THE HEADQUARTERS OF MAGYAR TELEKOM AND T-SYSTEMS HUNGARY

TECHNICAL SPECIFICATIONS
September 2019

TIBA Architects Studio Ltd.
Phone: +36 1 336 0961 | Fax: +36 1 336 0962
studio@tiba-studio.com | www.tiba-studio.com

CONTENTS:

1. BACKGROUND

“When Telekom merged its landline and its mobile business branches to create Magyar Telekom Nyrt in 2006, it became apparent almost immediately that the departments, previously operating at different locations, have to be moved to one spot in the interest of unified company operations. The preparations started in 2007 and Telekom set about designing its new headquarters in the first half of 2008. They assessed the market, defined possible locations, and soon came to the conclusion that the project would see a return even because of the rationalizing of fuel costs. At first, there were forty possible locations, but their number soon dwindled. The internal analyses showed that the ideal location would be accessible not only by tram, but also by car and underground; however, locations within the circle drawn by Hungária körút are inaccessible to people commuting by car and locations outside the circle are disadvantageous to people travelling by public transport. The final location should therefore come as no surprise, even though some people might have imagined a location on Váci út or in Kelenföld that meets these conditions.” (WGA - Metszet Magazine, January 2019)

2. DESIGN CONTEST

In the fall of 2013, WING Zrt. announced an invited design competition for designing the new headquarters of Magyar Telekom and T-Systems Hungary. In addition to four other architect studios, TIBA Architects Studio Ltd. was also invited to participate.

The Developer prepared a complete design program together with the building’s future long-term tenant. This documentation outlined a built-to-suit project that fully tailored the building to the lessee’s requirements, exactly specifying the lessee’s expectations and needs. According to the call for participation, the aim of the lessee is to provide a single, innovative, and unique main office that reflects the company’s character in the interest of housing the close to 4,500 employees working in six different buildings as of the announcement of the contest.

WING identified two locations: one was the Reno Udvar on Váci út, and the other was the lot in front of Groupama Arena on Könyves Kálmán körút. A total of four design versions were created for the two locations according to two construction models for each.

In the “campus model”, we created a type of group of smaller buildings independent of each other in an airy cluster housed inside an inner park-like area open towards outer public areas.

The other versions were prepared according to the “developer model,” where a single large building integrates the desired functions. In the case of a headquarters of course, size is not the same as scale. The challenge when designing the headquarters was to find the perfect balance between function, the design program, urban architectural challenges, and sculptural elements at the given location.

Extensive studies and assessments made it clear that the solution that has become prevalent among international headquarters is best suitable for providing an office building that meets the lessee’s requirements as well as the flexibility and effectiveness of the office spaces.

The developer and lessee therefore made the decision to build one building at the location on Könyves Kálmán körút. As a result of their decision, the Headquarters of Magyar Telekom and T-Systems Hungary has become the largest office building construction project involving a single building in Hungary.

3. LOCATION

The key factors when choosing the location on Könyves Kálmán körút included good accessibility by public transportation, proximity to the airport, and the prominent position of the site. One of the design factors for the headquarters was to make the building into a landmark in line with the vision of the local building regulations for making the intersection of Könyves Kálmán körút and Üllői út into a gateway to the city.

The plot at the address Könyves Kálmán körút 34-36 was developed during the course of the construction of the Groupama Aréna, with the requirement that any building on it would have to be built in unbroken rows. The regulation intends to ensure that the urban wall already built to the north of the area in question is continued; the regulation allows for buildings up to 45 m high. Despite of the requirement regarding unbroken rows, the district building code requires a visual connection between the stadium and the körút, which was a prioritized design factor for us as well. The local building code requires a 30 m wide pedestrian walkway to be left free along Üllői út leading to the metro station entrance; no buildings, parts of buildings, or anything else located above ground level is permitted to interfere with the view of and access to the Aréna.

According to the call for tenders, the task also extends to the optimal division of the plot in the interest of leaving space for a later construction project to be carried out as a second phase. As we envisioned the main entrance to the headquarters and the city gateway motif to be located on the plot's north side adjacent to Üllői út, the separate plot part was placed on the south side along Albert Flórián út. According to our concept for building on the plot, the space between the headquarters and any new building to be constructed would again provide both a view and a visual connection from the körút to Groupama Aréna, especially for those arriving on motorway M5.

Rendering of an aerial view from the Üllői út overpass

4. THE IDEAL WORK ENVIRONMENT

Concurrently to analysing the selected location, we also dealt a great deal with studying the function.

Since a number of large office building complexes have already been built on the basis of our designs, we collected the most important architectural requirements regarding 21st century offices and headquarters, which we then compared to the lessee's requirements. We found that the person, as the user, had again become the focal point. As a result of the battle to find talented employees, employees in modern offices enjoy flexible working conditions where office workers can choose the most comfortable (and moreover the most effective) method for performing work and are served by various extra services available within the buildings.

As a result of the paradigm shift that has taken place since the beginning of the new millennium, the definitions of both sustainable buildings and a sustainable environment have been replaced by a much more holistic approach. Today, in addition to the building's effect on its environment and its energy efficiency, ensuring the health and well-being of the persons working in the building is also greatly emphasized.

When developing office spaces, Telekom specified from the very start that the new headquarters should be an innovative office building on level with the best in Europe and should offer an ideal work environment. The list of rooms contained a number of special rooms, such as:

- social and recreational areas
- restaurants, cafes
- conference room and meeting centre
- showroom
- running track and rooftop garden
- fitness and wellness centre
- artificial lake, terraces, outdoor workstations, etc.

special technical solutions in the interest of energy efficiency and sustainability:

- energy efficient equipment
- water-efficient sanitary fittings
- selective waste collection
- complex building and energy management system
- irrigation using rainwater and a well
- modern sunshades and acoustic glazing with glare-free shading controllable both individually and centrally
- electric car chargers in the underground garage; bicycle storage and dressing rooms for bicycle riders

The spaces of open plan offices are broken up by communal areas given architectural emphasis and clearly visible from outside (see also: Architectural concept). Although we have provided a smaller number of communal areas adjacent to rationally furnishable office spaces, their total floor area is significantly greater. As a result, they truly play a role in forming office life and space, strengthen the feeling of community, and are venues for informal meetings and consultations. Outdoor terraces are also connected to these indoor spaces to further enhance the user experience. Cafés, the rooftop garden, and the internal green courtyard, which houses three covered outdoor workstations, can be used as alternative locations for working.

A 4G communication network capable of serving more than five thousand users in the building and its immediate environment helps facilitate fully flexible work. The network system even offers fifth generation (5G) connectivity, which is still a novelty everywhere around the world.

Not only does the building provide a wide variety of alternative work solutions, but also devotes a great deal of attention to the regeneration and health of employees:

- The ground floor houses two themed restaurants that support employees in eating consciously and healthily.
- Drinking fountains are installed in strategic locations to urge people to consume liquids regularly.
- The upper level is home to a fitness centre and a sauna world offering a view of the Buda mountains, while the rooftop houses a 200 m rubber running track, a rooftop garden, and outdoor sports equipment, which ensure that employees are just an arm's length away from the possibility of working out and refreshing themselves.
- The basement level offers bicycle storage and dressing rooms in support of those who choose to exercise and use alternative transportation methods; these offer a civilized and safe environment for cyclists arriving to the building. These are key elements to preserving the health of people in the building who perform mainly sedentary work.

All this will also be supplemented with less obvious and conspicuous facilities that motivate employees to exercise. We have used active design strategy that, by way of the building's design, provides a possibility or inspiration for exercising when using the building. By its very nature, a building almost two hundred metres long requires employees to take quite a few steps between the elevator core and their desks. We provide further motivation for moving around by placing printer and copier centres in central locations, which forces employees to make a number of short trips during the day, interrupting their work and getting up for printed documents.

One of the most effective active design method is placing stairs instead of elevators in the lobby, which has to be harmonized with the building's strict access control policy. The locations of the elevator core in the building lobby and the access control gates leading to them are not ideal from the aspect of the stairwells that must be located on fire safety evacuation routes. We wanted to avoid having these stairwells unused, standing in desolate corners of the building during normal operation. Of the five circulation cores used for vertical transport, two allow employees arriving in the basement to take the stairs to the ground floor lobbies. This is possible by physically separating the stairs leading from the basement to the ground floor and from the upper levels to the ground floor: the stairs from the basement lead to the lobby control points while stairs leading from upper levels provide direct access to the outside world. One of the cores also features natural lighting that significantly eases the uncertain, confined mood of escape route stairwells.

In addition to the above, increased amounts of natural light also serve to improve the general well-being of employees, which was an important issue during designing. Natural light is provided not only by the full-height transparent glass wall but also by the selected depth of the building, meaning all workplaces receive primary sunlight. To avoid the excess heating of interior spaces caused by the summer sun while still allowing for copious amounts of natural light, we used special multifunction sun guard coated glass on the façade. The design includes large mullions on the façade and electronically operated interior shades to prevent glare. We also examined the view available from interior areas. Various points along the external façade offer interesting, sometimes unexpected perspectives of the city; the internal façade opens the office spaces towards the pleasant, green courtyard.

Greenery is used as a biophilic design element in a number of interior locations in addition to the courtyards and the roof: the restaurant houses a lichen wall and the lobby includes irrigated plant walls.

Lobby - The plant wall leading to the panoramic elevator

Interior air quality is improved on office levels with the exclusion of materials that include volatile organic compounds (VOCs).

The active climate-control dropped ceilings used in office spaces ensure that there are no unpleasant drafts within the building; all airflow caused by the induction of the necessary amount of fresh air and their speed has been checked and controlled with the use of simulators. Employees can also open windows placed on the external glass wall, allowing them to aerate their offices by natural means as well.

The building has an “Excellent” BREEAM certificate, making it Hungary’s largest office building to do so and also the country’s highest BREEAM rated building on the basis of the more stringent regulations introduced in 2013.

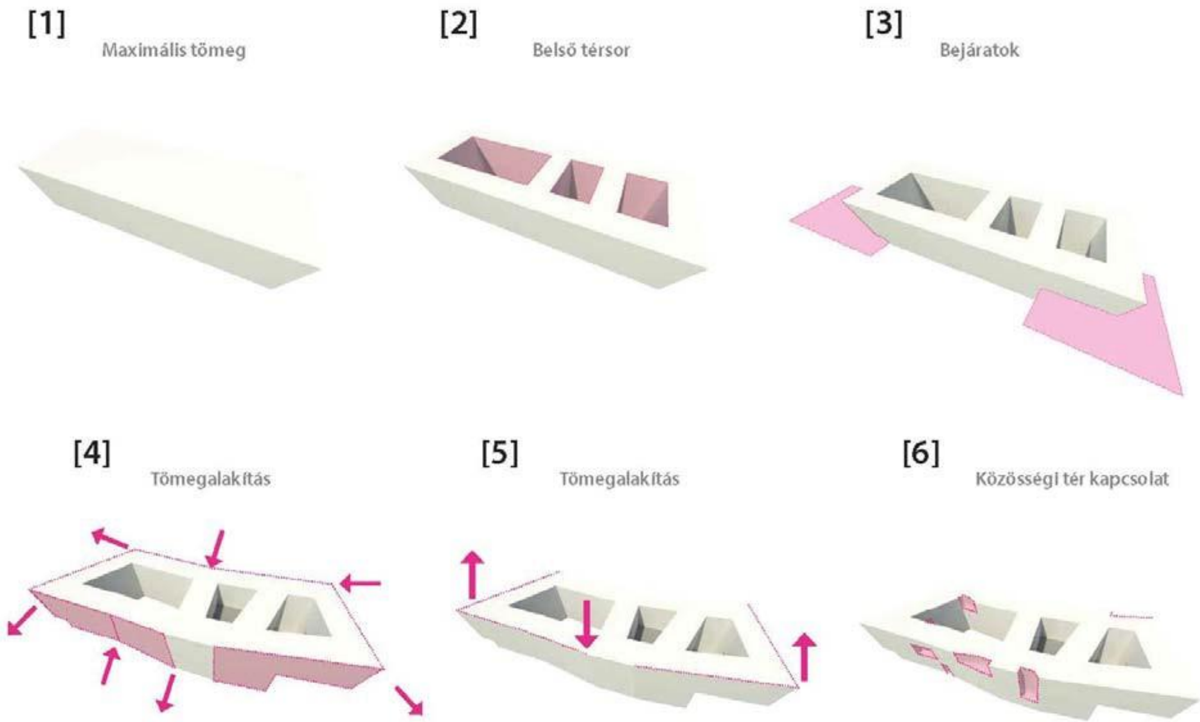
5. ARCHITECTURAL CONCEPT

5.1. MASSING

A building with an occupancy of 4500 persons requires an enormous space to be built up, a huge footprint, and scales of urban magnitude. During the course of planning, one of the greatest challenges we faced was how to handle, divide, formulate, and articulate this enormous mass. How should we form the new headquarters of one of the nation’s largest companies, which signifies a new beginning for both the company and in the life of the capital?

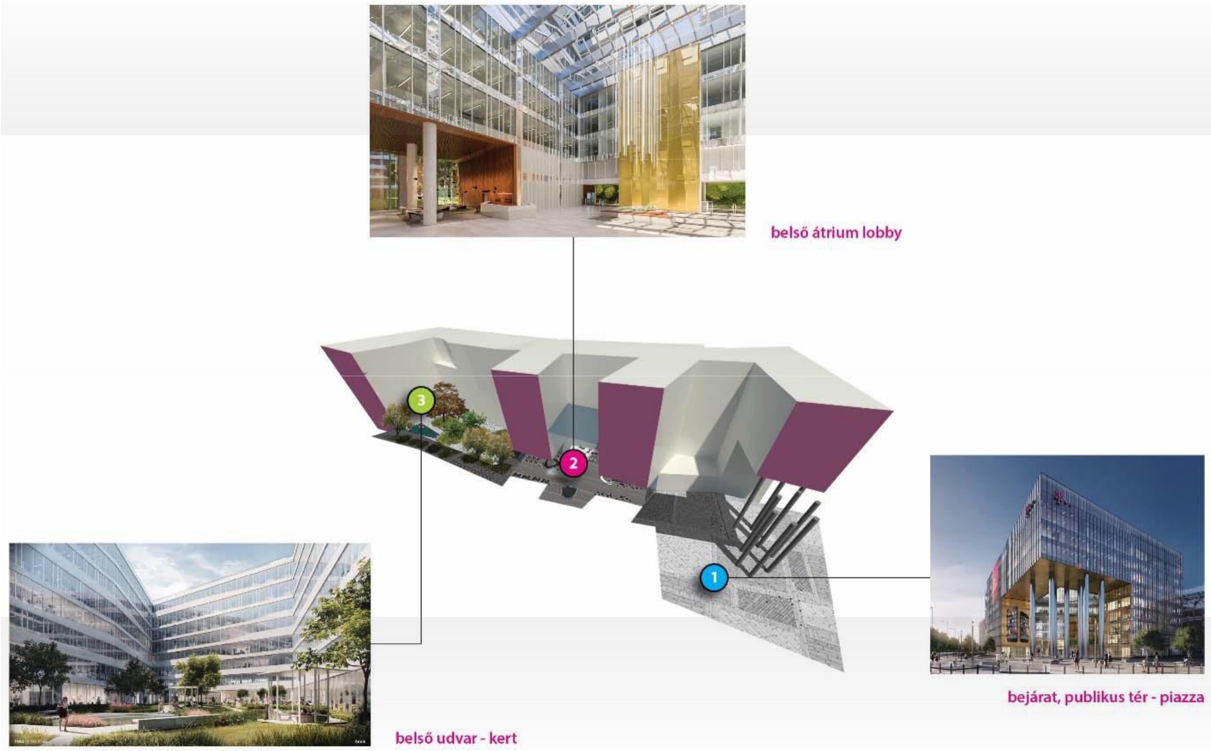
The architectural character of the Telekom headquarters follows a complex concept where the unique nature of the building’s mass and architectural approaches manifesting on different scales both play an important role. Massing is both bound and functional as well as free and artistic, just as the solutions used on the façade and the unique structural and interior design details that call to mind the ornaments used on the façade.

The principles of a Menger sponge / Sierpinski carpet provided inspiration in the conception phase of the design, which were freely interpreted and distorted, and then divided with the use of breaks and cuts. The form we arrived at was then lightened by cutting and perforating the building sections:



In addition to spatial organization, the building’s form was developed by the need to give it a unique character. The vitality and monolithic appearance of the mass alludes to both the building and to sculpture. This possibility for abstraction strengthens the viewer’s perception that the building is more than just an office building and is also an enormous work of art on one of the most important points in the city, as its gateway. The Studio undertook the additional work resulting from this design in the strong belief that it is creating something new and unique. The seemingly irregular rhythm of acute and obtuse angles is enriched by the irregular composition of crystal-surfaced notches. The trapezoidal shape of the internal courtyards and the breaks on the surfaces enhance the feeling that this mass is an abstract, sculpted sculpture.

The mass was finalized by enclosing three differentiated courtyards with different designs and functions. The design program circled around the following series of three courtyards: public - semi-public / semi-private - private:



The courtyards delineated by the building: Arcade – Atrium - Garden

- The main entrance area on the corner of Üllői út and Könyves Kálmán körút was enhanced to form a 6-storey high space with an arcade. This ensures that visitors arriving from the direction of the airport are greeted with a view of an actual gateway to the city, while foot traffic is provided an entranceway connected to a large, public, urban area and the underground entrance.

- We stretched, distorted, and formed both the internal, enclosed courtyard and the public arcade until we arrived at the spatial proportions we consider ideal. That is how the smaller, more enclosed courtyard developed in the centre of the mass's gravity, which became suitable for including central division: an atrium covered with a glass roof, which is typical of headquarters. Most of the social functions are connected to this covered atrium located in the very heart of the building; most of the building's areas are accessible from here, and the vertical circulation cores connecting the office levels, including the panorama elevators, are linked to this space.

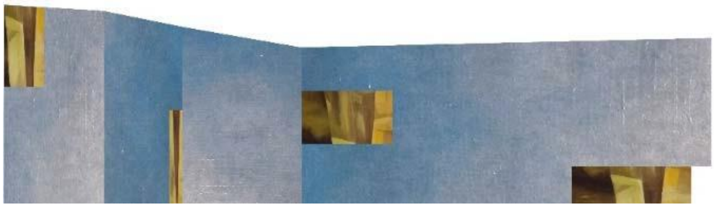
In the interest of providing for the utility of the office spaces, for efficient internal office relations, and to allow people to walk around, the sponge-like holes in the concept design were toned down to be notches on the façade. The office's social and recreational areas are housed behind these crystal-like notches, which allow the internal functions to make their affects felt on the façade: they are quite apparent from public areas, as well.

5.2. FAÇADE

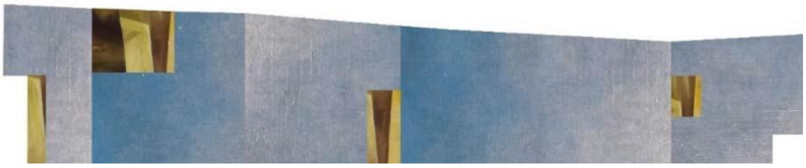
Ensuring the transparency of the building was always a primary architectural goal. By making the glass surfaces of the facades transparent, the monolithic mass is visually open, transparent and translucent. The fact that glimpses of the internal courtyard can be caught through the façade and the crystal-like glass surfaces emerging from the enclosed mass aims to strengthen this feeling of transparency. The enormous glass surfaces and openings also facilitate in connecting the internal areas with the outside environment.

Könyves Kálmán körút façade

Üllői út façade

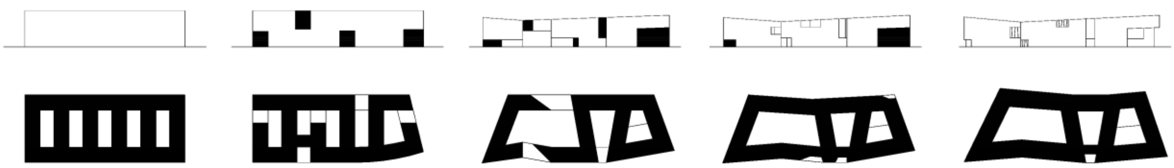


Albert Flórián út façade

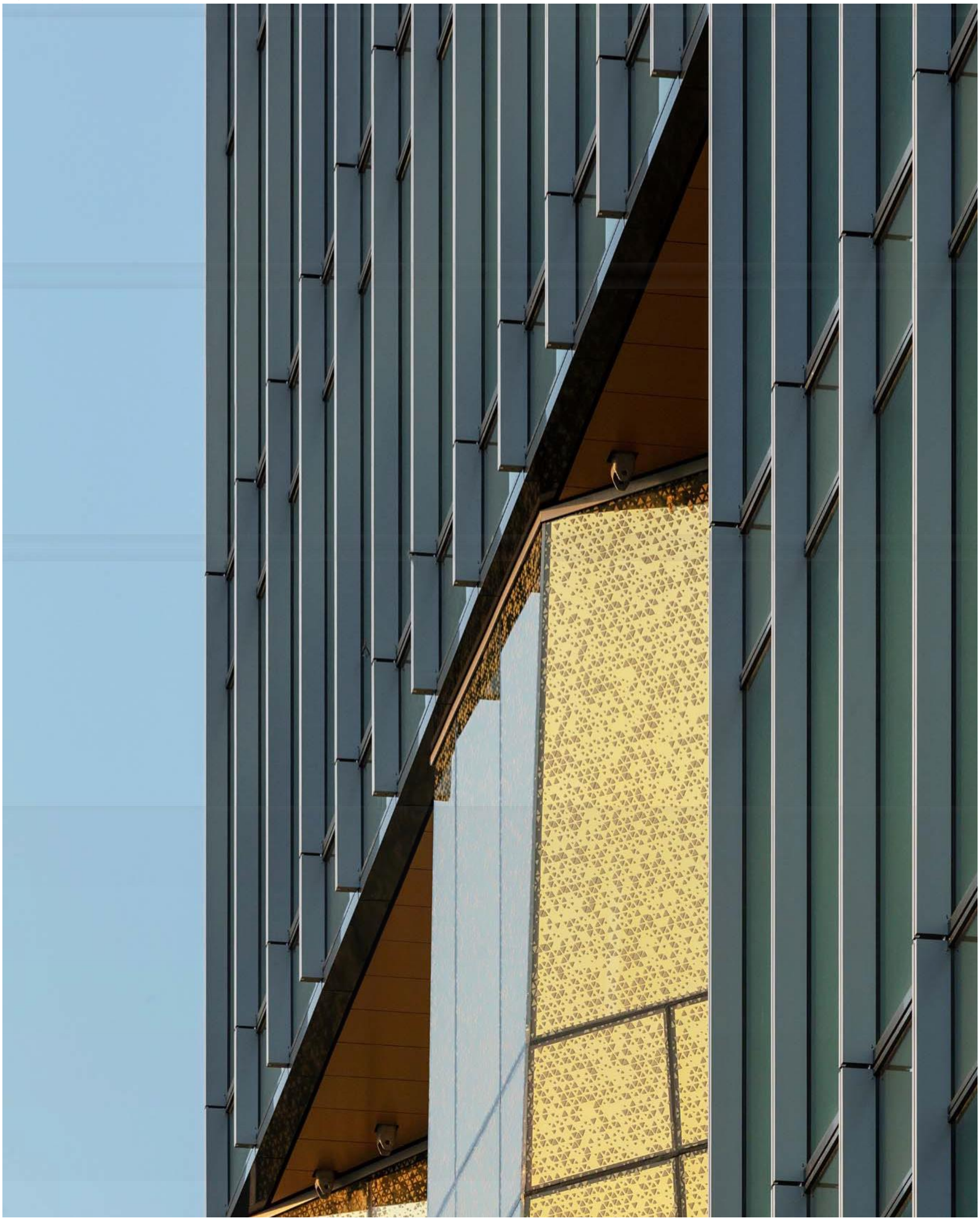


Façade facing Groupama Aréna

The simplicity of the general façade surface also aims to strengthen this feeling. The homogeneous surface emphasizes the crystal-like indentations and provides a uniformity of the mass. These indentations are made at the inflection points and in certain parts of the lower and upper surfaces. The broken surfaces allow the breaks in the surfaces to remain, calling to mind the nature of the indentations on the façade. The crystal forms of the framed indentations, the “gems”, occupy their positions while strengthening the cutouts on the large façade surface. The remainder of the glass-walled façade functions as its background.



While the connected surfaces gently modulate the urban wall, the cantilevers indicate the entranceways leading into the building. The arcade behind the main entrance, the gold surface that turns inwards behind it, and the dark negative mass of the courtyard, appearing as a recess, form a separate spatial composition. Together with the mass of the conference centre, the entranceway’s urban wall under the arcade creates a special junction that moves away from the frames and delicately transitions the masses. The large opening is at the edge of the whole of the building.



Façade – Detail

When examining the order of the façade, we came to the conclusion that a simple geometric grid system that follows the office internal division is the best to create a harmonious mass.

The curtain wall's vertical mullions also play an important role, as the mullions seem to close when viewed from the low vantage point of the cars driving by on Könyves Kálmán körút, making the general façade appear like a homogenous surface.

On the surface, the gold indentations provide the form that is also apparent in the lobby's glass ceiling and in the internal design (e.g. KAZA surfaces in the entranceway lobbies, prints on glass surfaces, the atrium glass ceiling, interior design graphics, etc.); this surface structure is thus also prevalent in other parts of the building in different forms and on varying scales.

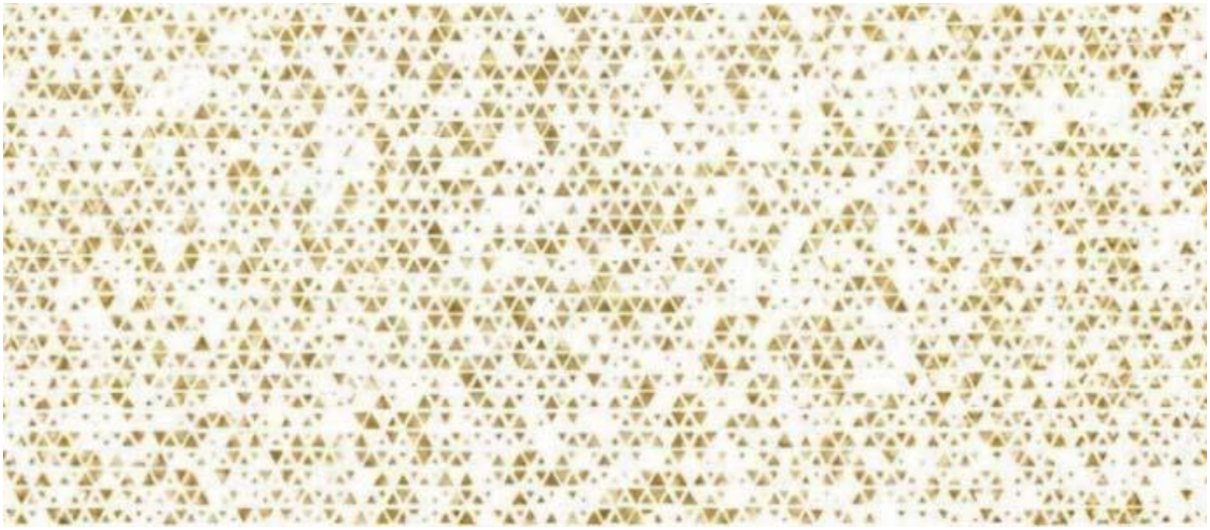
5.3. INTERIOR DESIGN - PATTERNS

When developing the common areas, the developer, as the owner of the building, gave preference to ensuring that the building maintained its value, to timelessness, and to elegance. In addition to the lessee's unique "brand" elements, the design also includes architectural style elements characteristic of Tiba Studio:

- The patterns on the safety film on interior glass surfaces
- The gold, crystalline surface of the elevator core
- The unique KAZA concrete surfaces in the lobbies and high-traffic areas designed by the Studio specifically for the building (KAZA Tiba Collection)
- atrium glass ceiling, etc.

Main entrance - reception desk, with the KAZA TIBA Collection concrete surfaces behind it

KAZA TIBA Collection concrete surface – Detail



The patterns on glass surfaces

We had to take into account the needs of a number of parties when designing the interior areas. In line with the strategy laid down with the lessee, the office spaces were developed to be people-centered, flexible in both space and time, and suitable for accepting a large variety of furniture. Colours were used in interior design only for common, informal, and recreational areas, including those used for more relaxed work processes.

The other large challenge of interior design was the optimization of the building engineering system and the related architectural and acoustic design of the dropped ceilings. The general contractor was adamant about designing and installing an economical and efficient heating and cooling system that is able to meet the strict comfort parameters specified in the requirements. As a result of long and thorough research work, simulations, and the construction and analysis of sample structures, an active climate-control dropped ceiling design was found to meet these needs. As the lessee’s requirements emphasized insuring acoustic comfort, we designed an efficient dropped ceiling system as well as sound absorbing room acoustic surfaces that allow for the installation and effective operation of climate-controlled panels.

The dropped ceiling was distributed in line with the secondary raster defined by the climate control elements as well as the façade raster so the internal dividing walls can be flexibly integrated into the system.

6. SPECIAL SOLUTIONS – TECHNICAL DETAILS, DESIGN METHOD

6.1. TECHNICAL IMPLEMENTATION OF THE FACADE

The basic requirement for the building's architectural concept was to provide an entirely transparent façade with unbroken glass surfaces from the ground level to the dropped ceiling. We included windows that can be opened on a surface equal to 1.5% of the office floor area. These windows provide natural ventilation and are installed with window restrictors to prevent accidental falling.

The building's glass structure extends upwards beyond the building mass and defines the façade's upper contour as a kind of false front. This also serves as a fence and cover for the functions (rooftop terrace, building engineering equipment) planned for the roof.

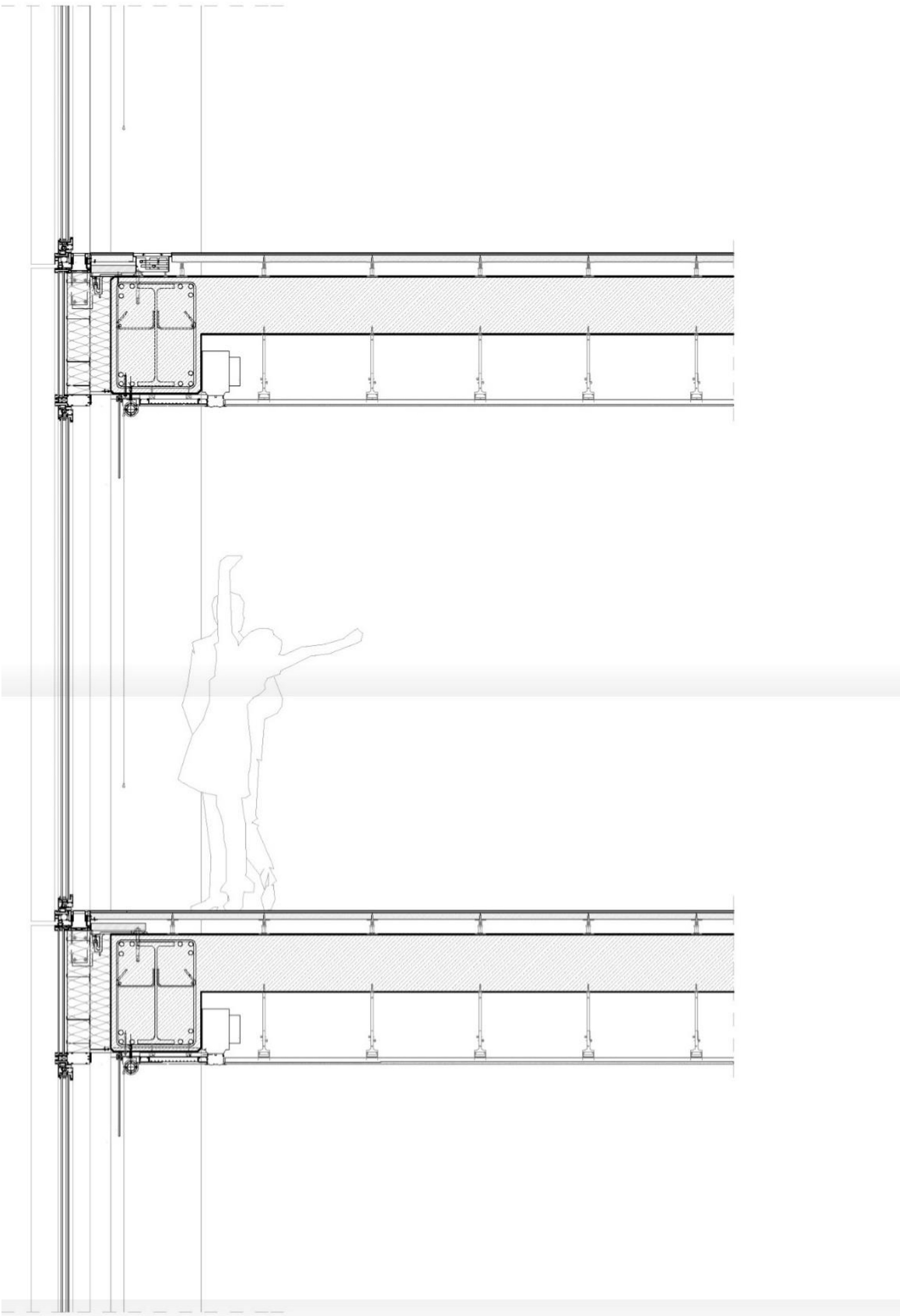
A very important requirement of the façade design was to ensure suitable acoustics and sound insulation. The intersection between Könyves Kálmán körút and Üllői út is one of the busiest in Budapest, meaning there is a great deal of traffic noise. When dimensioning the soundproofing of the façade, we examined the various façade surfaces both horizontally and vertically and naturally took into account the acoustic requirements of the interior functional spaces planned to be housed behind the façade. Based on these measurements, we defined 4 different sound insulation glass structures between 32 and 41 dB.

In line with the lessee's requirements, we planned P4A MABISZ certified safety glass on the ground floor.

The solar protection of these enormous glass surfaces was an important design factor. Solar protection is provided by a double structure. Based on a detailed solar exposure study, glass with a multifunctional solar protection coating was designed on areas exposed to the sun to provide 60% light penetration and a 28% solar factor; glass surfaces facing north and not directly exposed to the sun use Low-e coated glass without solar protection. In the case of facades exposed to the sun, electronically operated interior shades were planned to prevent direct sun glare; the shades can be operated and moved both centrally and separately for each office in line with the respective needs. The outer surface of the shades is covered with a reflective material to effectively reflect sunshine.

When selecting the façade system, a primary requirement was the ability to allow for fast and effective implementation; due to the enormous size and the tight construction deadlines, we designed a façade system consisting of prefabricated elements. At the same time, we needed a system that is suitable for keeping track of the heat currents and dimensional variations resulting from the building's size and structural design. The façade consists of one story-high modules hung on and attached to the edges of the slabs. This type of façade system is very sensitive to shape shifts and sagging in the recipient supporting structure, i.e. the edges of the slabs. As a result, the deflection requirements specified for the reinforced concrete structure are more stringent than usual. This required reinforced structural solutions. In most places, it was sufficient to strengthen the steel reinforcements in the edge beam; additionally, locations with special geometric characteristics required the inclusion of stiff steel inserts. In the case of the "bridge structure" spanning the arcade, suspended steel bars ensure that the edges of the slabs retain their shapes.

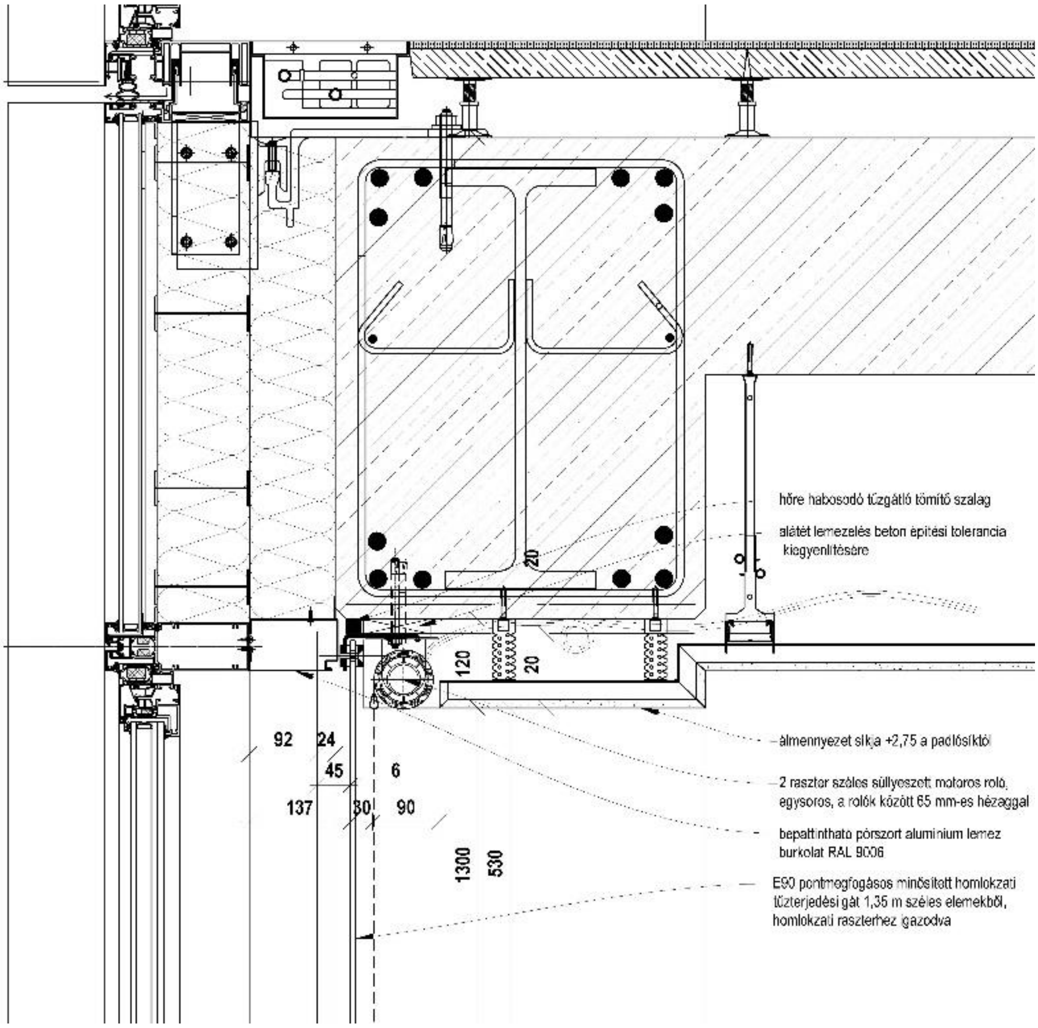
Due to the geometric design and in the interest of their differentiated appearance, the crystal elements in the façade notches were designed with a curtain wall appearance with structured glass that differs from the main façade. Its special appearance is provided by both the gold-colour solar protective coating on the glass and the pattern digitally printed onto the glass.



External façade – General office level - Detail

6.2. FAÇADE FIRE BARRIER

One of the greatest challenges faced when planning the façade was developing the façade fire barrier. According to the fire safety requirements, a façade fire barrier has to be developed between the floors or a certified extinguishing system has to be installed. Of the extinguishing systems available in Hungary as of the time of construction, there is only one that has the necessary certification; however, as it cannot be integrated into the façade system in question, we set out to find another technical solution. The traditional architectural solutions (the use of fire-resistant reinforced concrete or a built parapet wall) could not be adjusted to fit the architectural concept of building an entirely transparent façade.



The unique certified glass structure of the façade fire barrier – General installation detail

We therefore designed an innovative, novel structural approach. The basic idea lies in extending downwards the edge beam running along the edges of the slabs with a suitable, certified glass apron wall, thus allowing the apron wall and the edge beam to jointly function as a fire barrier. The final structure was developed as a result of a long planning and research process. It included using a fire simulator to examine the actual heat affecting the structure in case of a possible office fire. The actual fire safety requirements of the apron wall were determined based on the results of the fire simulation and after consulting with our fire safety expert as well as the experts at the competent fire department. Finding the appropriate glass structure and the necessary certifications was possible with the participation of our glass structure consultant. As a result, we managed to create a unique, elegant, suspended, frameless, point-fixed, clear, entirely discrete façade fire barrier structure.

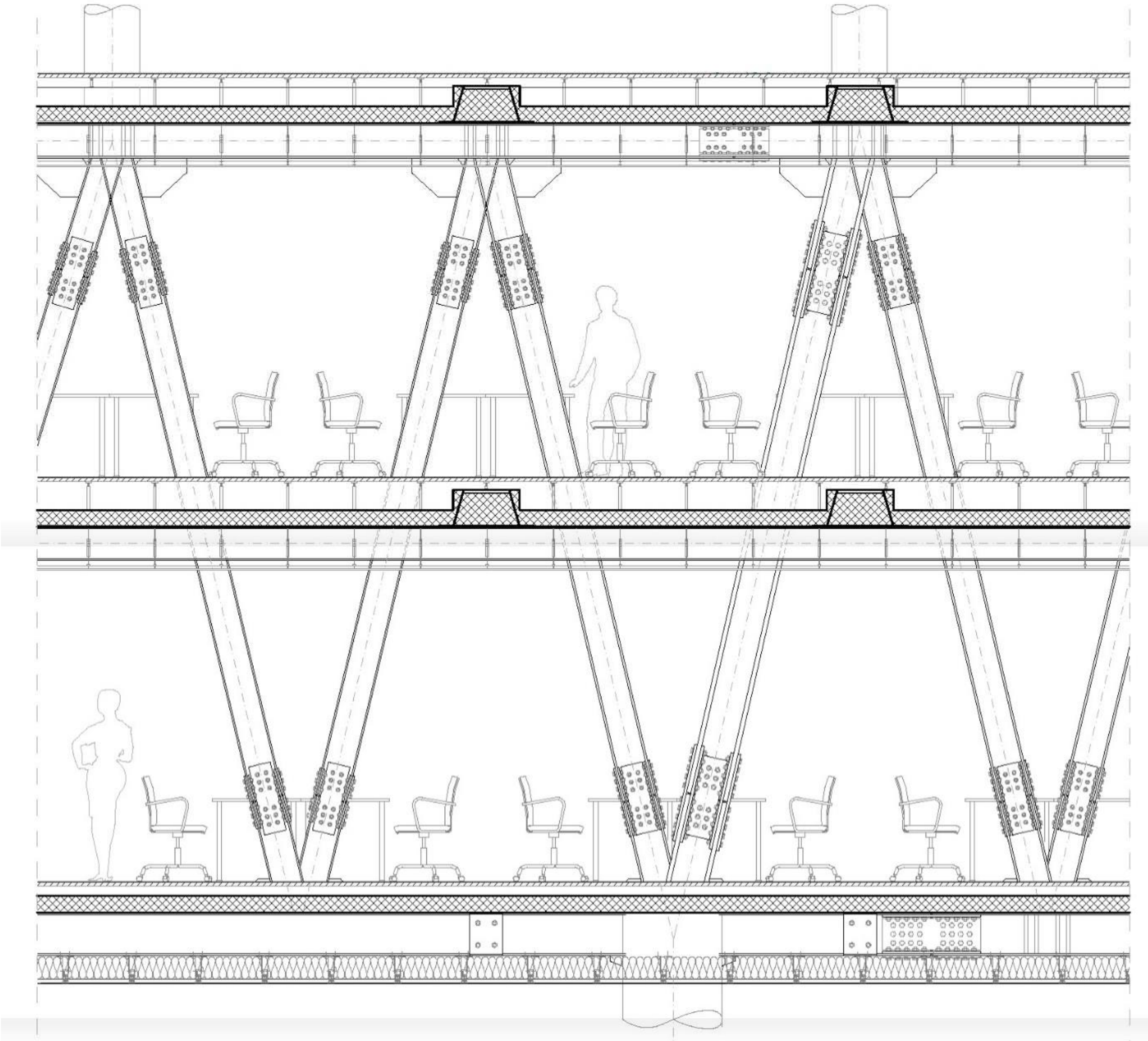
The installation of the point-fixed glass structure, fastening it to the reinforced concrete edge beam, and the connected structural elements (the modular façade system on the external surface and the shades and the climate-control dropped ceiling on the interior surface), as well as the connections for the floor convectors to be installed in certain locations on the next floor posed an additional engineering and architectural challenge.

The unique certified glass structure of the façade fire barrier in the "bridge" area with its gold-coloured suspension rods that serve to limit deformities in the ceiling edge.

6.3. ARCADE - BRIDGE STRUCTURE

The building's main entrance is indicated by an upward opening arcade at the corner. This enormous gesture gives the building strength and a feeling of monumentalism while forming an area in front of the building and the stadium that has a lot of character. The upper mass was originally envisioned as a cantilever but was subsequently modified to held by seven randomly placed pillars. An important design factor was to ensure that no column was to stand at the edge of the building mass terminating at the height of the 6th floor, and that they should not indicate any specific direction. We wished to use this solution to strengthen a feeling of floating.

This architectural vision required a complex supporting structure solution. Statically, two bridge-like structures connected and supported at the building's corner had to be designed. Due to the spans, we needed at least floor-level high beams that, if built from reinforced concrete, would significantly limit the utility of the interior.



The design for the arcade steel bridge structure - Detail

After a lengthy spatial development, implementation period, and cost optimization process, we decided to use a hybrid structure. The main supporting structure is a two-storey high truss pair on each side, onto which over hanging beams were laid perpendicularly, extended as cantilevers in the direction of the facade on both sides. The beams of the trusses lay along the lines of the workstations in the offices, meaning the standing and upside-down V shaped steel structures on the 6th and 7th floors are located in the line of tables, leaving areas for chairs and passageways free. The trusses connect to reinforced concrete shear walls at the edges of the building. The truss intersections located at varying positions at the building corners are supported by circular reinforced concrete pillars. This leads to the seemingly randomly placed columns. The areas between the steel cross beams are 15 cm thick reinforced concrete plates.

Architecturally, it was necessary to ensure that the 85 cm thick slab stripe visible along the façade is no thicker in this area either. This is a challenge in the case of a steel structured system that basically consists of main beams and ancillary beams stacked on each other, which was solved by including Peikko steel cross beams. This approach is special because the Peikko beams support the reinforced concrete plates while their lower edges coincide with those. The third level of the bridge structure is a reinforced concrete structure with traditional pillar distances where two rows of pillars run along the line of the trusses in the interior of the building.

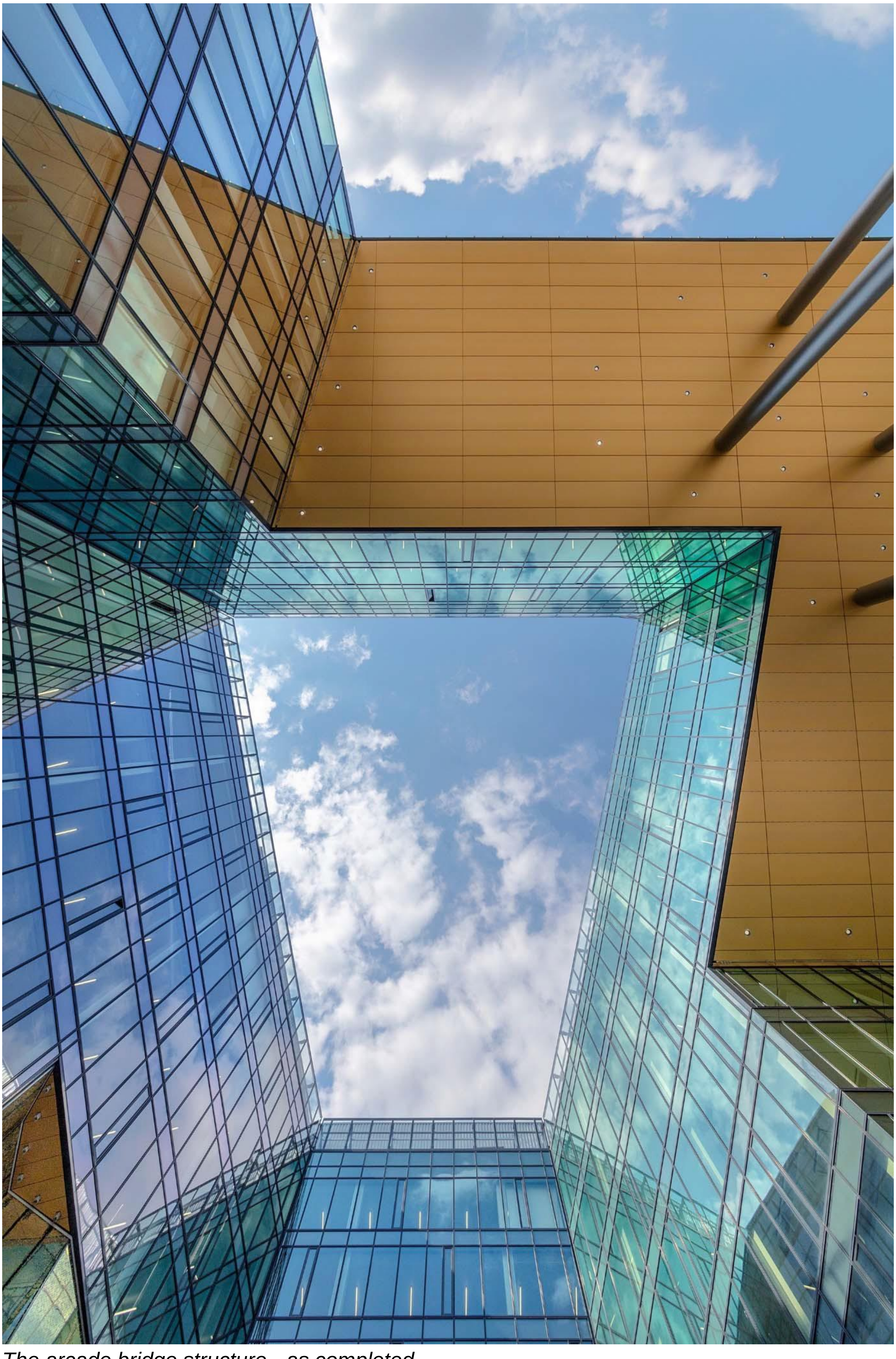
Similarly to the lower levels, the ceiling with its lattice of reinforced concrete beams extends past the building's outer surface in the form of consoles. To ensure that the console edges of the three levels move together and meet the strict sagging criteria for the glass wall to be installed upon it, the edges of the ceiling are joined together with steel threaded rods and suspended from the highest ceiling edge.

The arcade bridge structure during construction

The seven reinforced concrete pillars supporting the bridge were made with the use of a spun-cast prefabrication technology, allowing us to reduce their diameter to 80 cm. During planning, an important requirement was the ability to construct the elements quickly. The trusses were assembled in the air, on which semi-prefabricated ceiling plates were placed. These were used for building the remaining levels, which enabled the contractor to avoid building costly and time-consuming heavy-duty scaffolding.

The arcade bridge structure during construction

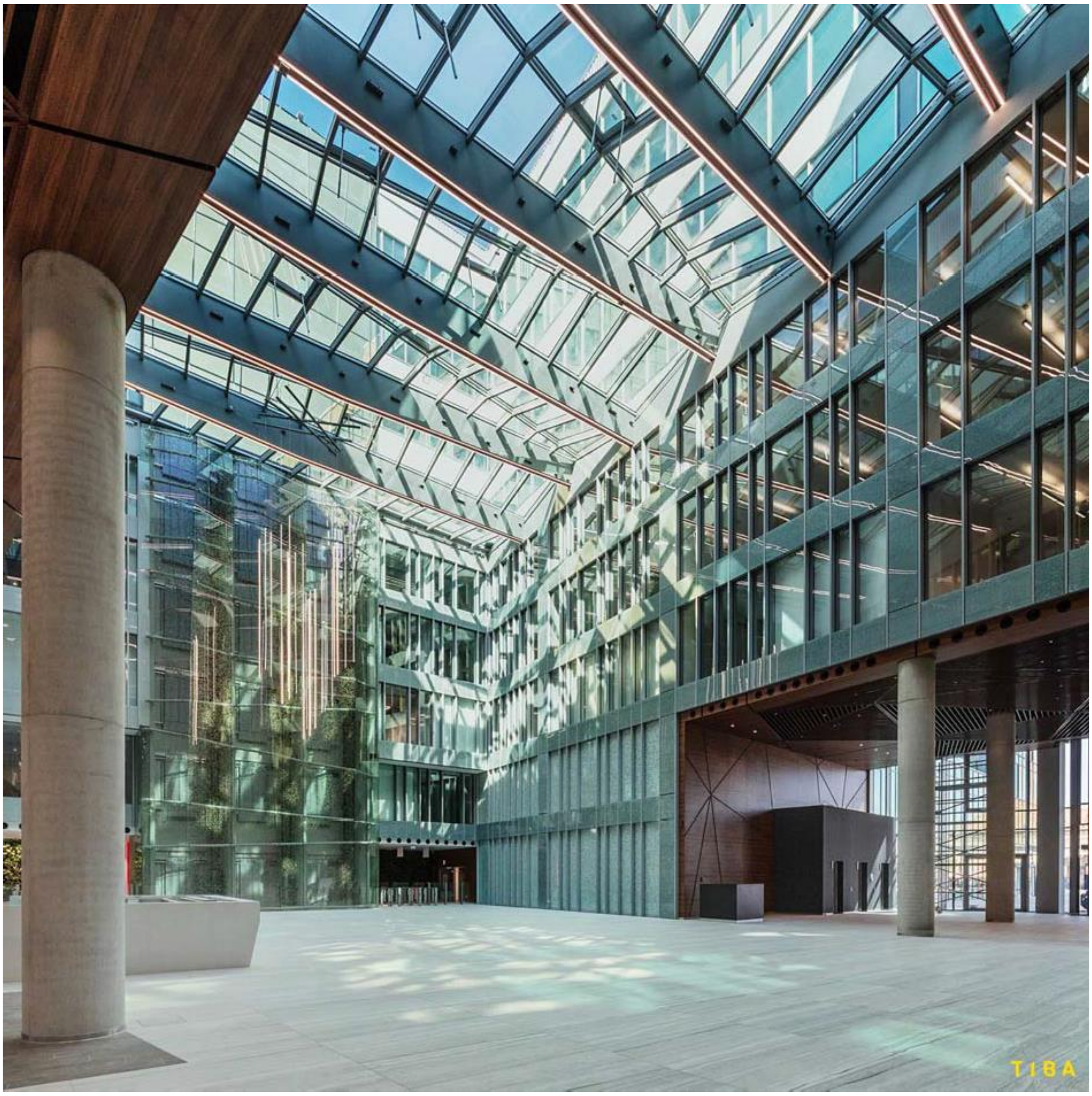
The office space developed in the arcade bridge structure - detail



The arcade bridge structure - as completed

6.4. ATRIUM

Due to both its scale and the number of people using it, a building of this size is comparable to a small city. Therefore its logistics have to be figured out in detail to ensure it can operate smoothly. Checking visitors and access control, important from the aspect of security, is provided both at ground level (the same level as public transportation) and in the lobbies for people arriving from the garage via the guest elevators. After the access control gates in the lobby, four elevator cores and five stairwells in the center of gravity provide for quick access to all parts of the building. In case of an emergency, safe evacuation is provided by five emergency stairwells, of which two have one emergency elevator each. Freight traffic in the building is serviced by two 2,000 kg elevators also suited for passenger traffic. Of the freight elevators, the one in the northwest wing is connected to the loading bay in the basement. The temporary warehouse for packages and lunch deliveries delivered to employees by courier will be built next to the lobbies.



Atrium, main entrance lobby, crystal-structured glass ceiling and panorama elevator

The ground floor houses the most important social areas, some of which are open to visitors.

The functions found on the ground floor are located along the line formed by the three courtyards - as explained in connection with massing. Visitors and employees arriving via public transportation enter the main entrance lobby and the adjacent atrium from the urban area under the arcade; those arriving by car enter from the underground garage and pass through access control.

Access control and directions are provided by the reception located in the lobby. (Visitors arriving from the direction of Albert Flórián út can also enter the building via the smaller "B" lobby located at the building's southern end.) The central atrium connected to the main lobby provides access to three additional elevator cores leading to the office areas. Of these, one is the panoramic glass elevator; when in operation, this also acts as a kinetic sculpture and fills the atrium with its continuous vertical motion.

Atrium glass ceiling with ornamental lighting

The trapeze-shaped central interior atrium is almost 20 m high and has two two-storey expansions: one is the main entrance lobby and the reception located in it, and the other is the guest café and social area overlooking the internal garden and courtyard.

The atrium and the connected functions available to outside visitors strengthen the customer-centric and open service provider image: it is a location for business and informal meetings, discussions, exhibitions, group events, etc.

The atrium (and lobby "B") provides direct access to the two restaurants located on the side facing the stadium. Both have connections to the outdoor garden and area: the large restaurant has an outdoor terrace on the inner courtyard and the smaller restaurant has one in the back garden.

A 300-seat conference centre is located on the Üllői út side, which is accessible directly from the atrium and from the outside public areas. Thanks to moveable walls, the larger and the two smaller conference rooms can be used flexibly both separately and together.

The atrium also opens to an exhibition area that serves the representative purposes of

Telekom.

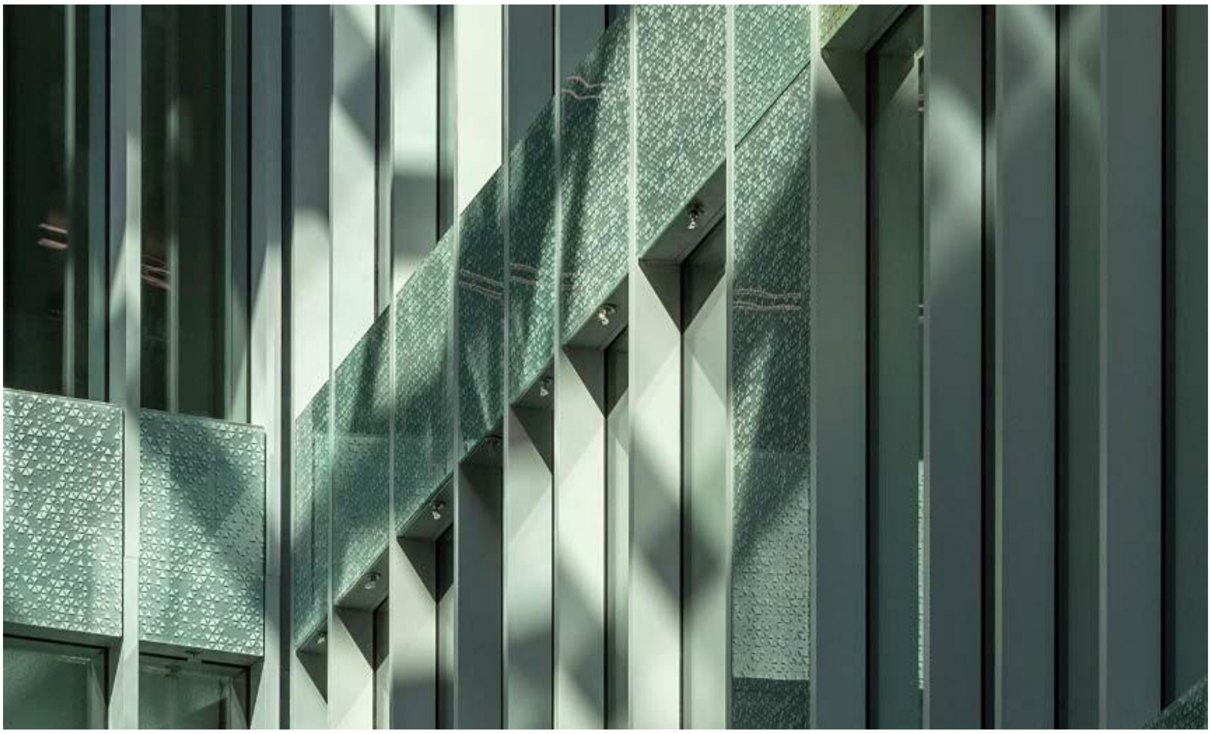
The wing facing Könyves Kálmán körút includes meeting spaces containing a fifth of all the meeting areas in the building. This allows employees to greet their guests under dignified circumstances and is easily accessible from the outside. Naturally, these are accessible from both lobbies and their windows face the street and the internal courtyard.

The atrium's glass roof also mirrors the forms of the crystal structure used on the building's façade. Its final form was developed as a result of a lengthy process and was created by cutting regularly modulated triangles.

In this case, it is the trapezoidal geometric shape of the atrium floor plan that results in the cut. The diagonal beams running in various directions and the horizontal ridges that are angled compared to them create a repetitive rhythm. This means the form is not directly an enlargement or reduction of the façade crystals; it is only the principle of the design, composition, and cut that are the same.

6.5. TECHNICAL IMPLEMENTATION OF THE ATRIUM'S INTERIOR FAÇADE

The spacious lobby is connected to the office spaces on the various levels with a multi-storey interior glass curtain wall. Since these walls form fire compartment boundaries on each level, we had to provide fire protection of both sides of the otherwise traditional curtain wall. The fire safety system was designed with the application of a certified sprinkler system. Regarding this solution, the challenge lay in working out a design that ensures that the sprinkler system was hidden to the greatest possible extent. That's why we designed details integrated in coverings that hide the sprinkler system's pipelines and also provide a uniform interior façade surface and a sculptural appearance.



The integrated fire safety system on the internal curtain wall - sprinkler heads on the external wall facing the atrium

6.6. BIM-BASED PLANNING

The Studio considered the possibility of using a building information management methodology as part of the project's design process while performing its duties as general designer to be a great opportunity for advancement and an exciting challenge. To ensure design quality and to support coordination tasks, design checks, documentation, and technical planning coordination we used BIM-model.

Instead of the traditional method of exchanging emails and 2D designs and talking over the phone, day-to-day communication with technical designers involved the transfer of 3D models and examining them during video conferencing. The extensive use of 3D models in all technical fields and the easy visualization of information greatly facilitated understanding the interconnection of designs and the various systems both within the design team and between the technical designers. The operation of the model as a database was a great supplement to this approach, which helped the efficient use of office resources to a greater degree than expected.

For example, adding new resources to the project becomes much quicker when information does not have to be transferred by traditional methods, as everything necessary is included in the model and information loss is reduced to a minimum. During the course of the design process, information is collected in one location; if the designs are amended, all related annotations, consignments, and quantitative records are also amended. This is naturally the ability of modern software, but it only functions correctly if the model is consistently used to store all information.

Since the main contractor's construction, implementation, and design works took place concurrently, the necessity to optimize the various design options in a cost effective manner and in a manner that meets all applicable requirements became a priority; this was possible by the wide-ranging model-based examination of possible consequences. The various simulations, such as the dimensioning of the reinforced concrete and steel supporting structure, the fire safety dimensioning of various structures, and checking heat and smoke exhaust and evacuation were all performed with the use of models. For technical reasons, the technical designers carried out these steps with the use of different models and with remodelling on the basis of the BIM model. With the development and spreading of IFC, all these functions are expected to be supported by a single model. Due to its comprehensive nature, the BIM-based design process is more time consuming at the outset than what projects with traditional structures and schedules allow, which is why it was necessary to start developing the building information model in the building permit phase (and in fact, even before!).

Axonometric longitudinal cross section through the courtyards: Arcade – Atrium - Garden

In the case of an office building such as this one, ongoing changes submitted by the developer and the tenant up until the time of handover are expected; in the case of traditional projects and a traditional contractual environment, these can be performed with only significant amounts of additional work, mutual concessions, and deadline extensions. In addition to continuing development in building information model-based planning, that is why TIBA is committed to examining and preparing for the future application of Integrated Project Delivery (IPD), which is often used in America and Scandinavia but so far has only been used in Hungary in experimental environments. In an IPD project, ensuring quality and creating value is at the centre of the project, primarily in the interest of realizing the customer's goals. All involved parties participate in the design process from the very outset and work together to achieve the goals; they all reap the benefits of the financial advantages provided by efficient design processes but are also liable for the inherent risks. In such a project, the close cooperation of the parties plays an important role, which is not possibility without effective building information management.