in slab on panel



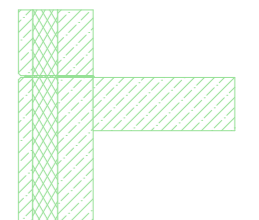
Zipper reinforcement nest in slab



Cantilever support



Zipper reinforcement butt joint



Thermal Insulation

BUILT-IN THERMAL INSULATION LAYER (E.G. ROCK WOOL, XPS OR PUR FOAM), WHICH CAN PROVIDE VALUES BELOW 0.15 W/M²K.



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Fire Resistance

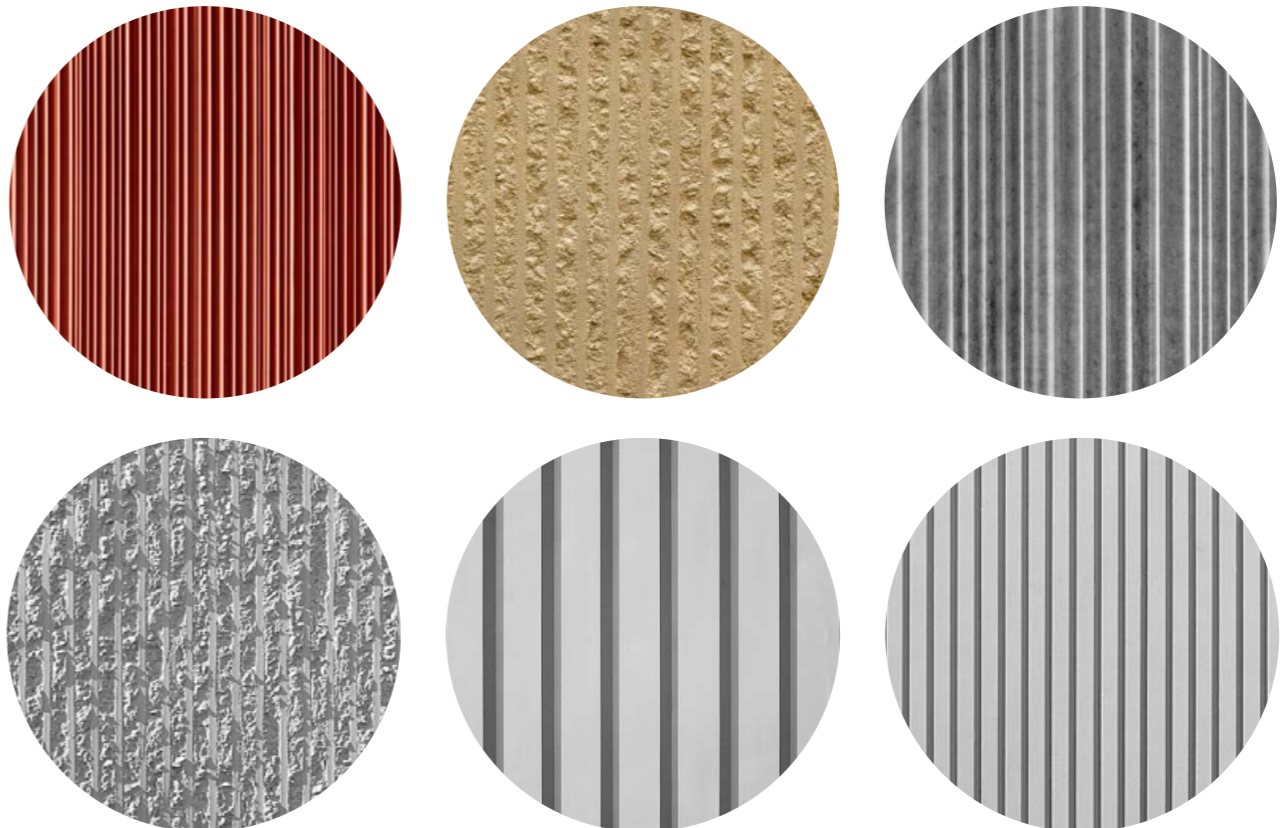
THE FIRE PROTECTION CLASSIFICATION OF WALL PANELS CAN BE AS HIGH AS REI 90 OR REI 120, DEPENDING ON THE MATERIALS USED, THE LAYER STRUCTURE AND THE CONCRETE COVER.



Surface Formation

EXPOSED CONCRETE SURFACES CREATED WITH POLYURETHANE MOLDS ALLOW CONCRETE TO SERVE NOT ONLY AS A STRUCTURAL ELEMENT BUT ALSO AS A DESIGN FEATURE.

These flexible molds enable the transfer of complex patterns, textures, and even custom graphic motifs onto concrete surfaces. The templates create precise impressions in fresh concrete that are durable and rich in detail. They produce precise impressions in fresh concrete that are both durable and highly detailed. Made from robust, easy-to-handle polyurethane, the molds can be reused multiple times, providing an economical and sustainable solution for architects and developers. The end result: distinctive, visually striking facades and interiors that retain their quality and long-term durability.



Budapart_BRG

Top quality in housing

BUDAPEST

BudaPart district
BRG Residential building

Year of completion
2023

Designer
Óbuda Építész Stúdió Kft.

Facade wall panel
3915 m²

Total volume
1057 m³



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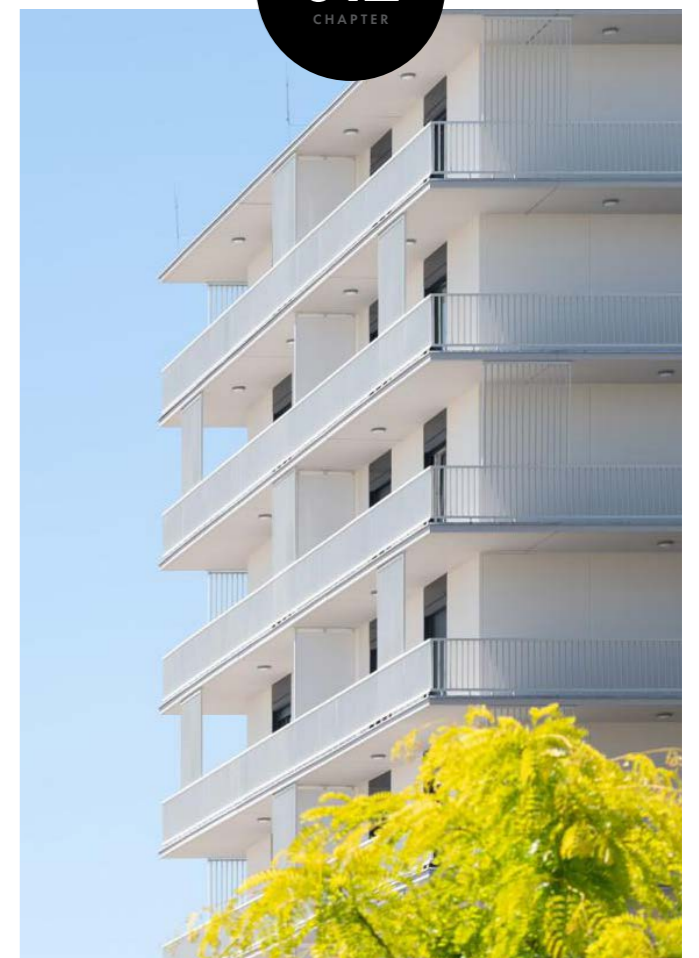
Budapart_BRG

BRG

LOCATED IN THE CENTER OF BUDAPEST, THIS TWO-WING BUILDING WAS COMPLETED IN 2023, WITH SPECIAL ATTENTION GIVEN TO CREATING AS MUCH GREEN SPACE AS POSSIBLE.

The building's facade features smooth-surfaced, anthracite and white prefabricated three-layer sandwich panels, designed in accordance with the manufacturer's technical specifications and static engineering plans. A total of 369 sandwich panels provide the exterior cladding for 180 homes across two building sections and eight floors.

The balconies on the upper floors consist of prefabricated reinforced concrete slabs, while the staircases in the stairwells were also manufactured using prefabricated reinforced concrete technology by PREbeton Zrt.



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We love
to build

General

AS A GENERAL CONTRACTOR, THE MARKET GROUP HAS OUTSTANDING PROFESSIONAL EXPERIENCE AND COMPREHENSIVE PROJECT MANAGEMENT KNOWLEDGE, WHICH GUARANTEES EFFICIENT AND HIGH-QUALITY IMPLEMENTATION.

The group oversees every stage of the process, from design to execution, allowing clients to manage the entire project through a single point of contact. With modern technological solutions, wellcoordinated teamwork, and reliable partnerships, the Market Group provides a solid foundation for the successful delivery of projects of any scale.



Transport

DELIVERY AND LOADING OF ELEMENTS WITH STATE-OF-THE-ART INLOADER TRUCKS IS FASTER AND SAFER, AS THE ELEMENTS DO NOT NEED TO BE TILTED OR SECURED SEPARATELY.

The low floor height and enclosed cargo area protect the shipment, reducing the risk of damage while improving logistical efficiency. This results in shorter working times, lower risk, and more cost-effective transport.



Storage

STORING WALL PANELS IS EXTREMELY PRACTICAL, AS THESE ELEMENTS ARE EASY TO MOVE AND HANDLE.

Thanks to their optimized design, the panels can be stored in a space-efficient manner, helping to maintain order on-site and streamline logistics.

In addition, modern digital tracking systems allow each panel to be accurately monitored from production to installation. This system ensures that the condition and location of the panels are continuously checked, minimizing errors and optimizing workflows.

Assembly

INSTALLING THE PREFABRICATED WALL PANELS IS EXTREMELY SIMPLE AND QUICK, AS THE ELEMENTS ARE SPECIFICALLY DESIGNED FOR EASY INSTALLATION.

The panels' precision manufacturing ensures accurate dimensions, so installation requires minimal time and effort.

One of the Market Group's greatest strengths is its stable, professional, and reliable subcontractor network. Well-established partnerships built over the years guarantee high-quality execution and smooth workflows. Thanks to these long-term collaborations, projects are delivered efficiently, accurately, and to the expected standard.



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No. 1. **WALL PANEL TECHNOLOGY**

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