



KRAKOWSKA AKADEMIA

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**PROJECT OF THE DEVELOPMENT OF ZABŁOCIE
BOULEVARDS WITH AN EXPERIMENTAL PROJECT OF THE
OFFICE, SERVICE AND SPORT COMPLEX**

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Introduction – motives for undertaking the design topic

As part of my master's thesis, I decided to take up the topic of reorganizing public spaces in the Zabłocie district in Krakow. The focus of attention on this area of the city results from the fact that during the past 5 years of studying at the Krakow Academy, I had the pleasure to get to know the structure of this district, its possibilities, potential, architectural and landscape values. I also got to know the threats and weaknesses of the studied area.

In getting to know Zabłocie, I focused primarily on the critical observation of public space. From the point of view of the inhabitant, this is an extremely important point in the functional program of each district, because public space surrounds us every day. However, we cannot only limit its definition to attractively designed parks, city squares and streets. Public space is also any place accessible to the public, where any of the city's residents can find themselves. Observing the values of the above-mentioned public spaces in Zabłocie, an image of mediocrity and mediocrity emerges, and the dominant function is subordinated to cars. This is incomprehensible, as in recent years Zabłocie has become an area of exceptionally intensive residential development, around which the space should serve to improve the quality of life of residents and to establish and develop social relations. In order to solve the above-mentioned problems, I decided to make an architectural and urban intervention

1. Public space

1.1. Definition

Bearing in mind the public space, which is an inseparable element of the structure of each city, the Act on spatial planning and development of March 27, 2003¹ speaks of the area "of special importance for satisfying the needs of residents, improving the quality of their lives and fostering social contacts. due to its location and functional and spatial features". The very wording of the act defines very precisely the basic function of public spaces as places that enable and provoke interpersonal interactions. Establishing new neighborly ties affects our well-being, is able to evoke positive emotions and makes us want to stay in a given

¹ Ustawa z dnia 27 marca 2003 r. o planowaniu i zagospodarowaniu przestrzennym

place. A well-designed and defined space between buildings therefore affects the quality of our everyday life.

An important element that influences the perception of space is whether it attracts people and determines them to be active. At this point, we can say about the social space², i.e. the one that prompts residents to extend their contact with itself and with other people staying in it.

Jan Gehl in his book "Life between buildings"³ raises the social aspect to the rank of one of the most important components of a well-designed public space. He notices that the possibility of experiencing contacts with other people gives an extremely attractive opportunity for stimulation. He juxtaposes it with communing with buildings, i.e. inanimate objects, which rarely evokes sensations in us. On the other hand, when the inhabitants of a city or district move among the presence of other people, then none of the moments of communing with the urban space is close to the previous or the next. The number of stimuli we experience is unlimitedly rich. This illustrates how important the human subject is in the process of architectural and urban design, and the buildings themselves, no matter how diverse and colorful they may be, are not able to replace our experiences related to interpersonal contacts. It shows what the main emphasis should be when making design decisions.

Namely that life between buildings has a much greater impact on the perception of what is a good example of architectural planning than even the most breakneck attempts at sophisticated combinations of steel, reinforced concrete and glass. What's more, Jan Gehl emphasizes that through design activities, we can create favorable or negative conditions for activity in public space, and thus, we can create cities full of vibrant life or completely devoid of it.

1.2. Problems of contemporary urban planning

Unfortunately, the observed reality of the developing Krakow in previously unurbanized areas is quite different from the one given by Jan Gehl as an example worth following. The dominant feature is multi-storey buildings with the maximum building area permitted by the construction law and the spatial development study. Monotonously functional, with numerous areas for car parks and greenery, limited only to the decorative function of huge residential structures.

² <https://pieing.cafe/wp/przestrzen-i-kolor/>

³ Jan Gehl „Życie między budynkami” patrz str. 21

Moreover, the space between the buildings is dominated by intense car traffic and is completely subordinated to it. In this type of district, the example of which, every year, Zabłocie is looking for people in vain. We mainly see buildings and cars. Pedestrian traffic is limited only to the necessary activities, i.e. moving from point A to point B as quickly as possible, without any desire to stay in a given space for a longer time.

What's worse, public spaces subordinate to cars are inhuman and anonymous. In such conditions, we feel that we are not welcome in public spaces, and instead of going outside and spending time with others, residents prefer to stay in their own apartments, in front of a TV or computer screen. This way, housing estates are created as a city of bedrooms, the function of which is limited only to providing accommodation for their residents.

1.3. The importance of greenery in the city⁴

It is known that the city is a very complex organism, the functioning of which consists of many dependencies. The conditions in which we live are the result of the way of organizing the spatial arrangement specific to a given district. The degradation of the natural environment in favor of galloping urbanization of the areas destroys ourselves. Unfortunately, new investments rarely include green areas. Old, neglected, biologically active spaces are replaced with new, much smaller greenery, with no possibility of development and expansion. A common process is cutting mature or old trees only so that their root systems do not interfere with the newly designed investments. Their places are, of course, replaced by new, young trees, but many years have passed before they grow to the state of those cut down. The observations show that there are less and less green areas in Zabłocie. The districts are covered with a sea of concrete, and the exorbitantly high prices per square meter of new apartments make developers maximize the development of all available spaces.

Meanwhile, a healthy urban organism needs green areas. Numerous squares, parks, green alleys and squares shaded by healthy and mature trees are an extremely important element without which healthy human functioning cannot be imagined. Moreover, scientific research confirms that creating more and more new green areas has a positive effect on public health. Numerous voices of residents in debates and discussions on spatial planning, as well as the multitude of projects

⁴ <https://pieing.cafe/wp/zielen-to-wiecej-niz-myslisz/>

proposed to the civic budget, assuming the creation of new park spaces, show that the residents want numerous squares and parks to be located in the vicinity of their place of residence. Research shows that frequent green areas and communing with nature improves our well-being and increases our concentration. These are very important aspects when talking about the quality of life of a society living in urban organisms.

In addition to the above-mentioned advantages of green spaces in cities, tall greenery can also provide a very good acoustic insulation, eliminating the need to use traditional acoustic screens of very dubious architectural beauty. Depending on the density and size of the trees, it is possible to significantly reduce the noise coming from, for example, large urban communication arteries. One of them is, for example, ul. Gustaw Herling-Grudziński, running through the center of Zabłocie. Even ornamental shrubs or tall rushes can provide a fine but very beneficial sound barrier.

Additionally, green areas reduce the more and more frequent effect of the "urban heat island", which is the result of excessive overheating of urban areas. Thanks to the trees in public spaces in the city, in summer it is possible to reduce air temperature by up to 4 degrees Celsius in relation to areas without greenery.

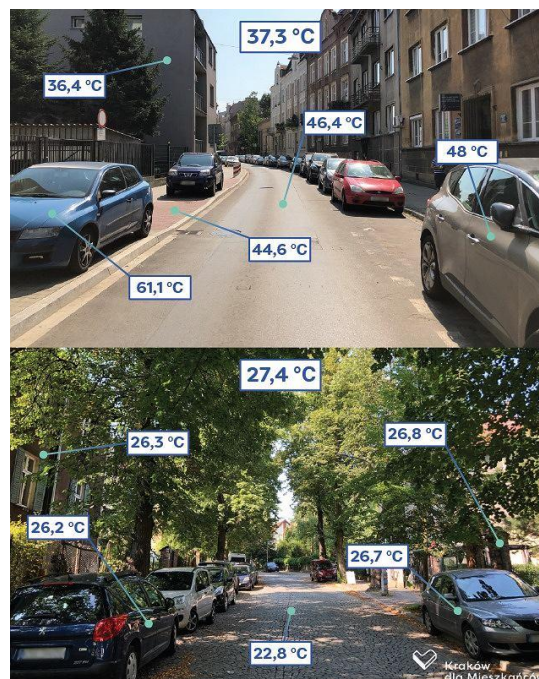
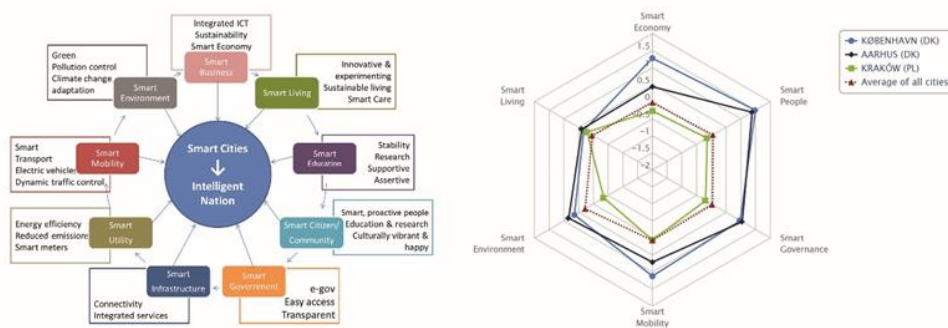


Illustration 1 – Temperature differences streets with trees and streets without trees⁵

⁵ <https://bi.im-g.pl/im/32/fb/17/z25147698V,Roznice-temperatury--ulica-z-drzewami-i-ulica-bez-.jpg>

Green areas also enable proper bioretention, which helps in efficient water management by absorbing most of the rainwater without having to discharge it into the municipal sewage system. This is a point that cannot be ignored, especially in the face of the deepening water crisis in Poland, which should encourage us to use it as effectively as possible.

1.4. Smart city 3.0



SMART CITY PLAN

By 2030, Kraków is planning to become a Smart City in all areas of this strategy. However, statistics show that the city is still far from the most developed European metropolis in this idea.

Illustration 2 – Graph with Smart City components and a statistical comparison of Krakow against the background of leading cities⁶

One of the key points in the Krakow development plan is the city's desire to implement the "Smart City" idea⁷. For this purpose, support programs for

⁶ European smart cities

<http://www.smart-cities.eu/?cid=5&city=47&ver=4>

⁷ Klub Jagielloński – Smart City 3.0, czyli idea która w końcu dostrzega mieszkańców

<https://klubjagiellonski.pl/2020/05/06/smart-city-3-0-czyli-idea-ktora-w-koncu-dostrzega-mieszkanow/>

entrepreneurs and investors were introduced in the scope of "Smart Economy", while in the field of "Smart Mobility" new purchases of ecological and low-floor rolling stock are constantly being made. However, despite these and other activities, a statistical comparison with the best developed cities in the "Smart City" ideology shows that on many levels, Krakow is only at the initial stage of implementing this ideology for the functioning of an intelligent city.

It is therefore appropriate to define what the Smart City idea really is. It is defined as "a city that uses information and communication technologies to increase the interactivity and efficiency of urban infrastructure and its components, as well as to raise the awareness of its inhabitants"⁸. The next part talks about "making investments in human and social capital and communication infrastructure in order to actively promote sustainable economic development and high quality of life, including wise management of natural resources, through civic participation".

And here we come to the heart of the problem why Krakow, despite many different initiatives taken in the spirit of Smart City, still remains far behind the top of the most developed European cities. The goal of Smart City is not to massively introduce IT sector services to public life, without thinking about what problems this technology should solve, but to real solve the above-mentioned issues in order to improve the comfort and convenience of city citizens' lives.

In this way, after two previous generations of Smart City based mainly on the implementation of technology, a third was born, putting more emphasis on the initiatives of residents, local authorities and companies. The inhabitants of the city themselves, can actively become the creators of solutions which, in their opinion, will best improve the quality of life in a given part of the city. The creation of new parks, lines of fast and widely accessible public transport or building new bicycle paths are investments that, according to the Smart City 3.0 idea, have an effective impact on the satisfaction of the residents.

Thus, I believe that the citizens of the districts can themselves actively participate in planning activities and during public consultations, personally engage in the creation of a functional program of the designed public spaces. Nobody like them can define everyday problems and needs concerning a given part of the city. In this way, it is possible to put even more emphasis on bringing the city back to its inhabitants.

⁸ Wikipedia definicja Inteligentne Miasto
https://pl.wikipedia.org/wiki/Inteligentne_miasto

Based on the above considerations, we can discuss Zabłocie district as a reflection of the problems related to public spaces. It is worth noting, however, that there are architectural, communication, landscape and social aspects on the basis of which Zabłocie, despite many negative changes caused by intensive housing development, is still an area with a very large potential, which only needs to be properly displayed and put into practice, in order to obtain a properly balanced neighborhood structure, focused primarily on its inhabitants.

2. Zabłocie – study of location

2.1. History

Zabłocie is an area of Krakow, located on the right bank of the Vistula, which has been part of the Podgórze district since 1991. The name of the district literally means "behind mud". The period of the most dynamic development of Zabłocie falls at the turn of the 19th and 20th centuries, when numerous railway and industrial plants are created. Thus, this area gains a strongly industrial character of the building.



1970



2019

STRUCTURE OF A FRAGMENT OF THE CITY AND ZABŁOCIE DISTRICT

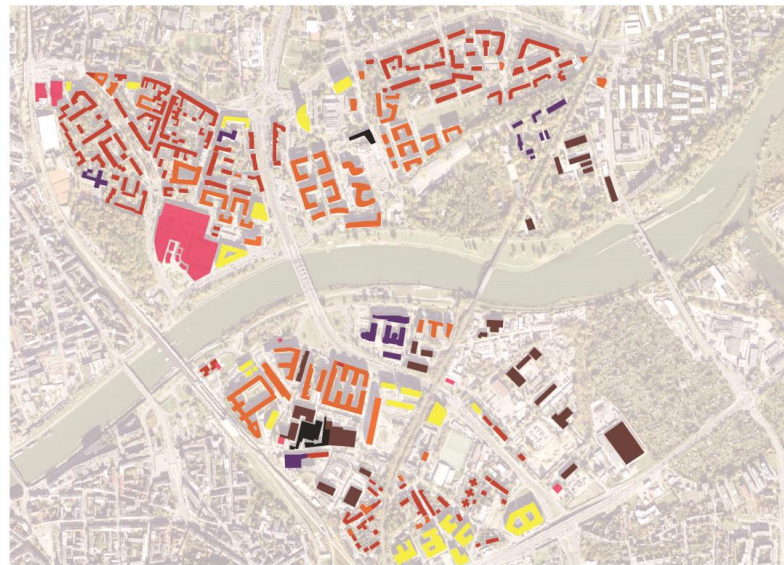
Over the years,
character of the area has changed a lot,
from domination of industrial buildings
to the dominance of residential function

Illustration 3 – Structure of the district over 40 years

After 1989, many state-owned enterprises were liquidated, which gradually began to decline. To prevent complete degradation of the area, since the late 1990s, measures have been taken to revitalize this district. Currently, it is one of the most dynamically developing areas of Krakow. Over the past years, Zabłocie and the

neighboring Grzegórzki district have changed their character more and more. Industrial buildings replace office and residential estates with a very dense building ratio.

2.2. Urban and functional structure



**FUNCTIONAL BUILDING STRUCTURE
OF A CITY FRAGMENT
AND ZABŁOCIE DISTRICT**

■ Residential buildings	■ Scientific and didactic buildings
■ Residential buildings built over the last decade	■ Cultural and museum buildings
■ Office buildings	■ Commercial and service buildings
■ Industrial buildings	

Illustration 4 – Functional building structure of a city fragment and Zabłocie district

The Zabłocie functional program is characterized by diversity with a dominance of residential and office functions. An important point are also cultural and cultural-scientific facilities defining the district as an area of intense artistic activity. It is important to note that despite the very large number of apartments, there are still no service and recreational functions. There are few shops in the district and there is not a single fresh food market. There is also a lack of places for active rest dedicated to such a large group of new residents. There is also no space adapted to organizing major cultural events such as concerts, sports competitions or summer cinemas. From the point of view of young marriages, it is particularly important that there are no schools in Zabłocie outside the university where their children could attend.

One more interesting thread can also be noticed from the analysis of the functional structure. Well, there is a very large urban contrast between Grzegórzki

district, the character of which, even among new housing estates, is regular and orderly, where we can clearly see a certain structure and urban composition. However, the area of Zabłocie, located on the opposite side of the Vistula, is characterized by very loose and chaotic buildings. This is largely due to the above-mentioned, industrial character of the district, which has dominated for years. Numerous warehouses, processing plants, production halls, traces of railway lines serving these plants, all of this was created without the explicit purpose of creating a district with urban features in this place. The urban stage is only being created today and is a change that is constantly taking place before our eyes.

2.3. Communication structure

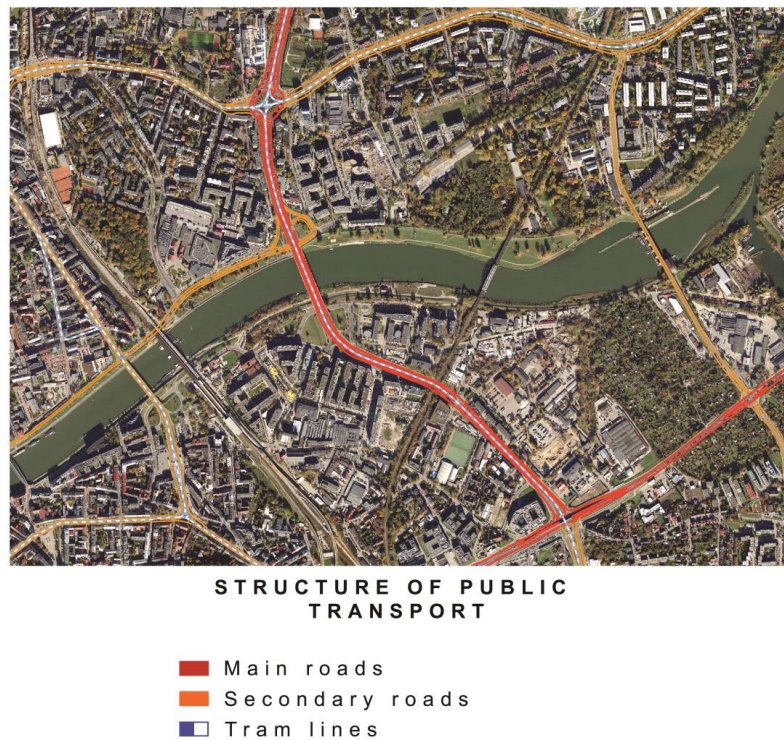


Illustration 5 –Structure of public transport in Zabłocie and Grzegórzki district

The extremely dynamic development of the area is affected by the fact that this part of the city is relatively well connected. Numerous tram and bus lines pass through here, the project of the first fast agglomeration railroad line and technical infrastructure necessary for this are being implemented, and additionally the third Kraków beltway runs through both Zabłocie and Grzegórzki.

Thanks to this, the Zabłocie district is an extremely attractive investment area, dynamically explored by successive developers. Good communication and proximity to the city center mean that the value of the local housing investments

reaches very high prices per square meter. In addition to housing construction, investments in workplaces, such as offices or services, have recently started to appear gradually. However, the housing function still dominates. Nevertheless, the communication aspect is one of the very strong advantages of the Zabłocie area. Unfortunately, despite the relatively well-developed public transport network, the district is still dominated by car traffic. This is largely due to the lack of adequate infrastructure that would place greater emphasis on pedestrian traffic. THIS is the real problem why, at rush hour, both this and the surrounding neighborhoods look like a huge sea of cars stuck in the structure of the entire city.

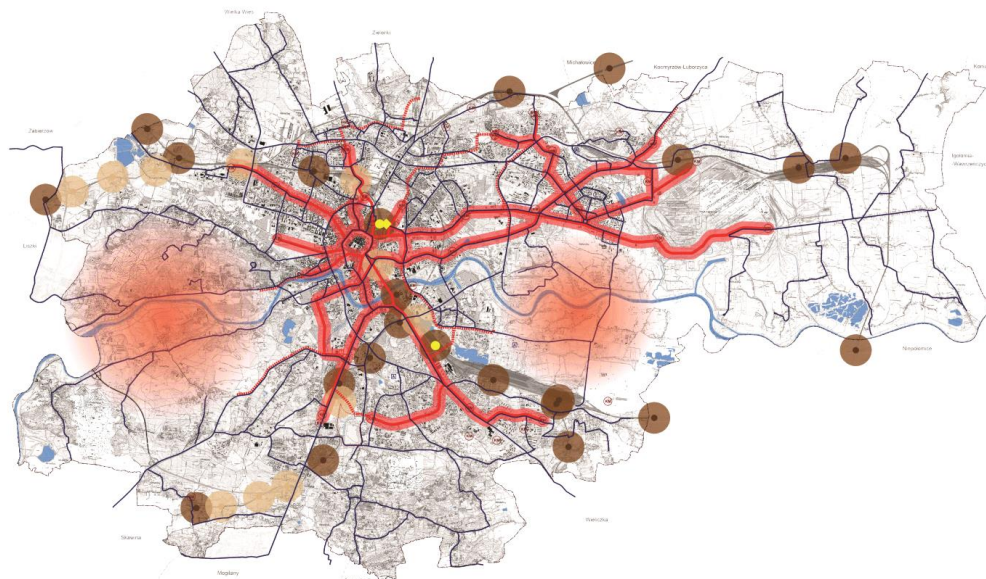


**STRUCTURE OF PUBLIC
TRANSPORT**

The city is still based on cars instead of public transport and gaps in the program of the four beltways rings cause huge traffic jams in the center and even on the city's main beltway.

Illustration 6 –Problem of huge traffic jams in the center

It is a fact, that the city, in its structure of public and car transport, despite many investments made and continuous development processes, still struggles with the basic problem of an even circulation of transport in all directions. While the transport network from east to west is very well and richly developed, in the structure of transport from north to south there are still huge gaps that cause concentration of the flow of inhabitants through the city center each time.



**STRUCTURE OF PUBLIC
TRANSPORT**

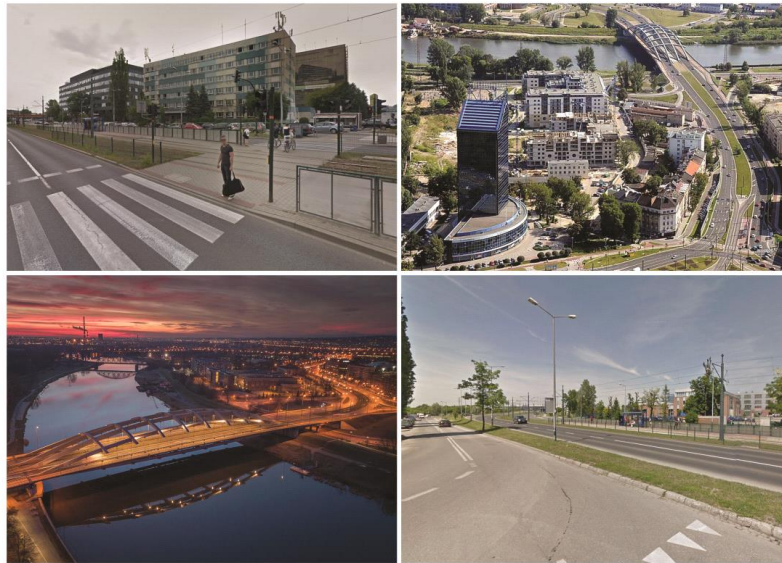
- Bus lines
- Tram lines-existing and planned
- Railway stops-existing and planned

Almost all public transit from south to north takes place through a narrow area of the city center. In the eastern and western parts of Kraków there are huge gaps in the continuity of public transport.

Illustration 7 – Gaps in public transport

This also applies to road transport, for which Gustawa Herlinga-Grudzińskiego Street, running through the very center of Zabłocie and being part of the second ring of Krakow's ring roads, in addition to Aleja Trzech Wieszczów, is the main corridor of the flow of residents from north to south and in the opposite direction, for which it continues there are no suitable alternatives within the city center. Therefore, limiting car traffic in the area of Zabłocie is a multifaceted problem of the development of the entire city and it cannot be unequivocally solved by introducing some architectural and urban solutions, only within Zabłocie.

2.4. Structure of public spaces

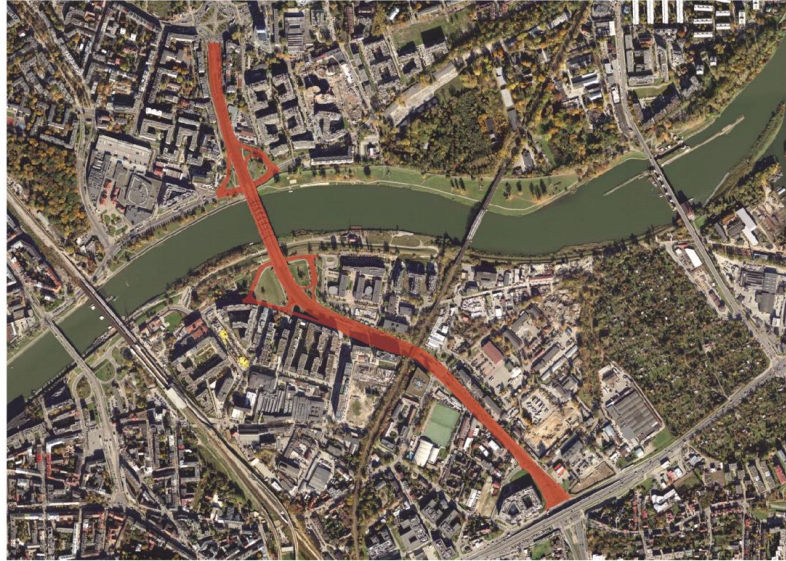


**ROUTE OF THE SECOND BELTWAY
THROUGH THE DISTRICT**

The road has a huge impact on the acoustic comfort of the surrounding area and is an urban barrier in walking and cycling between areas on both sides.

Illustration 8 – Route of the second beltway through the district

Extra-urban engineering facilities located in the city center that dominate the entire surrounding buildings on an urban scale. There are not enough pedestrian-bicycle connections that integrate the opposite banks of the river and communities living on both sides of it. Large, empty spaces devoid of human scale intended only for car traffic and creating some kind of barriers in pedestrian communication.

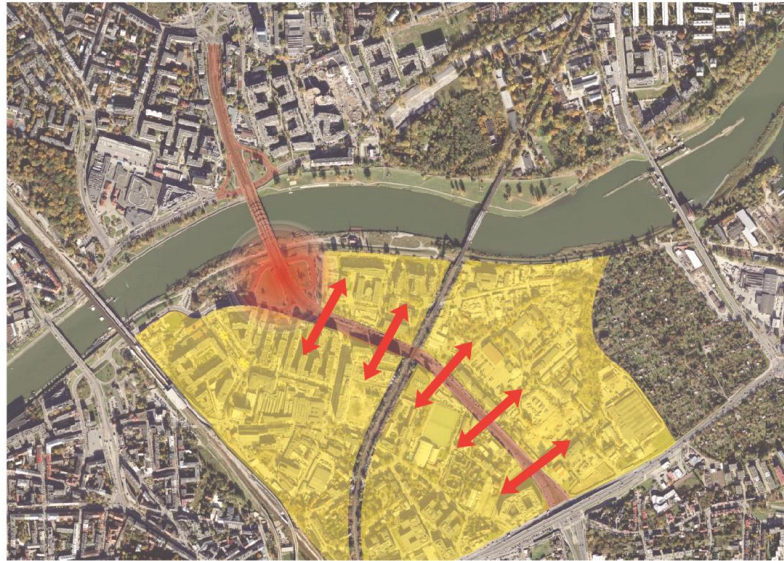


**ROUTE OF THE SECOND BELTWAY
THROUGH THE DISTRICT**

A fragment of the second beltway ring runs through the center of the district - a two-lane road with a tram track in the middle.

Illustration 9 – The course of the Herlinga-Grudzińskiego street

Moreover, the public nature of urban spaces does not extend beyond Gustawa Herling-Grudziński Street towards the river. This street is not only a huge, devoid of human scale element in the scale of Zabłocie, but also an urban barrier that disintegrates the parts of the districts located on both sides of it.

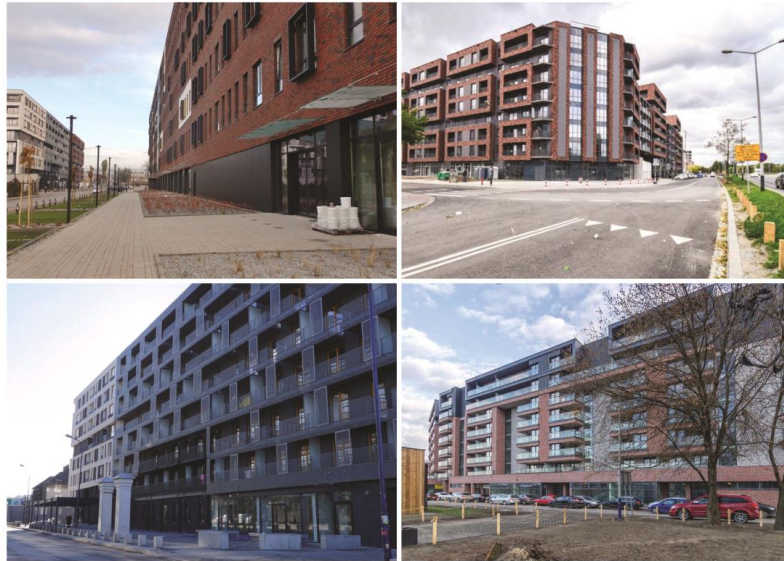


DESIGN CONCLUSION

Reducing the acoustic impact on the surroundings, developing empty areas at exits from the beltway and urban integrating areas on both sides.

Illustration 10 – Process of urban integrating areas

In addition to reducing the noise caused by increased car traffic, which is related to city-wide planning activities, another extremely important task for architects should be the introduction of attractive, functional and people-oriented architecture around the street, to give it a more downtown character similar to the original foundation of Aleja Three Wieszczów or Dietlowski plant. This street should become a representative element of the entire district and, above all, integrating the parts of Zabłocie located on both sides of it. A significant role in this assumption will be played by the skilful management of empty spaces at the exit from the Kotlarski Bridge, which constitute a kind of welcome gate for people entering Zabłocie from the Grzegórzeckie Roundabout. This space in its present shape scares away rather than focuses attention for longer



LIFE BETWEEN BUILDINGS

Zabłocie is not a living fragment of the city. Colorful and diverse buildings are created, while the space between them is devoid of architecture determining interactions between people.

Illustration 11 – Nature of public spaces

Zabłocie's huge problem is the almost total lack of life between the buildings. Urban architecture is primarily adapted to the needs of cars, the needs of pedestrians and cyclists are often pushed to the further track. The public space around new investments is almost completely devoid of trees, which on hot summer days only intensifies the occurrence of the so-called "heat island". This makes staying in such a designed space extremely uncomfortable. There are also no small, semi-private squares equipped with greenery and benches, conducive to creating random meetings. All this means that despite the fact that residential development in Zabłocie has developed very dynamically in recent years, the district still looks like it is completely deserted, deprived of natural life between the buildings of its inhabitants.



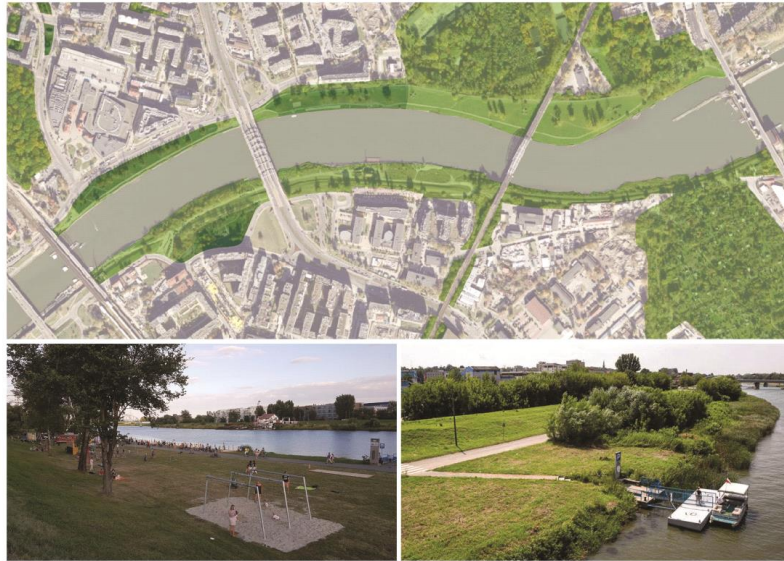
DESIGN CONCLUSION

Creating spaces that determine the presence of people, which results in wealth and variety of sensual experiences for the residents of the district and encourages them to stay in the space between buildings.

Illustration 12 – Examples of proper shaping of public space

One of the most important design tasks is to restore urban space for residents, calm traffic, and introduce elements of small architecture and intensive planting of trees and plants so that staying between buildings would be pure pleasure for their residents and an opportunity to meet and build neighborly ties.

2.5. The relation of the district with the river



BOULEVARDS AND WATERFRONT

The boulevards are not an architecturally developed area. Only small fragments play the role of a pocket park and mini beach. The waterfront from the Zabłocie district is a bush.

Illustration 13 – Current state of boulevards and waterfront

A very disturbing fact is that Zabłocie, despite its riverside location, by no means establishes an urban or architectural relationship with the river. The boulevards are a foreign and forgotten element of Zabłocie's urban composition.

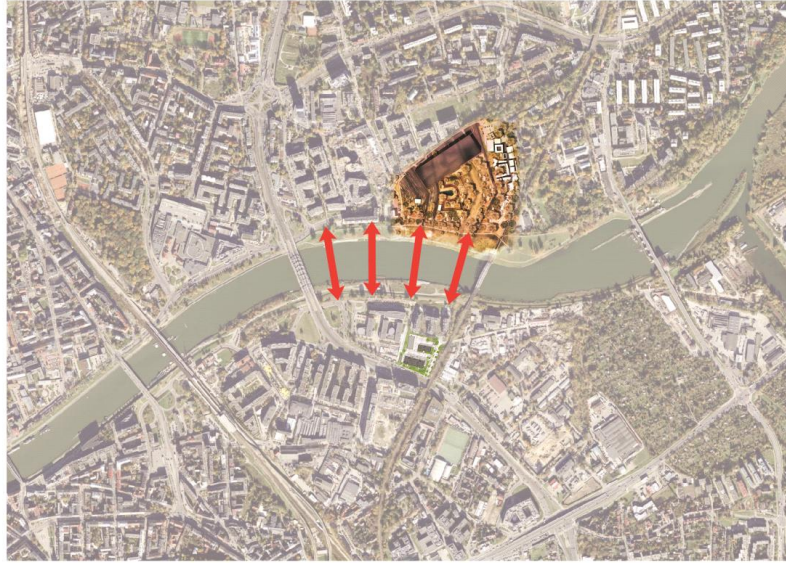


NEW PUBLIC CULTURAL INVESTMENTS

Over next few years, 3 investments in the field of culture and art will be implemented: Academy of Music Music Center and Social and Economic Innovation Cluster

Illustration 14 – New public cultural investments

Moreover, the attitude of absolute ignorance of the area of the boulevards and the river has a destructive effect on the functioning of planned future municipal investments in the field of culture, art and education. The Music Center, Music School and Innovation Cluster planned in the near future are facilities that could perfectly complement the MOCAM Museum of Contemporary Art, already operating in Zabłocie, or the Krakow Academy. A necessary condition for this integration of cultural and educational institutions is treating the river and the adjacent boulevards, both on the Zabłocie and Grzegórzki sides, as an element that binds parts of the city together, and not as a foreign element in the urban fabric of the city.



DESIGN CONCLUSION

Integration of opposite banks of the Vistula river in the form of foot and bicycle footbridges.

Illustration 15 – Areas requiring integration

An absolutely necessary architectural intervention should be the integration of the opposite river banks, either by using the existing bridge infrastructure, or by creating new facilities focused primarily on pedestrian and bicycle communication.



DESIGN CONCLUSION

Creating a multifunctional recreational space of the highest quality architecture dedicated to activating the life of the city's inhabitants.

Illustration 16 – Example of multifunctional using of boulevards

In addition, the use of the river and the currently developed boulevards as a representative recreational space dedicated to residents, a space that will offer a rich and diverse functional program, emphasizing the values and character of the district, should be one of the first investments in the field of improving the quality of life of residents.

These areas have great potential for creating a real showcase of the district, as illustrated by examples from other cities, such as Warsaw, Wrocław or Kopenhaga, where the revitalization of boulevards and their transformation into spaces socially actively met with huge approval of the inhabitants, and areas near the river have become one of the most active urban areas.

2.6. Structure of green areas

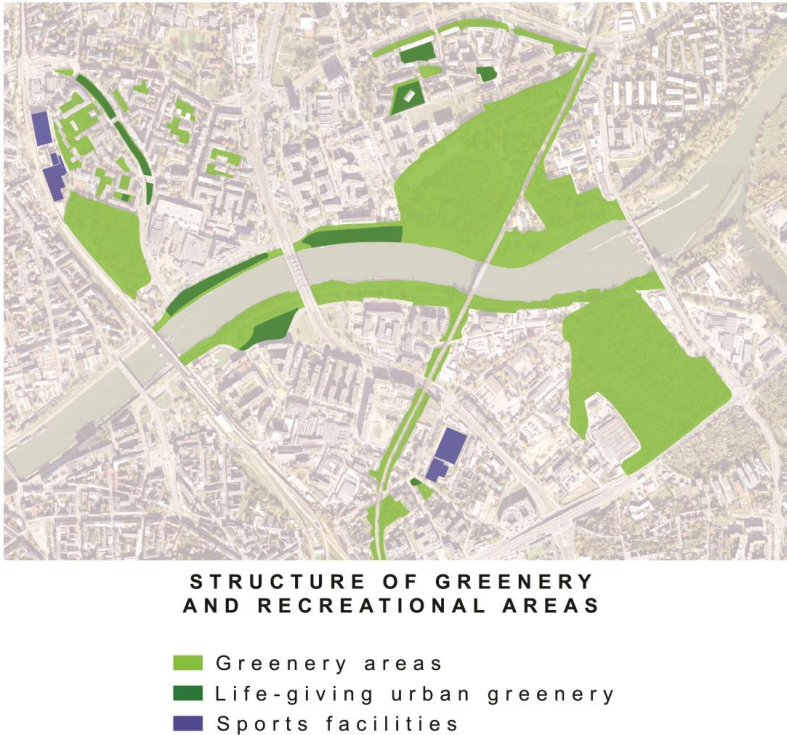


Illustration 17 – Structure of greenery and recreational areas

There are relatively many green areas around Zabłocie, including plantings along the railway embankment, undeveloped and wild boulevards, and garden plots. Unfortunately, the very center of Zabłocie is almost completely devoid of trees, greenery in public spaces around new investments is only decorative. The roads are devoid of trees that could be an acoustic barrier to the noise caused by cars. The sidewalks and bicycle paths lack pleasant shade, which in summer, on hot days, can cool the area by up to 4 degrees Celsius and reduce the "urban heat island" effect, common in the Zabłocie area. What's worse, only a small percentage

of the greenery around the district is developed and arranged with residents in mind as recreational and leisure areas. Sports facilities are exceptions and are not open to the public on a daily basis.



DESIGN CONCLUSION

Creation of green and active recreation areas,
integrating the neighborhood community

Illustration 18 – Example multifunctional development of greenery areas

Therefore, the key architectural task should be a significant increase in biologically active areas. All green areas should be transformed into urban parks and squares. Thanks to this, it is possible to significantly increase the standard of recreation and communal functions. And for the residents of the district, this is a great reason to increase outdoor activity and build new social relationships. However, such areas should be rich in the variety of functions offered. Greenery alone is not enough to activate urban life. In addition, a large amount of greenery and life-giving shade will positively change the microclimate of the district and improve the quality of the air we breathe.

3. Design goals

Based on the above analysis, the next step was to take a specific location that requires immediate architectural intervention. Moreover, I have made the decision to turn my attention to spaces that are undoubtedly in the worst condition or completely forgotten.

The thought is supported by Christopher Alexander's "A Pattern Language", in which the author clearly states that when deciding on a design location, we should not focus our attention on the most attractive spaces, but focus primarily on those who are in the worst condition

Therefore, it was natural to choose the undeveloped area of Zabłocki boulevards as the project location and intervene in the structure of Gustawa Herlinga-Grudzińskiego Street and the surrounding transport infrastructure.



Designing a self-sufficient center of the district that will strengthen local communities and the selection and distribution of given functions will reduce the need to move by car inside the unit.

Illustration 19 – Components of a self-sufficient neighborhood

In view of the problems and challenges discussed above, the following design goal was defined for the public spaces in Zabłocie. The main idea of the project is to transform forgotten public spaces in accordance with the Smart City 3.0 ideology and to turn the district towards the river, using all its landscape and city-forming values.

Selection of the functional program of individual areas of the project in such a way as to move away from the monofunctional residential district, complementing the already existing facilities with those that are clearly lacking for the inhabitants of Zabłocie. I want to create a self-sufficient district where everything is within walking distance. Where services are located close to home, public space abounds in socially active green areas as well as recreational and sports areas, and in order to get to work, you do not have to travel throughout the city to get to one place.

I organize the buildings that I introduce to the project in a multifunctional way, i.e. one that provides both access to work or housing, and services. Finally, I want to build a conscious society of citizens that, by creating a community, can decide about investments by actively participating in social consultations or design workshops on planned projects.

4. Project description

4.1. Boulevards

4.1.1 History

The Vistula boulevards are a special example of engineering art, consistent with the architecture, urban planning and landscape of the city of Krakow. The purpose of their construction was primarily to protect the city of Kraków and Podgórze against flooding. They were designed by Roman Ingarden, in cooperation with Eng. Adam Bielański and Artur Born, and architect Jan Peroś took care of the aesthetics and ornamentation. Their construction lasted in the years 1907-1913⁹.

⁹ Muzeum Inżynierii Miejskiej - Bulwary wiślane

<https://www.mim.krakow.pl/bulwary-wislane/strona/>



Illustration 20 – Construction of the lower right boulevard wall

On both sides of the Vistula, boulevard walls were built, lower internal and higher external. Between the outer and inner walls, on both sides of the river, reloading and marinas were arranged, also equipped with hard roads and tracks. The outer boulevard walls were made on a concrete foundation footing with the external cladding of hewn stone, and the lower boulevard walls were made on a concrete foundation slab, covered on the water side with wooden squares. 6-meter wide ramps were created, connecting the lower and upper boulevard roads, three on the Krakow side and two on the foothill side.

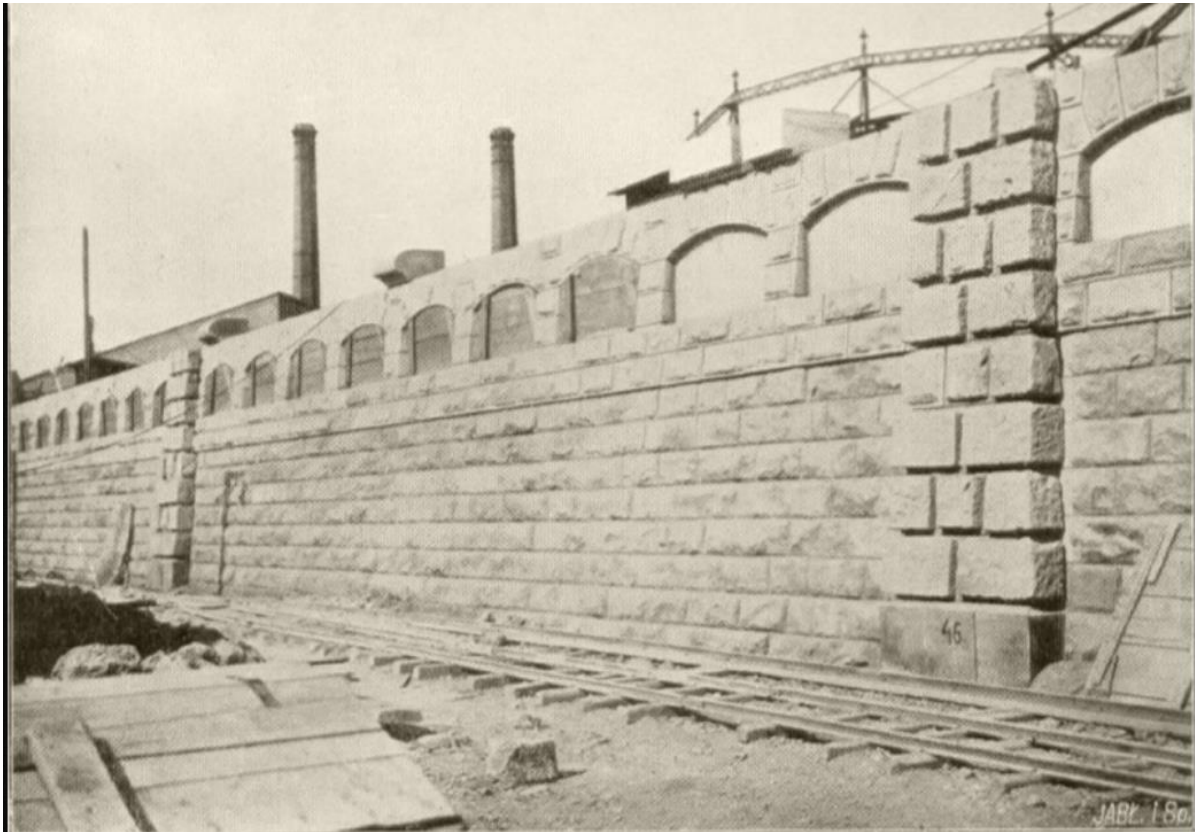


Illustration 21 – The upper left boulevard wall

For pedestrian communication, stairs were made that could be used to descend to lower platforms. Work on the boulevards also involved the complete regulation of the river bed, which was deepened so that ships could land on the lower walls. Further reconstructions and improvements lasted until the outbreak of World War I, and then continued in the interwar period, but were again interrupted by the war. In 1961, the Dąbie Water Step was put into operation, thanks to which the water surface was raised by 3 meters.

Unfortunately, the ideas for the construction of a river port for inland navigation, the construction of a shipyard on the left bank and the construction of a weir with a circulation canal for the damming of steamboats and galleys to navigate, were never implemented due to the hardships of war.

The complex of boulevards and embankments serves as flood protection to this day, which was confirmed by experiences during great floods, among others in 1970, 1994, 1997 and 2010.



Illustration 22 – The current state of the boulevards

The boulevards on the section from the Dębnicki Bridge to the Kotlarski Bridge have become very attractive, because of their landscape values, beautiful panoramas of the Wawel Castle, Skalka or the Mangha Japanese Cultural Center.

Despite these advantages, the development of the rest of the boulevard is not continued and requires architectural intervention.

4.1.2. Description of the proposed adaptation of the boulevards



Illustration 23 – Bird's eye view

The design of the boulevards on the section from the railway bridge of the cross-city line to the Zabłocki railway bridge assumes that the city will be turned towards the river by creating a space with a varied functional program and seasonal public pavilions creating a new place on the service and recreational map of Krakow. Particular zones such as the food truck park, skate park, flower meadows, field gym or open-air gallery of street art, open all year round, extend the artistic character of Zabłocie and constitute a space for experiences dedicated to the inhabitants of Zabłocie and Grzegórzki.

What's more, the space for cultural events and exhibition pavilions corresponds directly with the International Architecture Biennale, held every two years, whose formula could be extended by a dedicated exhibition and promotion pavilion, which would appear periodically in the exhibition space of the boulevards. The event space can be used by the Krakow Academy, organizing open-air cultural events, such as juwenalia or inaugurations of the academic year. A balanced functional program between the areas actively concentrating the

cultural life of Zabłocie and green areas arranged for outdoor recreation, allows for the maximum use of this area on the economic and social level.

The creation of Przystania Zabłocie as an extension of the Przystań Wisła park will make it possible to maximize the value of the site for a new form of activity related to the use of the river. At this point, there may also be a water tram stop, a very popular attraction among tourists in the summer season. This will contribute to an even greater revival of Zabłocie public spaces and promote this district on the cultural tourist map of Krakow.

The quay design in the form of stepped terraces enriched with high rush greenery is to provide an attractive space for relaxation in the quiet of the water. The stepwise formation of the flood embankment and the use of a grass floor are to create a natural form of a resting place with beautiful view openings over the entire riverbed and a park located on the opposite side in front of the Music Center.



Illustration 24 – Plan of boulevard

A field for outdoor games and a gym in the vicinity of this zone in relation to a housing estate located in the immediate vicinity of the boulevards provides an active leisure offer for its residents.

The extension of the Romanowicza street axis to the river line is a natural continuation of the same architectural procedure that was implemented in the design of the Krakow Academy building complex. In the future, along with the development of the district, Romanowicza Street may constitute the main compositional axis of Zabłocie with its representative finale in the form of a frame

for a view of Grzegórzki and squares on both sides of it for seasonal pavilions and city cultural events.

The location of exit ramps for cyclists and disabled people under the Kotlarski Bridge results from the use of natural roofing created by the bridge structure, thanks to which on rainy days, moving along the ramps will still be comfortable and safe.

4.1.3. Construction



Illustration 25 – Visualization of boulevards

The boulevard floor is made of architectural concrete poured on the spot on hardened gravel surface. The material used is resistant to frequent contact with water, resulting from the fact of cyclical flooding, to which the lowest areas of the boulevards are exposed. In addition, the monolithic nature of the floor eliminates its uneven settlement resulting from the high level of groundwater. Reinforced concrete is also easy to clean. The Larsen wall located on the river side, whose upper edge is licked with a reinforced concrete wreath with boulevard floor, protects against excessive rising of groundwater. Densely distributed greenery, in addition to aesthetic values, is also intended to absorb a significant amount of rainwater.

Due to the cyclically occurring high water levels of the Vistula, especially in the early spring period, caused by the meltwater flowing from the mountain areas, all of the seasonal pavilions and the marina building were designed to be raised above the level of the flood embankments of the platforms.

The platform structure consists of a reinforced concrete slab made of architectural concrete supported by steel poles. The columns are attached to the reinforced concrete structure, which is also the floor of the boulevards. This floor is also made of architectural concrete.

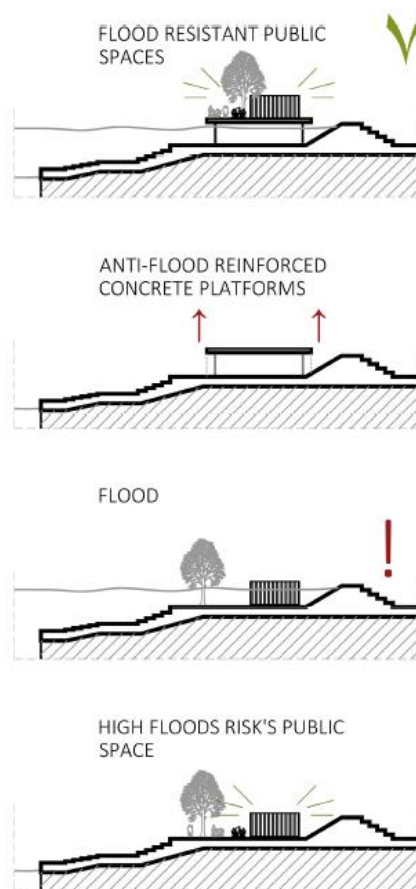


Illustration 26 – Concept diagrams

An important architectural advantage is the fact that thanks to the lifting of the platforms onto the seasonal pavilions, each of them offers a spectacular view of the Vistula bend and the opposite bank on the Grzegórzki side. Additionally, the Platforms create a pleasantly shaded space underneath, which makes the space of the boulevards more attractive also on hot days

4.1.4. Marina building

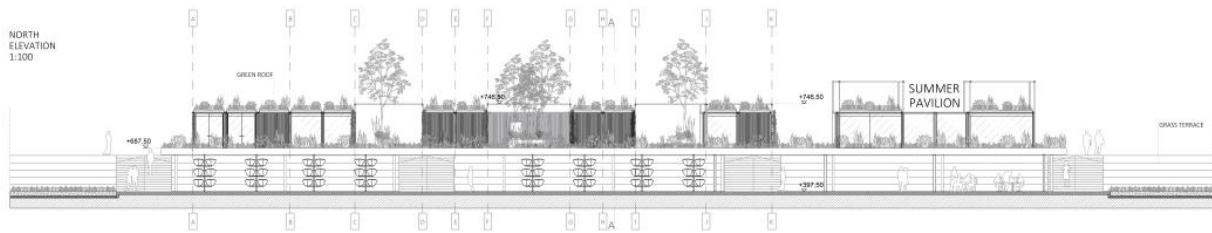


Illustration 27 – North elevation of marina building

The construction of the marina building involves the use of old sea containers in the recycling process of these facilities and modular elements made of glued wood. This is to minimize the time needed for the construction processes and to reduce the carbon dioxide pollution of the environment resulting from the traditional process of erecting buildings using concrete and steel cast in place.

This is also to facilitate the modification of the aforementioned pavilions depending on the demand for a given function at a given time. In the absence of a total demand for individual objects in this place, they will leave a zero mark on the environment.

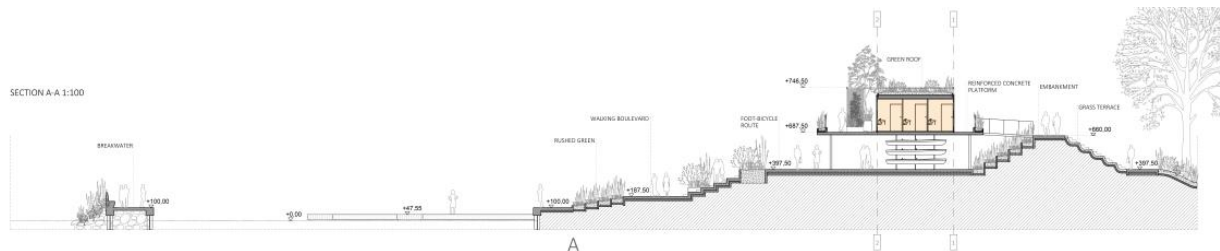


Illustration 28 – Cross-section of marina building

The building of the marina is situated on one of the reinforced concrete platforms and was designed as a one-story structure with green roofs. Inside there are all the most necessary functions of the marina, such as bathrooms, workshop, kitchen and canoe rental. There is a spacious place for storing canoes from the rental shop under the reinforced concrete platform.



Illustration 29 – Plan of marina building

Thanks to this, the facility can be a fully functional facility for practicing various types of water sports on the river, including canoeing which is becoming more and more popular among Krakow residents.

4.2. Adaptation of the street and tram tracks

4.2.1. Reorganization of public space along Herlinga-Grudzińskiego Street

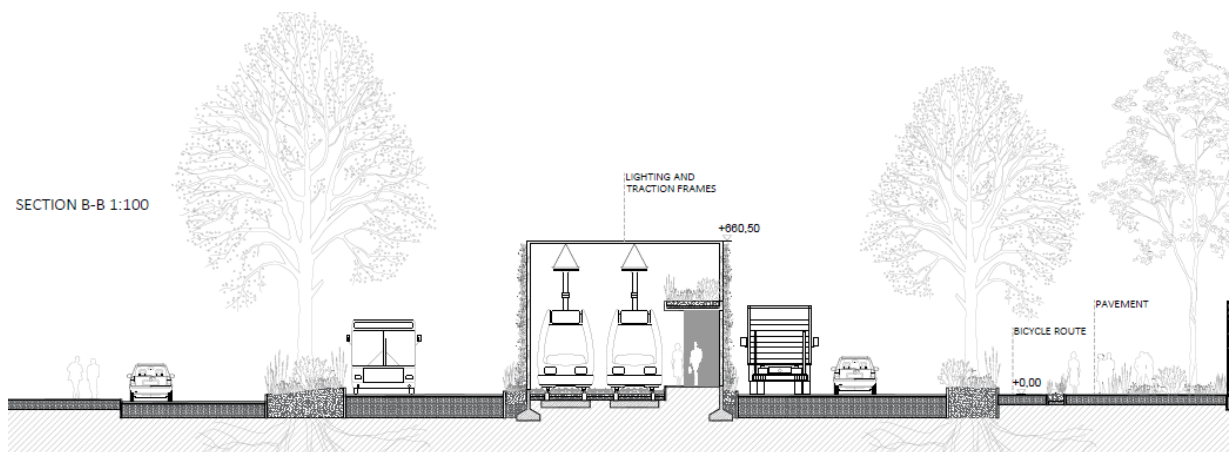


Illustration 30 – Cross-section of exhibition pavilion and street

Due to the dominant nature of Gustawa Herlinga-Grudzińskiego Street, which is a component of the second ring road of Krakow, an architectural intervention was designed in the form of dense trees on both sides of the street. This will provide acoustic protection against the noise of passing cars and will give the street the character of a representative green park alley.

On both sides of the street, bicycle paths and pedestrian paths are planned, separated by linear compositions of low greenery. The tram track running through

the middle of the street has also been given a green character in order to achieve a high aesthetic value of the communication infrastructure.

Linear pots with tall grass have been added to the green surface made of a layer of humus, covered with grass. Traditional traction poles, devoid of any architectural value, have been replaced with minimalist frames which, apart from being a load-bearing function for tram traction, also serve as track lighting.

They are made of corten boards, which refers to the industrial character of Zabłocie. Each frame is planted with climbing ivy, thanks to which, after years of plant growth and expansion, the frames will create a composition of green pergolas over the track. Traditional bus shelters were replaced with simple green flat roofs made of architectural concrete and embedded in corten lighting and traction frames.

4.2.2. Street furniture along the pedestrian and bicycle routes of the Kotlarski Bridge

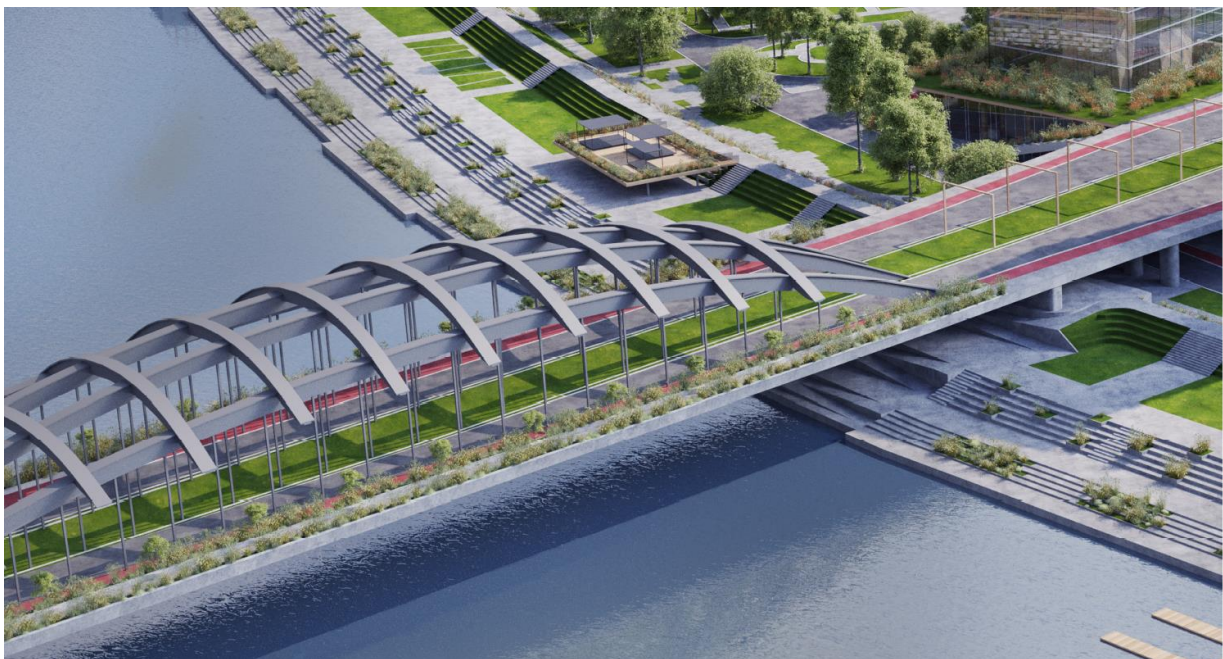


Illustration 31– Visualisation of Kotlarski Bridge

Due to the planned cultural and educational investments in the Grzegórzki district, a natural complement to the functional program of Zabłocie is the introduction of pedestrian and bicycle connections on the opposite banks of the river.

Although the Kotlarski Bridge provides the much-needed integration of the opposite river banks, its traversing from the pedestrian or cyclist's point of view is

not the most pleasant experience of communing with the urban space. The bicycle paths and sidewalks located directly next to extremely busy roadways allow pedestrians and cyclists to move directly next to cars traveling at high speed.

To eliminate this influence, elements of small architecture were introduced without interfering with the supporting structure of the building. Between the bicycle path and the pedestrian route there is a linear flower pot with rush greenery and local plantings in the form of small trees. Thanks to this, a natural acoustic barrier was created for the noise caused by car traffic.

Communication has also been systematized, because nowadays the pedestrian and bicycle route is run without a clear division. Next, a linear flower pot with low greenery was attached to the outer edge of the bridge by means of a light steel structure. In this way, the existing infrastructure was used to in an attractive way strengthen the pedestrian and bicycle integration of the opposite banks of the Vistula River

4.3. Office, market and sports center



Illustration 32 – Scope of project activity

Another area of architectural intervention was solving the problem of huge voids on the inner sides of car exits from the Kotlarski Bridge. Spaces completely

devoid of human scale and a communication system adapted to the needs of pedestrians. Moreover, the spaces located in the center of the Zabłocie urban layout. Following the idea of a neighborhood unit¹⁰ developed by Clarence Arthur Perry, I decided to make these places, due to their central character in the urban tissue of Zabłocie, a concentration of social life.

Going further, choosing a functional program, I decided to act on the principle of complementing what already exists in the immediate vicinity, so as to give residents the greatest possible functional diversity of neighboring areas, thus eliminating the need to move to other parts of the city in order to get to work or provide for living needs

As I noted in the previous location analysis, Zabłocie is dominated by the residential function. We also have the campus of the Krakow Academy as a teaching unit, and a municipal project is being implemented in the adjacent areas in old warehouse buildings „Klaster Innowacji Społeczno-Gospodarczych Zabłocie 20.22”¹¹ dedicated to creative environments, social organizations and micro-enterprises or start-ups entering the labor market.

Therefore, the aforementioned functions should be complemented by a space providing residents with new jobs, generating social life and commerce, and giving the possibility of practicing sports all year round.

In this way, we get a self-sufficient district with a diverse functional program, ensuring all the needs of a city dweller in the immediate vicinity of the place of residence. In this way, the project has a chance to contribute to reducing car traffic inside Zabłocie, as all the most important city-forming functions are located within walking distance.

By analyzing the proposed design, it is possible to divide it into three complementary objects forming a coherent architectural complex.

10 Urbnews.pl – Clarence Perry
<http://urbnews.pl/sylwetki-osob-zwiazanych-gp-urbanistyka-clarence-perry/>

11 Gazeta krakowska.pl - Klaster Innowacji na Zabłociu.
<https://gazetakrakowska.pl/klaster-innowacji-na-zablociu-jest-koncepcja-architektoniczna/ar/c1-15104018>



Illustration 33 – Visualization of office, service and sports center

4.3.1. Fresh food market

The heart of the entire complex is the fresh food market. Just as city squares and marketplaces used to be a concentration of city life, places of building neighborhood integration and local trade in the face of a district devoid of such a natural heart, nowadays this is the role of the building of a modern marketplace.

The main theme of the building concept is to create a place that integrates the local community, associated with the dominant residential function around. Located in the corner of the intersection with Zabłocie Street, the building fills the corner of the plot in terms of urban planning.

The arrangement of rising green terraces emphasizes the corner character of the building.

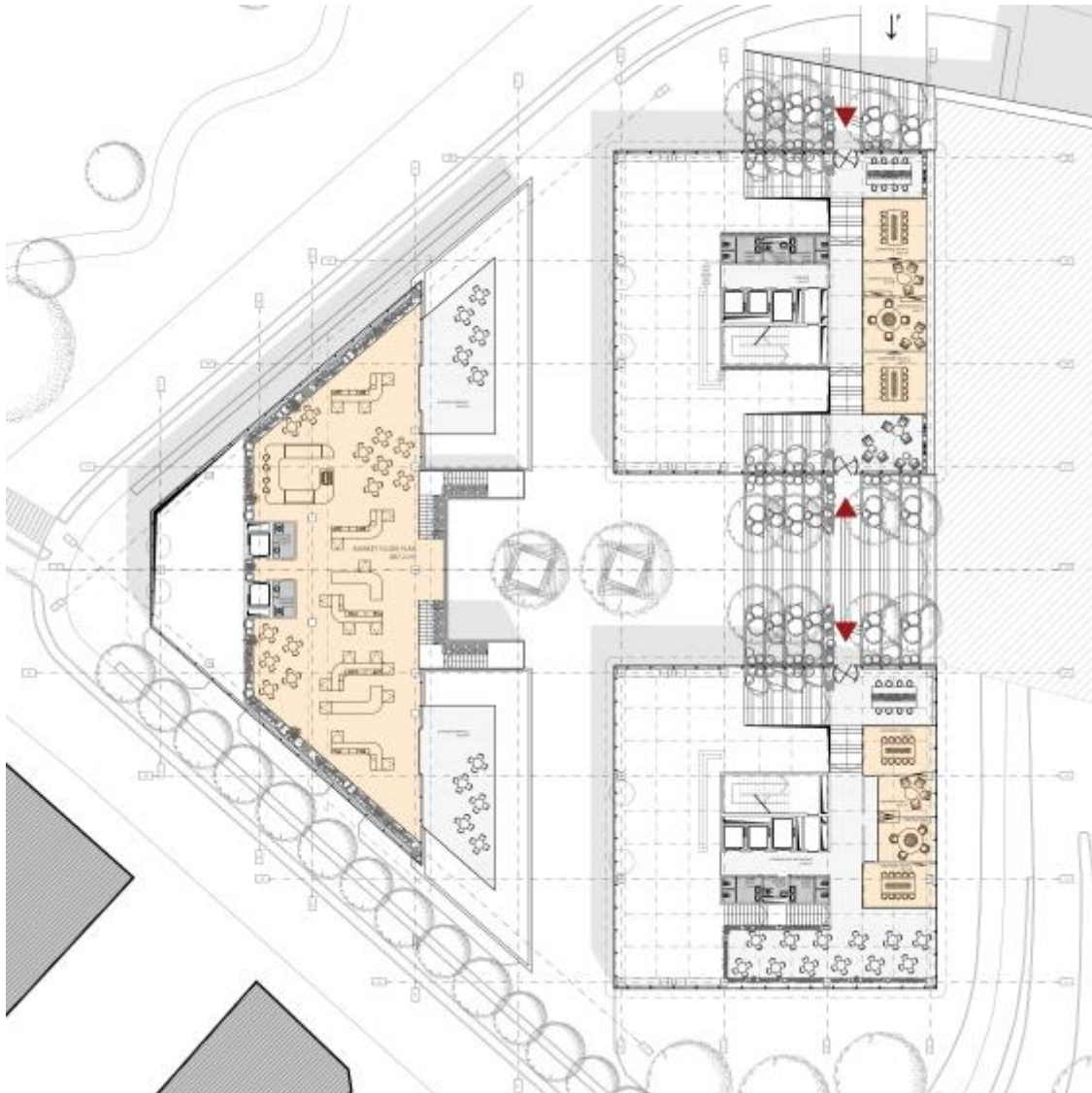


Illustration 34 – Plan of the first floor of the market and office

The functional program of the building consists of the ground floor and the first floor, filled with fair stands. The body of the building is as simple as possible, meeting the functional needs of the interior.

The façade is made of a glass curtain wall with panoramic sliding doors integrated in several places. Thanks to this, in favorable weather conditions, it is possible to partially extend the facade. As in traditional market squares, the blurring of the boundary between the inside and outside of the building opens it even more to the local community. Both the ground floor and the first floor have the character of a completely free plan, which allows for flexible arrangement of the exhibition stands. The interior becomes functional and adaptable, depending on the demand.

The free plan of the building was also designed to organize culinary festivals, which are gaining more and more popularity and are frequently visited by the inhabitants of Krakow.

All stands are movable, therefore it is possible to arrange them in any way depending on the needs.

The decorative element of the facility is a completely glazed staircase located on the inside of the building, from the courtyard side between the market building and foyer of office buildings.

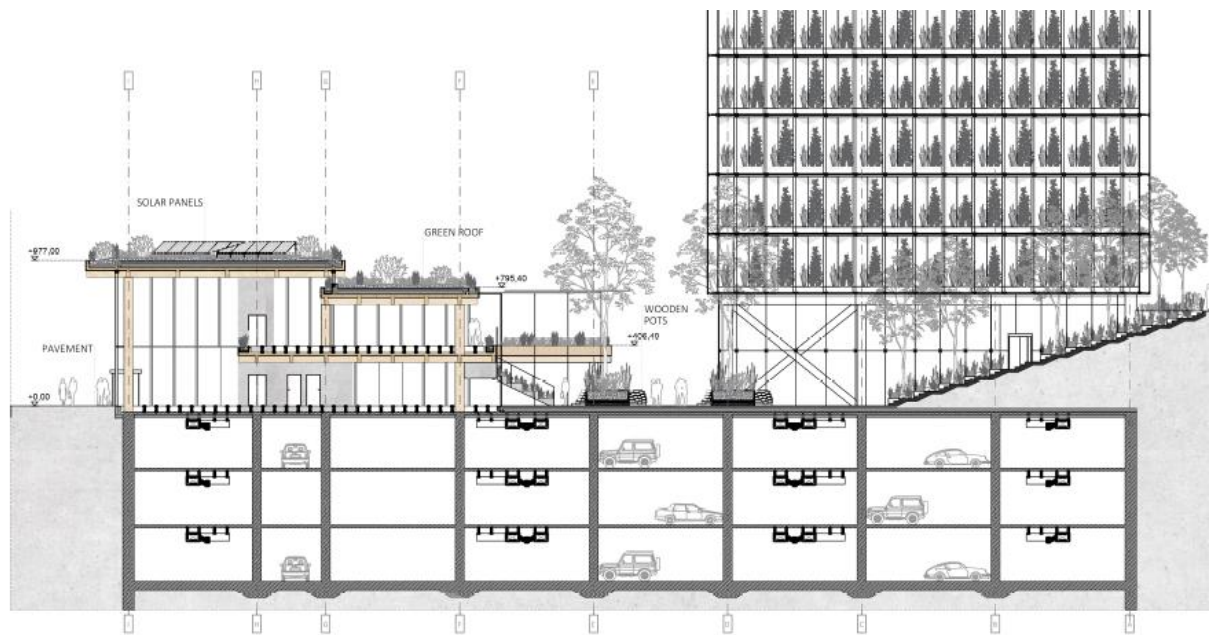


Illustration 35 – Cross-section of the market

The building structure is a skeleton structure with pillars and floor beams made of glued laminated timber. The roof is made of green flat roofs with additional photovoltaic panels ensuring the energy efficiency of the building.

The technical area and the lifts have been designed as a reinforced concrete core, stiffening the skeleton structure of the building.

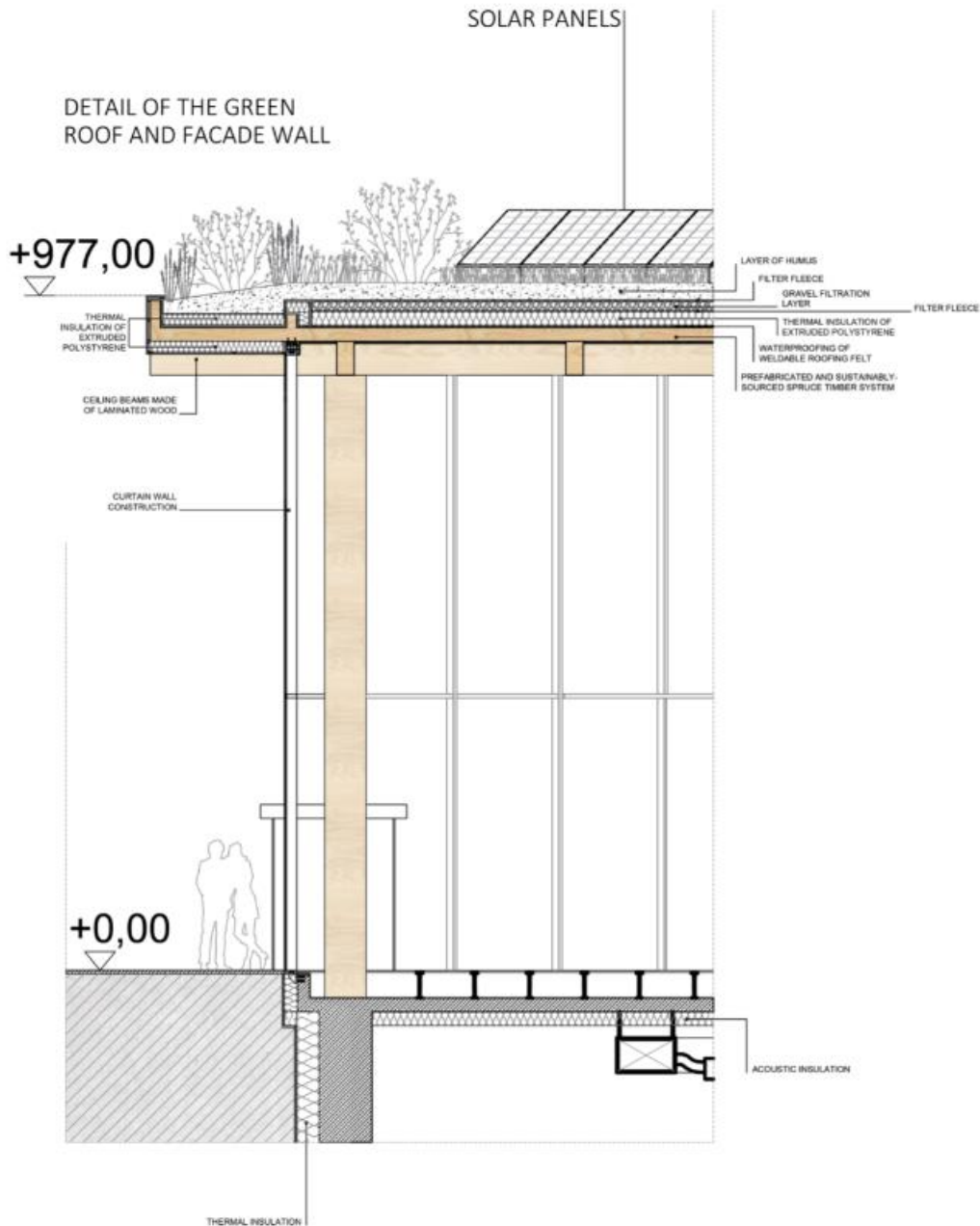


Illustration 36 – Detal of the green roof and façade wall

4.3.2. Office buildings

A functional complement to Zabłocie is a workplace located in the immediate vicinity of residential buildings. The plot behind the marketplace is complemented by two office buildings integrated into the embankment of the ramp to the Kotlarski Bridge. Commercial office buildings are generally characterized by a not very open architecture, intended only and exclusively for a narrow group

of society. Often their basements are an extension of underground car parks to increase their capacity.

In order to better use the facilities for city-forming purposes, the entrance zones have been designed as a two-story foyer, integrated with cascading stairs leading directly from the pedestrian routes located along the Kotlarski Bridge. In this way, the architecture of the ground floor offers a chance to simplify the pedestrian communication system at the descent from the bridge.

In the foyer of one of the buildings there is a restaurant that is open to the public, and the interior of both is richly decorated with greenery, thanks to which the ground floors of the buildings constitute a natural extension of public spaces.

The mutual location of the foyers of office buildings and the market building create a small street and a downtown square in the axis of the complex.

Office buildings have an experimental construction of laminated timber. Wood has been used in construction for centuries, and in recent years it has been used more and more often in modern construction.

This is due to its numerous advantages, such as lightness, modularity, and above all, during the construction processes of wooden structures, a significantly smaller amount of carbon dioxide is produced compared to reinforced concrete or steel.

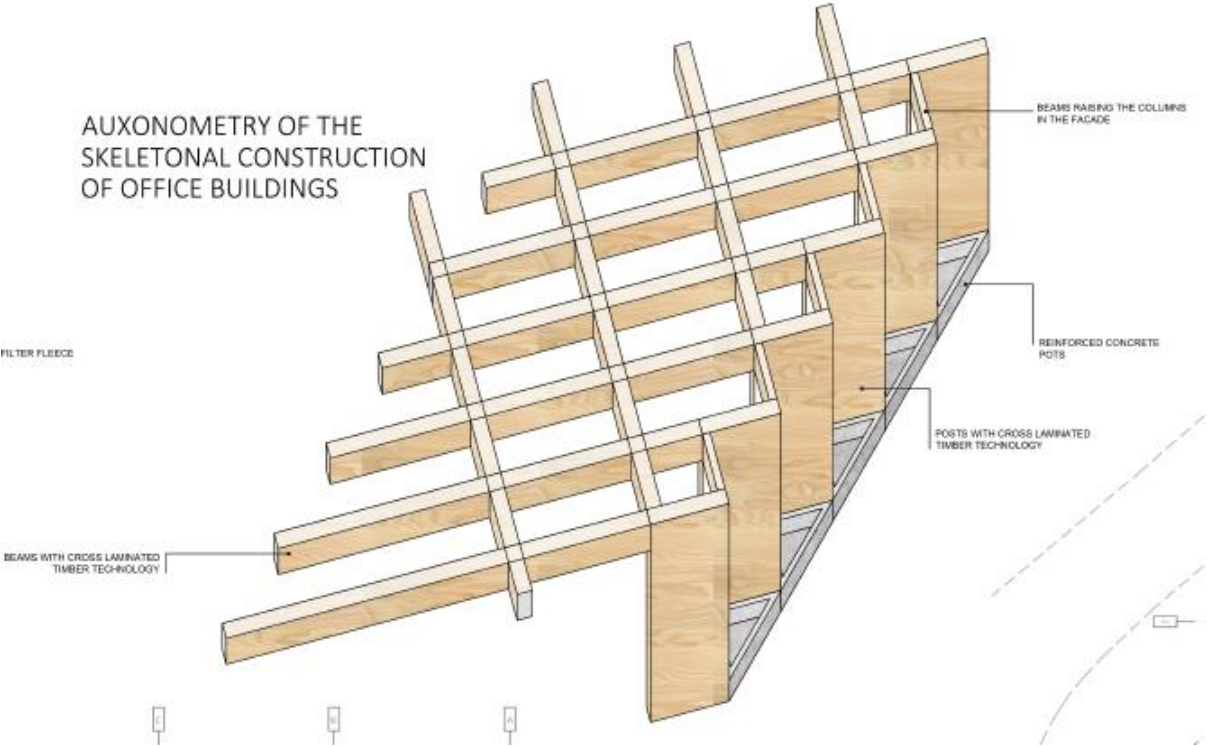


Illustration 37 – Auxonometry of the skeletal construction of office buildings

CLT - Cross Laminated Timber¹², i.e. panels with an appropriate gluing technique, is a material that favors the use of wood in construction on a larger scale. Thanks to this, they are extremely durable and, most importantly, fireproof.

Therefore the structure of the facilities is made of prefabricated Laminated timber elements. An element that provides additional horizontal stability of the building is the reinforced concrete core. The facade is at the same time the supporting structure of buildings.

Placing the glass panels of the façade at an angle provides an unobstructed view in one direction, while the full panels on the south side reflect the direct rays of the sun. Thanks to this, a large amount of diffused light reaches inside of the building, more favorable for comfort office working conditions. As a result, the building heats up much less in summer. Additionally, the ventilated façade and tilt windows ensure natural air circulation, cooling the offices. This is very beneficial for the energy efficiency of the building.

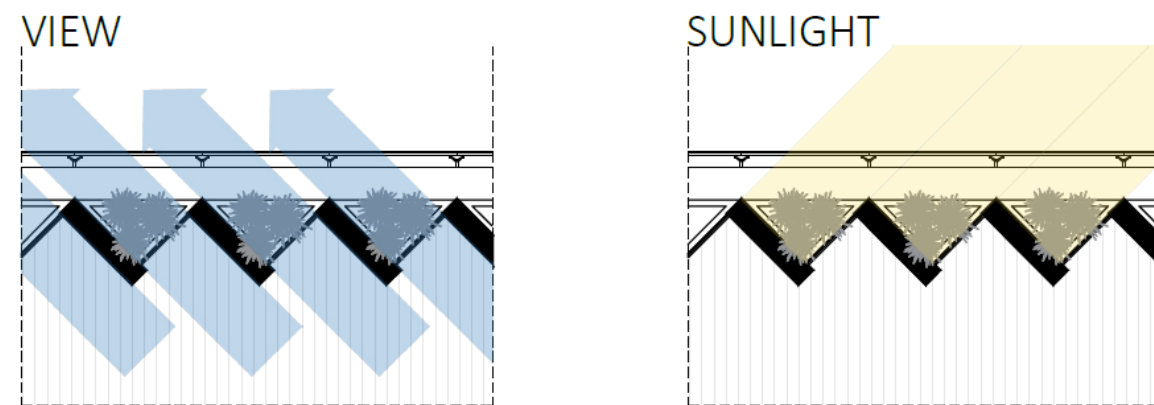


Illustration 38 – Diagram of the facade functioning

Small flower pots with medium-height greenery are placed around each office floor, which has a soothing effect for employees working in front of the monitor screen. Looking at the natural green every now and then makes our eyes rest after a long effort. In this way, we get a building with an exceptionally pro-ecological character.

12 Generacja Smart pl. - Nadchodzi era drewnianych wieżowców.
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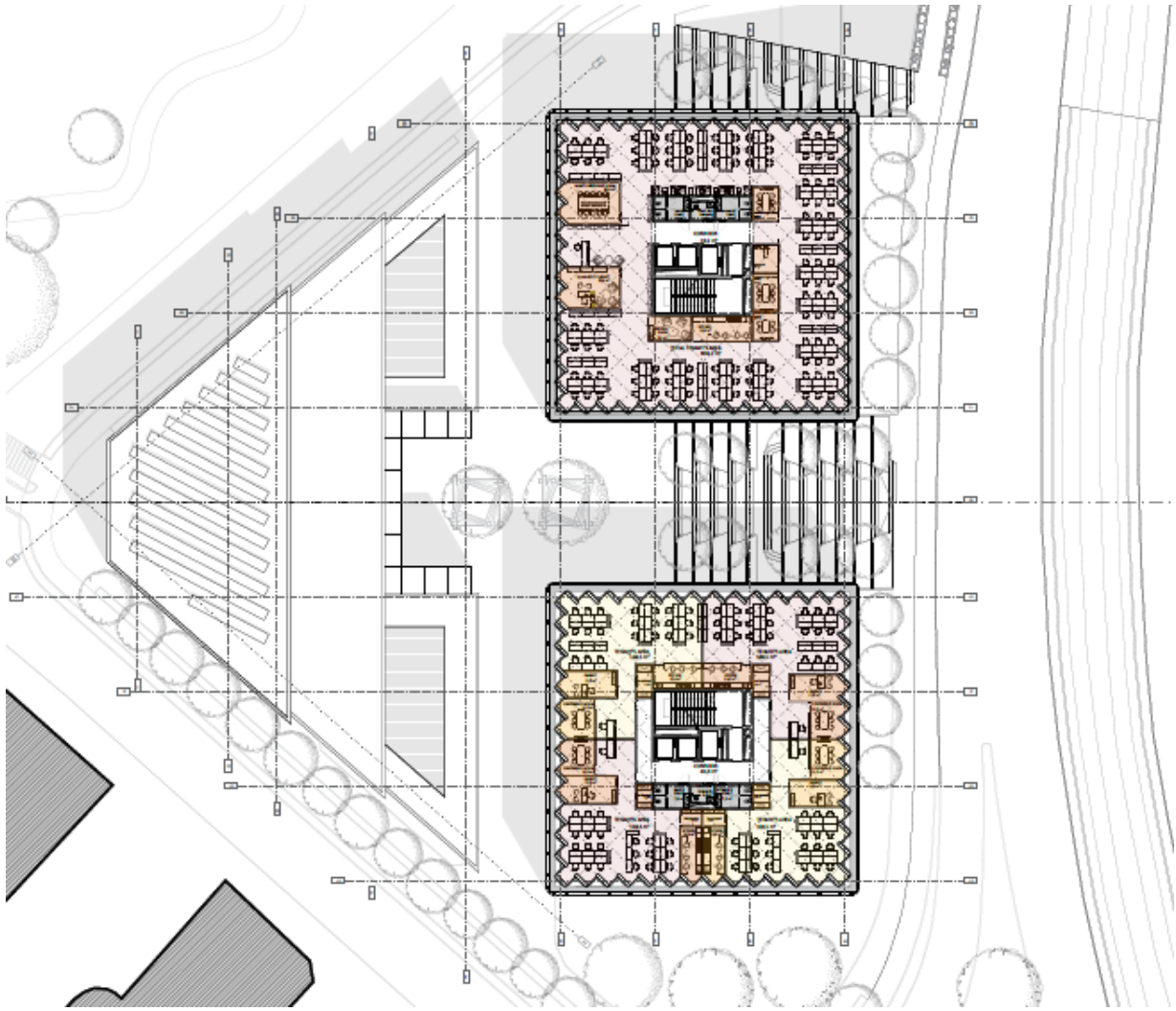


Illustration 39 – Office plan - repeatable floor

The layout of the repeating storey of the buildings makes it possible to divide it into four tenants, in accordance with the standards of office construction.

Under the entire complex there is a three-level underground car park with a reinforced concrete structure. The entire complex is based on a reinforced concrete foundation slab, which protects the underground part against the pressure of groundwater, due to the close proximity of the river. Moreover, the car park is surrounded by sheet piling, made in the diaphragm wall technology - thus creating a sealed bathtub.

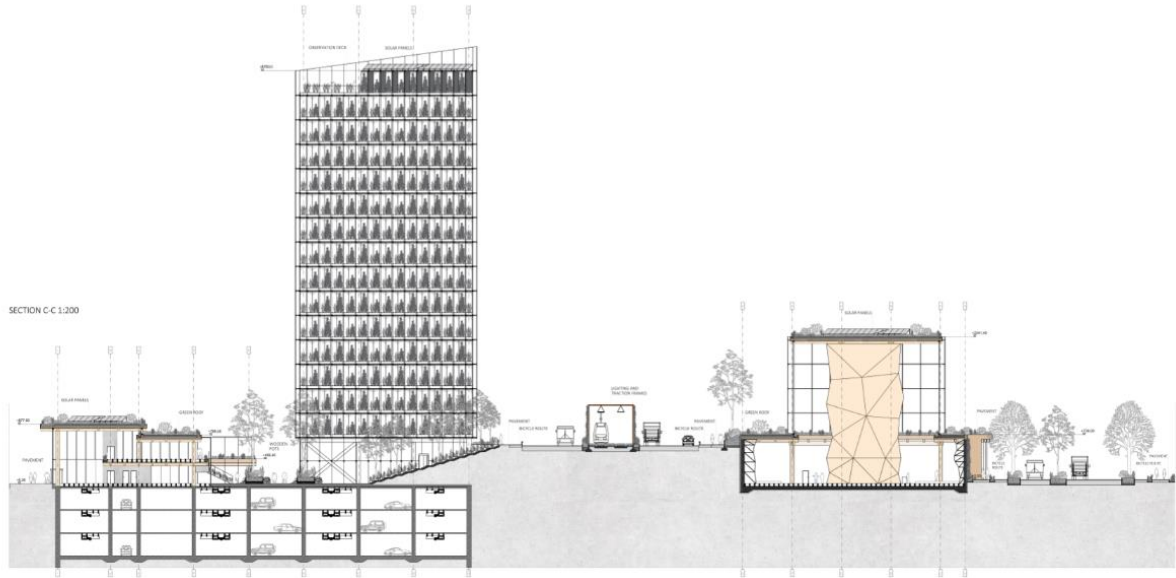


Illustration 40 - Cross-section of office

4.3.3. Climbing center

On the other side of the inrun of the Kotlarski Bridge, there is a climbing center, richly equipped with walls of various difficulty levels. It is a functional complement to the district as a place for active sports throughout the year, regardless of the weather conditions outside. This completes the sporting function of the river boulevard.

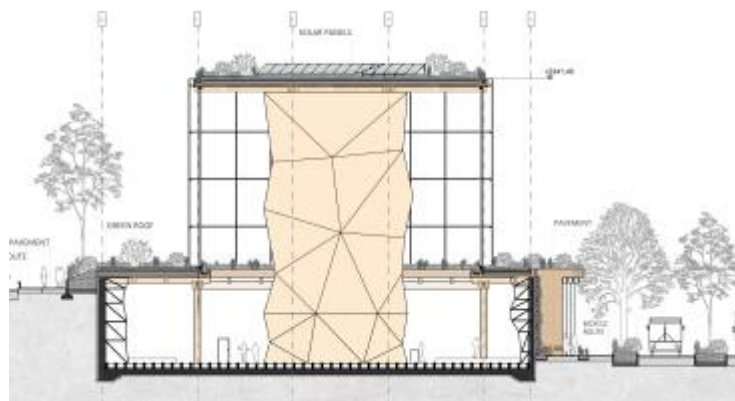


Illustration 41 - Cross-section through the climbing hall

In the entrance area there is a shop and a climbing equipment rental. The main climbing hall corresponds architecturally to the shapes of office buildings, thus creating a coherent urban complex, which is a form of an entrance gate to the Zabłocie district, which will be crossed by people traveling by car or public transport.

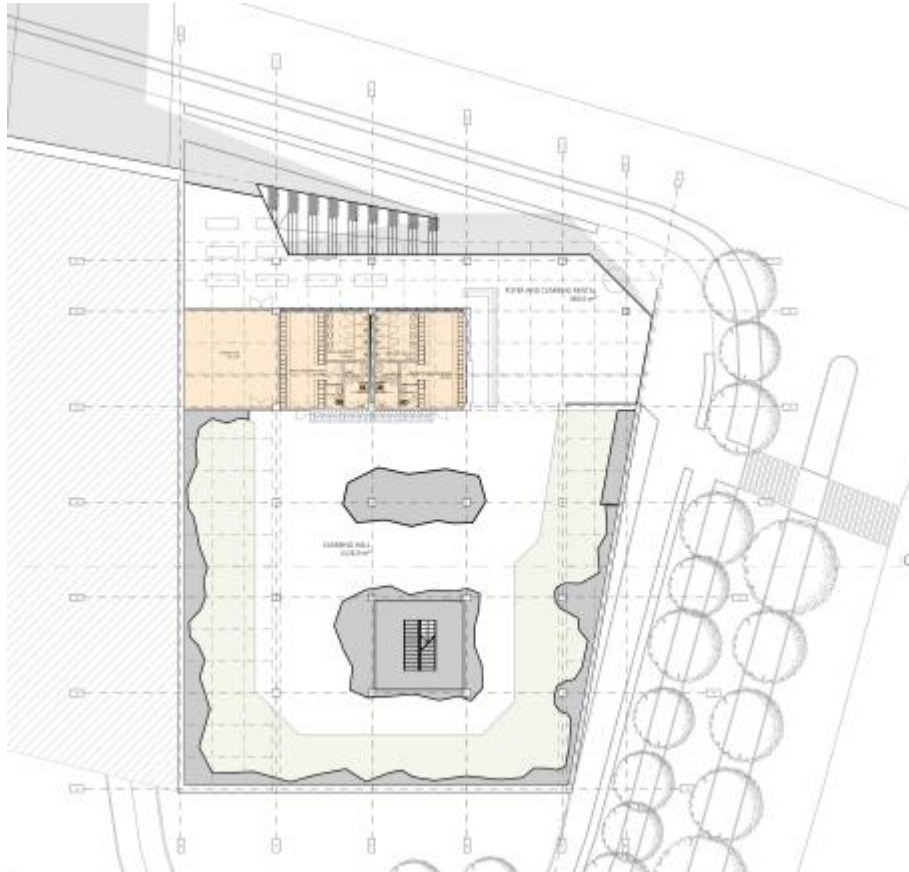


Illustration 42 – Plan of the climbing hall

The complex of all four buildings, thanks to the quality of the proposed architecture, the multifunctional program and the high-rise character of one of the office buildings, is to emphasize the dynamically developing district in the urban fabric of the city, being the new center of Krakow and constitute an attractive dominant over the water and among neighboring buildings of equal height. It is worth emphasizing that these are other buildings that with their shapes are opposed to the surrounding infrastructure that generates noise.

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