

**Marcin Charciarek\***

## *The use of precast concrete façade elements in selected projects of new Polish public buildings. Formal meanings and technology*

### *Abstract*

The article is a presentation of selected examples of Polish public architecture as an attempt to search for contemporary architectural meanings and their expression in prefabrication concrete technologies. Prefabrication – increasingly visible in the Polish scenery – is not only becoming a construction alternative to monolithic systems, but is also chosen by architects as the ideal technology to implement their aesthetic intentions. An additional goal of the work is to analyse available sources on the topic of prefabrication of concrete façade solutions, in terms of their impact on the aesthetic expression of architectural objects, and to present the selected type of prefabrication through technical and construction details.

Contemporary concrete architecture is increasingly subject to prefabrication due to higher technical and quality requirements. The cited patterns of application of modular façade solutions prove that they do not have to limit the architect's design freedom and can be an alternative to leaving the beaten tracks of monolithic concrete construction.

**Key words:** concrete, prefabrication, Polish architecture

### *Introduction*

The examples presented in the article illustrate the two main assumptions determining the text's formula. First of all, architecture is always an attempt to materialize an idea. Secondly, through the presentation of technology and construction details, the author wants to show the process of ennoblement (or perhaps rehabilitation) of concrete building materials in architecture as a way of searching for new artistic values. The order established in this way is a way of presenting prefabricated concrete architecture through its formal representation and creation, which consists in transferring individual meanings and emotions into the building material. In this context, the detail is an obvious end for the materialization of the idea, as well as the beginning of the idealization of concrete architecture.

The research problem of the article is to point to the technology of prefabricated concrete architecture, which,

associated with unification and uniformity of use, reveals the diversity of the world of forms and architectural meanings that follow the shapes. Prefabricated buildings differ not only in their formal expression, but also in their creative approach to detail as the essence of every creation in concrete architecture

### *Objective*

The aim of the work is to show, using selected examples of Polish public architecture, how the choice of prefabrication concrete technology affects the formal and semantic shape of buildings. Prefabrication – increasingly visible in the Polish landscape – is not only becoming a construction alternative to monolithic systems, but is also chosen by architects as an ideal technology for implementing their own aesthetic intention.

An important reason for taking up the topic of the latest Polish prefabrication is the deepening definition of the term "concrete architecture" as a distinct, expressive aesthetic relationship in which concrete becomes an ideological,

\* ORCID: 0000-0001-9634-3902. Faculty of Architecture, Cracow University of Technology, Poland, e-mail: marcinch@pk.edu.pl

structural, formal and material intention. In this context, the term “concrete architecture” (French: *l’architecture du béton*, Italian: *architettura in calcestruzzo*) means defining the ideological (formal and semantic) value of architecture created in concrete. This term determines a certain scope not only for attempts to technologically imagine an architectural shape, but also is the architect’s will in unique treatment of the selected material.

An additional aim of the work is to analyse the available sources on the subject of prefabrication of concrete façade solutions in terms of their impact on the aesthetic expression of architectural objects and to present the selected type of prefabrication through technical and construction details.

### Methods

The article discusses those architectural ideas that seem exemplary in reading the connections between the idea and the prefabricated matter of architecture. An analysis was carried out of selected public buildings implemented in the years 2017–2021 using prefabricated technology (*case studies*), which appeared in the Polish public space as “reference objects” in the selection of technologies and thus received industry awards – e.g., the annual Polish Cement in Architecture award or SARP Awards.

Literature studies were conducted on the connections between the idea of concrete architecture and concrete technology and prefabrication. A query was conducted on contemporary concrete technology and the principles of its design and incorporation. Photographs, author’s drawings, execution details borrowed from design offices, author’s descriptions, construction descriptions were helpful in individual analyses. Due to the – still – small number of examples, the field of research was limited to a few representative available technological solutions. The technical solutions presented in the article reflect the state, time and possibilities of current system solutions – and therefore available in Polish realities. Due to their very detailed construction specificity, the original drawings were adapted by the author to the possibilities of publication.

### State of research

It seems that the lack of interest in this type of technology in the 1990s was reflected in the poor presentation of the topic of prefabrication in scientific studies or industry publications. One of the few, but very important and complete, is certainly the monograph by Andrzej Basista (2001), in which the author analysed and summarized everything that contributed to the extreme judgment of concrete and its products – including the so-called large slab and other prefabrication systems.

Currently, the results of the query conducted by the author of this text indicate that the scope of studies devoted to concrete prefabrication is an intensively developing science and technology – especially in countries with a high level of material knowledge at technical universities and laboratories in Western Europe and in the United States. This is accompanied by a very rich literature that

is a review of each type of prefabricated construction, various concrete technologies, typical and unusual construction solutions and architectural formations resulting from these analyses. This extensive knowledge is built on studies synthesizing system solutions, by: David Bennett (2005), Friedbert Kind-Barkauskas et al. (2002) or Alfred Steinle et al. (2019), ending with studies presenting detailed solutions for architects, e.g., “Detail” (Peck 2016).

In Poland, after decades of rejecting concrete prefabrication (related to the low quality of the so-called large-panel construction, inflexibility and uneconomical solutions in residential construction), certain *differentia specifica* can be observed, i.e., a return to thinking about prefabricated architecture in terms of economizing construction and rationalizing architectural form. Not without significance for the use of this type of technology is the idea of sustainable development, in the context of which prefabrication of concrete corresponds to everything that is part of the trend of lower energy use, building material or its reuse.

The increasingly visible degree of implementation of prefabrication has been intensified, and the awareness of building with cheaper and less energy-consuming material has resulted in the introduction of new concrete technologies into residential, industrial and public construction systems. This is illustrated by the increased number of publications in recent years – by Grzegorz Adamczewski, Paweł Woyciechowski (2015), Paweł Mika (2011), Krzysztof Kuniczuk (2011). There is also a visible return to recognized publications from the Polish People’s Republic period by Carl Krause (1974) or Ludwik Cejzner (1976). Since 2000, more and more catalogues and guides have appeared published by individual prefabricated concrete factories. A very important role in promoting the idea of prefabrication has been played by the conferences of the Concrete Producers Association and the Cement Producers Association organized in recent years. Annual conference publications are evidence of new insight into the issues of concrete prefabricate<sup>1</sup>.

### Results

The change in the approach to the issue of prefabrication in architecture is evidenced by the increasing number of very prestigious projects carried out using this technology, especially in recent years. After a period of difficult experiences with monolithic technology, the choice between new concrete technologies has become an important element of the creator’s thinking about the architectural form, and consequently – about the construction and implementation design. Architects take into account not

<sup>1</sup> In Poland, there are no clear regulations governing the process of designing and making concrete elements from architectural concrete. The most commonly used is the study by Krzysztof Kuniczuk entitled *pt. Beton architektoniczny – wytyczne techniczne* [Architectural concrete – technical guidelines] (2011) published by the Association of Cement Producers, with the help of which the architect should select the category of architectural concrete and define the parameters concerning porosity, uniformity of colour and formwork category, determine the exposure classes due to freezing/thawing, and also determine the cost of execution.

only all the elements of implementation – starting from the costs of the design and construction, concrete specifications or implementation time – but also increasingly often decide on prefabrication due to the predictable quality of the obtained concrete and the possibility of including an original idea in it. This also results from the obvious advantages of prefabrication – its production in a plant designed for this purpose, in optimal conditions, in which it is possible to ensure constant quality control, better than that achieved on the construction site, using, e.g., monolithic concrete.

This trend is also associated with the significant need to recognize the construction process as an element of sustainable development, which imposes the use of solutions that reduce the consumption of energy and raw materials in every area of life (Mika 2016, 8). Serial production, multiple use of high-quality forms, formwork and almost complete mechanization of the production process significantly accelerate production, and the abandonment of full formwork and scaffolding shortens the process of building the facility. In the production process, prefabricated elements obtain not only the target technical characteristics (e.g., strength), which reduces technological breaks in the construction of the facility (related to, e.g., maturation of the concrete of structural elements), but also visual (aesthetic – washed, etched, sandblasted, polished concrete), which in *in situ* technologies were often a problem for designers and contractors due to unpredictable effects resulting from the lack of execution rigor. An additional advantage of concrete prefabrication is the routine assembly of elements by specialized teams and the use of such design solutions that accelerate assembly work. Prefabrication is becoming a recognized (although not always available), learned and understandable construction technique for architects, which they can use without restrictions, but which requires conscious agreement with all parties to the investment in order to ensure the final shape of the architecture assumed in the original idea.

In the Służewiec district of Warsaw, in the former industrial zone, the **P4 hotel and office complex** (2017) designed by JEMS Architekci was built. The architectural concept is to be created by four buildings, two higher 7-storey buildings and two lower 4-storey buildings. The visible, raw structure of the buildings was created using the concrete monolith technique and prefabricated elements: reinforced concrete frame structures made *in situ* finished with a concrete cladding system. The distinctive elements of the buildings that give them character are V-shaped pillars and massive beams. The functional flexibility of the project is due to the ordered frame structure, which is an interpretation of Le Corbusier's "plan libre" creating freedom of elevation.

The two completed buildings show the search for a brutalist model for this type of architecture. The expression of P4 buildings finds the meaning of architecture in the logic of the brutalist idea of *as found* (Banham 1966), which is carried out with an evident message of a strong and expressive formal concept (Fig. 1). However, these are not buildings referring to the patterns of the 1960s and 1970s, traditionally built from the raw face of façade concrete.



Fig. 1. Warsaw, P4 Hotel and Office Complex, designed by JEMS, 2017 (photo by M. Charciarek)

Il. 1. Warszawa, zespół hotelowo-biurowy P4, proj. JEMS, 2017 (fot. M. Charciarek)

In P4, the texture of the formwork was replaced by well-thought-out and elegant geometries of prepared concrete cladding on all external structural elements. The approach to the attempt to monumentalize the scale of both buildings and their strong, repeatable articulation is certainly brutalist. The structural system of the whole – ceilings, beams, columns – visible outside and inside, is an essential element shaping both the side and front façades of individual buildings, and also creates the individual character of the interiors.

Although the basic structure of the entire P4 complex was made using monolithic technology, the main aesthetic function is performed by prefabricated elements. Individual fragments and details were created from a mix based on white cement and crushed granite aggregate with a gradation of 2–16 mm tested on a mock-up (on a 1:1 scale). Almost 20 different tests were performed before the effect desired by the architects was achieved. All prefabricated elements on a scale were made on steel forms that were designed and manufactured in a prefabrication factory near Warsaw. The effect of exposed aggregate was created by covering the forms with an agent that retards the setting of the mixture at the very face of the precast element, which, after hardening, was mechanically rinsed under high pressure at the appropriate moment. The shape of the

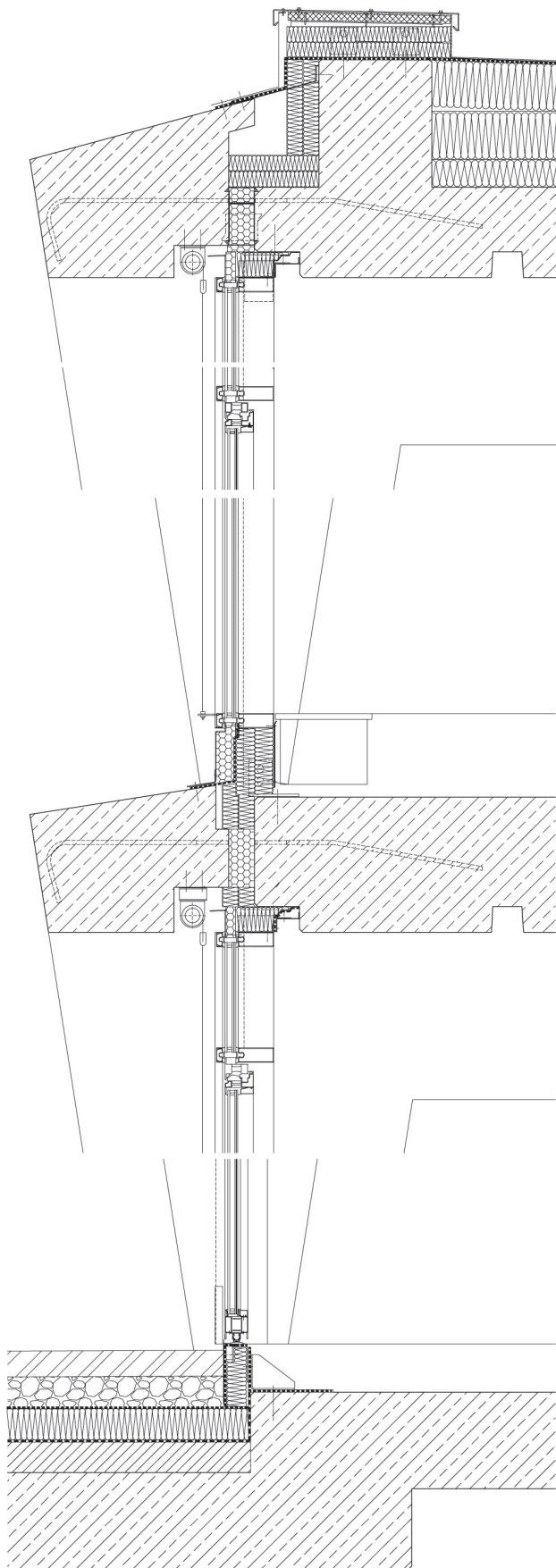


Fig. 2. Warszawa, P4 Hotel and Office Complex, detail of the façade, designed by JEMS, 2017 (drawing by M. Charciarek)

Il. 2. Warszawa, zespół hotelowo-biurowy P4, detal fasady, proj. JEMS, 2017 (rys. M. Charciarek)

forms and the density of the mix were designed so that the aggregate would be properly distributed at the walls, in places where the setting delay was planned.

According to the main contractor, the P4 buildings consist of 1,880 prefabricated elements with a total surface area of 7,808.5 m<sup>2</sup>. The largest span of the element is 723 cm. Horizontal prefabricated elements serving as cornices between floors act as a fire-proof partition. The building elevations included a total of 186 types of prefabricated elements (different shapes and sizes) (Pięciak 2020). The prefabricated elements in the hotel building, facing the street and in the office building located deep in the plot, do not differ in texture and colour (Fig. 2).

In the landscape of Polish architecture, Bolesław Stelmach's implementations are exceptionally expressive in terms of materials. Within the search for "new structures", there is still a visible tendency to give a monumental character to architectural form found in the dialogue of modernist patterns and elementary, classical references. Stelmach's "monumental concrete" and "analogue concrete" are the equivalent of the synthesis of form practiced by David Chipperfield – somewhere between contemporary reductionism and the classical trend (Stelmach 2013).

The white, six-story building of the **Sejm Committees in Warsaw** (2019) (Fig. 3) seems to be a pure emanation of the representation of the architecture of public authority – all thanks to the rhythmic "coatings" of light concrete, which, also in their classic division and modulation, create the impression of seriousness and security – important and appropriate meanings in the case of centres of highest state authorities. The building of the Sejm Committees also refers in its expression to the elite source of the Latin word *classicus*, derived from the term *classis* – class – referring to the social, political and educational layers and at the same time reflecting the sense of prestige and norms of European democracy (Hrankowska 1994, 14). In Stelmach's building, the main formal principle is the arrangement of rhythmic prefabricated concrete pilasters and walls, supported on the entire perimeter by a prefabricated concrete cornice (Fig. 4). The pilasters do not have capitals or a separate tympanum. Decorum was replaced by the rationalist aesthetics of a technical structure serving as support and background for pure technical concrete.

The typified and reduced form forced everything that was invented in reinforced concrete to be the result of a well-thought-out technology – from designing reusable formwork to building many versions of the mock-up in a 1:1 scale. All this to produce over 500 external pillars that constitute the façades of the parliament building. The colour of the entire facility is very important – the whiteness of the concrete material was not only supposed to refer to the attributes of democratic power, but was also supposed to be a reference to the Kielce sandstone and limestone from which the neoclassical main building of the Sejm of the Republic of Poland is built (Stiasny "Budynek Komisji Sejmowych").

The evident neo-classical rationalism of the Sejm building establishes the dominance of geometry inherent in the character of public architecture, organized by a system of divisions and proportions that make the building



Fig. 3. Warsaw, the Building of the Sejm Committees, designed by Stelmach and Partners, 2019 (photo by M. Czechowicz)

Il. 3. Warszawa, Budynek Komisji Sejmowych, proj. Stelmach i Partnerzy, 2019 (fot. M. Czechowicz)

an accessible and recognizable form. Contemporary versions of pilaster strips, pilasters, cornices and trellises are, in a way, another incarnation of monumental architectural orders transformed over decades. Also evident for Stelmach are the elements that build material identity: mass, volume, structure, and also the properties of building materials: the size and thickness of concrete, the colour of glass, the colour of steel.

Special attention to architectural detail can be seen in the **Museum of the Polish Army** in Warsaw – one of the elements of the urban development on the Warsaw Citadel, built according to the 2009 competition design by the WXCA Pracownia Projektowa team (Fig. 5). According to the terms of the competition, the area defined by the outline of the former Russian fortress was developed as a compositional spatial and functional assumption, referring in scale, colour and layout to the historical architectural and urban layout. The whole will eventually consist of the Polish History Museum, centrally located in relation to the main square, and the flanking twin pavilions of the Polish Army Museum.

The simple and rectangular solids speak with their volume, emphasising the total aesthetics of architectural concrete. As Szczepan Wroński, the author of the building, says: *In order for the planes drawing the space to resound*

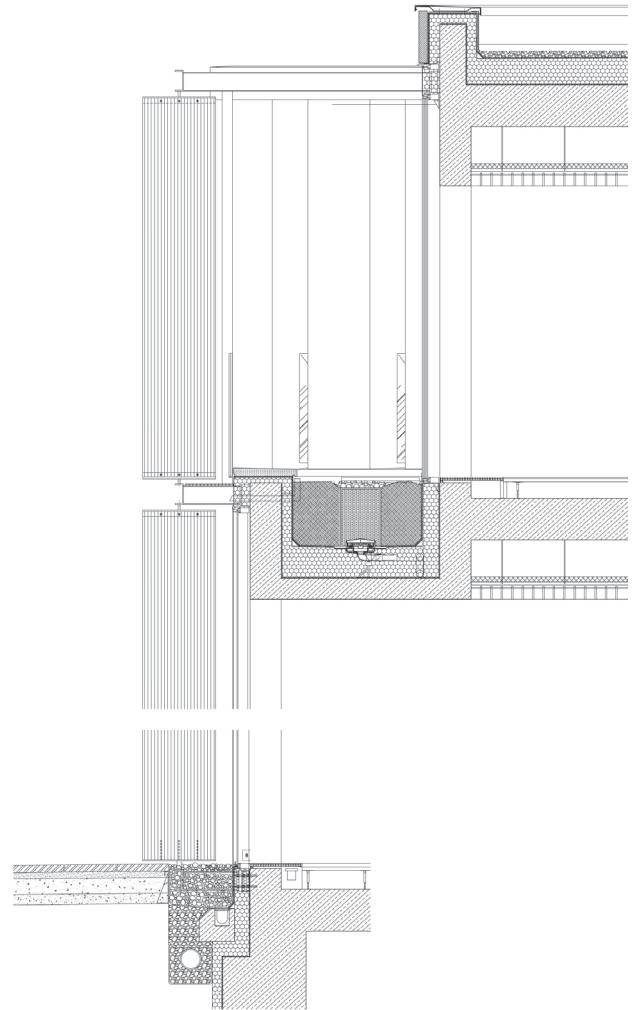


Fig. 4. Warsaw, the Building of the Sejm Committees, detail of the façade, designed by Stelmach and Partners, 2019 (drawing by M. Charciarek)

Il. 4. Warszawa, Budynek Komisji Sejmowych, detal fasady, proj. Stelmach i Partnerzy, 2019 (rys. M. Charciarek)

*properly, an unquestionable and sincere massiveness of the building material was necessary. Unquestionable and delightful. After examining a number of paths, among the potential materials, architectural concrete coloured in the mass in a warm brick-red colour, but not too intense, but slightly dimmed* (Dworzak-Żak 2019, 61), was decided upon.

The results of the design work show that the WXCA architects understand Louis Kahn's sentence that the "soul" of architecture, as a category of non-measurable values, is – simply – a phase of work on detail, composition and the search for an initial form – some ordering *primary form* that is mysteriously transformed into a real object<sup>2</sup>. At the Citadel, coloured concrete was to become a means of expression and communication, facilitating

<sup>2</sup> According to Kahn, the detail is the beginning of the idealisation of any architecture: [...] *when one is confronted with a fragment, regardless of size, structure, light, one reacts to its character, its spiritual atmosphere, one notices that everything that man proposes and realizes becomes a single entity* ([after:] D.B. Brownlee 1992, 69).

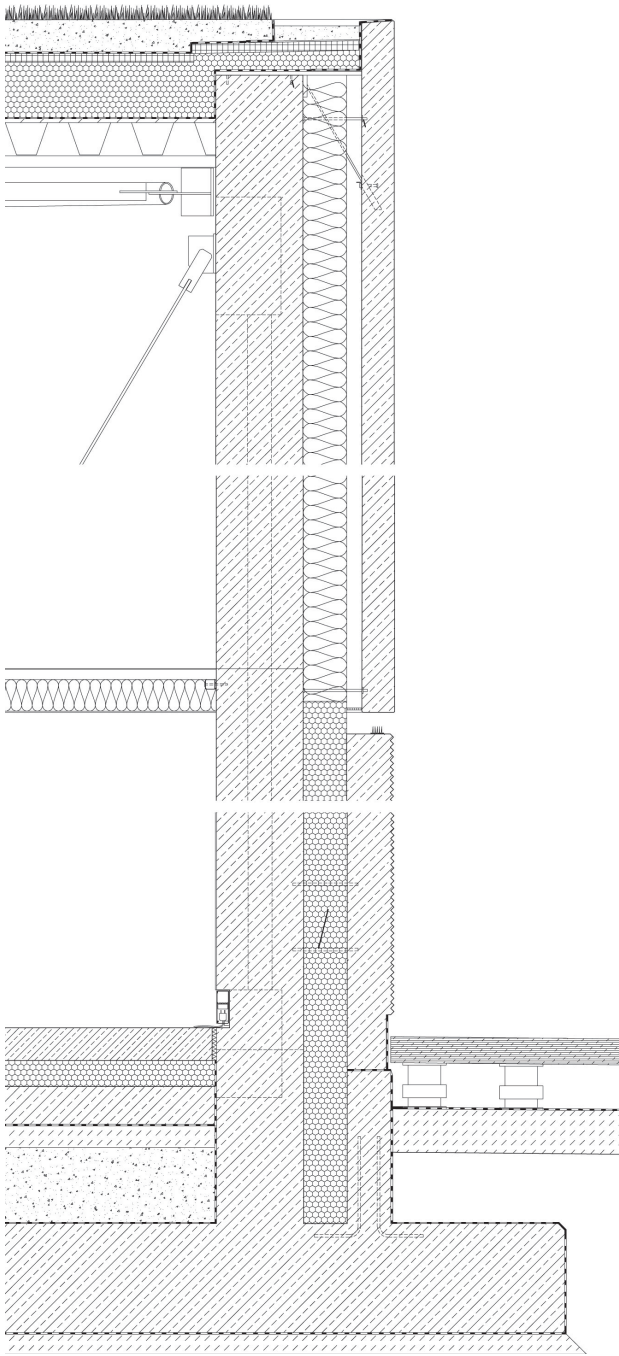


Fig. 5. Warsaw, Museum of Polish Army, detail of the façade, designed by WXCA Pracownia projektowa, 2022 (drawing by M. Charciarek)

Il. 5. Il. 5. Warszawa, Muzeum Wojska Polskiego, detal fasady, proj. WXCA Pracownia projektowa, 2022 (rys. M. Charciarek)

an understanding of “what the building wants to be” (Brownlee 1992), while also being an interpretation of the architect’s “concrete sensibility”.

The leitmotif became the spatial pattern on the façades – the chevron relief – a repetitive motif, 15 cm wide, which in a subtle way alludes to elements associated with the military. The ambiguity of this geometric ornament makes it possible to find in it hussar wings, military ranks or the weave of a general’s cord. This modelling of the façade’s



Fig. 6. Warsaw, Museum of Polish Army, designed by WXCA Pracownia projektowa, 2022 (photo by M. Charciarek)

Il. 6. Warszawa, Muzeum Wojska Polskiego, proj. WXCA Pracownia projektowa, 2022 (fot. M. Charciarek)

surface means that the play of light and shadow heightens the feeling of “tangibility” and tactile impressions (Pallasmaa 2012). Concrete was treated as a medium for memory, the past and the military legacy of the Polish nation.

It proved to be very important to find suitable colours for the façade elements that would be appropriate in the important context of the Citadel’s brick buildings. Hundreds of specimens of pattern-printed and smooth surface coloured concrete were therefore examined (texture, colour, quality of chevron reproduction, visual effects after the application of anti-graffiti treatment). In the next stage, it was very important to produce a full-scale mock-up presenting the variety of solutions and clarifying the architects’ requirements and the contractor’s capabilities. Setting the mock-up at the height of the target building (approx. 16 m) additionally allowed for the development of details concerning the colour, texture, concrete texture, chevron scale, exposure to light, weather conditions or the juxtaposition (interfaces) of concrete with other materials (Adamowicz 2021).

According to the study, architectural face concrete classified as BA3 was adopted (Kuniczuk 2011). After testing dozens of samples (60 × 60 × 5 cm) for the correct colouration of the concrete, a mixture with a colouration of 5 per cent was used entirely from one concrete manufacturer. In order to achieve a uniform colour and texture of the façade, it was also necessary to maintain the same technological conditions at all times (perfectly reproducible composition of the concrete mixture, concrete feeding method, its vibration, care), which is also impossible to achieve in the long term. Ultimately, wall section matrices with reliefs 120 cm wide and 735 cm high and a corner matrix were made, on which, among other things, the technology of making chevrons was tested<sup>3</sup> (Fig. 6).

<sup>3</sup> System formwork with rubber matrices was adopted. The formwork storage area was covered with tarpaulins to keep it clean and to protect the dies from UV radiation.



Fig. 7. Wrocław, Nowy Targ Office Building, designed by Atelier Maćków, 2019 (photo by M. Lulko)

Il. 7. Wrocław, Biurowiec Nowy Targ, proj. Atelier Maćków, 2019 (fot. M. Lulko)

The concrete chevron of the Museum of the Polish Army is to become, as it were, a “matrix” of national memory, a concise and essential sign that formulates the meaning of the museum. The geometric visual sign in concrete is meant to be a vestige facilitating the understanding that monument belong to that sphere of the human imagination which is responsible for the feature of idealising history by bringing together in one place everything that concerns material and immaterial history. The culture and collective experience contained in them become a trace of each nation’s history and, with the help of the narrative of form and matter, a means of communication and a carrier of values (Forty 2009).

The belief that the monument is built by the tangibility of the physical material is accompanied by the belief of the WXCA architects in the existence of an immaterial, hidden expression – the “character” of concrete – a synthesis of idea and form derived from it.

The **Nowy Targ office building** (2019) is a seven-storey building precisely integrated into the urban landscape in the centre of Wrocław. The office building stands near St. Catherine’s Church, closing the frontage of Nowy Targ Square (Fig. 7).

The architectural design of the office building was created by the studio of Zbigniew Maćków, an architect known for his search for architecture that is always a response to the existing spatial, historical or formal context. This time, the architect gave the building the form of a modular vol-

ume with ordered, rhythmic divisions. The project’s author explained in an interview that the aim was to create architecture with a truly metropolitan character – he claimed: *Architecture has a tremendous power to influence space, people and the living pattern of the next generations. This is why it is so important to create a well-thought-out design of a building so that it communicates naturally with its surroundings, its inhabitants, and at the same time refers to the history and specificity of the place in which it is being built.* This is precisely the idea behind the Nowy Targ office building in Wrocław (Sołomiewicz “Zbigniew Maćków opowiada o projektowaniu Nowego Targu we Wrocławiu”).

In this very rigorously defined context, one can see the intention to create an architecture with a good, adapted scale to the surroundings and the sustainability of the material solutions. At the same time, an effort was made to create a model of an office building that is not an introverted structure that only takes advantage of the ideal location and the existing infrastructure of the city. The classical (composed of prefabricated lesenes and cornices) order of the newly designed frontage has its source in the rationalist expression of the architecture, whose visual rigour is more important than any formal expression. The homogeneity of the façade, the proportions applied between the individual elements of the massing, and its rhythmic divisions allude to an architecture that achieves the status of a landmark in the complex space of the city. Discipline can be seen

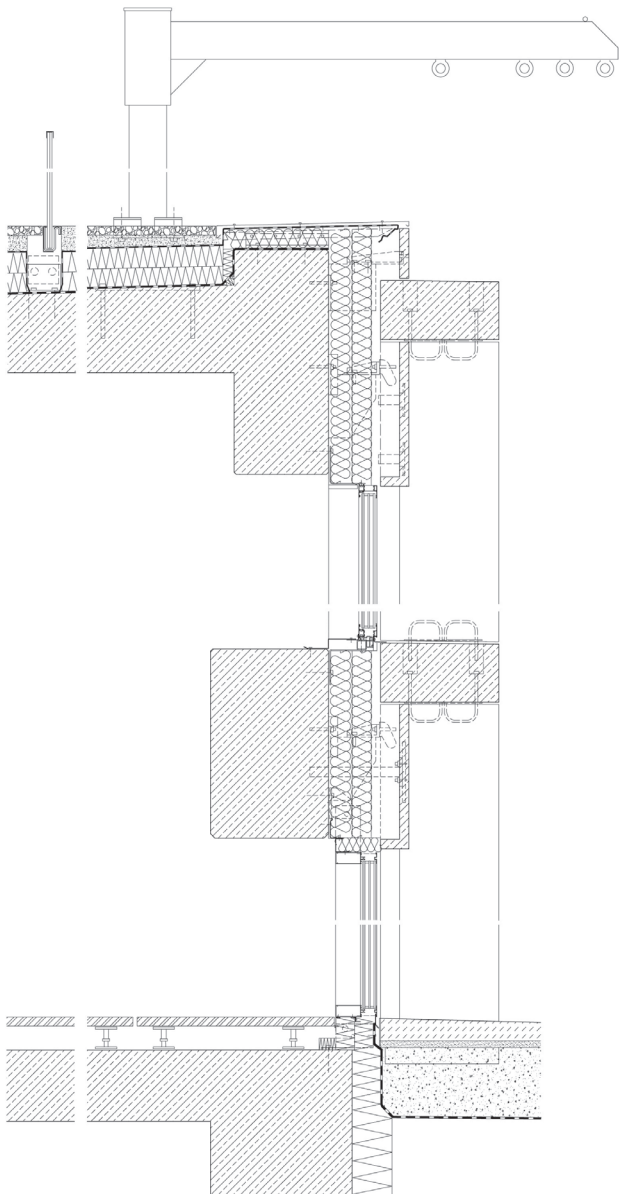


Fig. 8. Wrocław, Nowy Targ Office Building,  
detail of the façade, designed by Atelier Maćków, 2019  
(drawing by M. Charciarek)

Il. 8. Wrocław, Biurowiec Nowy Targ,  
detal fasady, proj. Atelier Maćków, 2019 (rys. M. Charciarek)

in the window elements, the elevations and dimensions of the spatial elements of the façades, which are differentiated according to their compositional role and position within each façade. Prefabricated elements in the form of slabs and spatial elements (cornices, inter-window pillars) made of C35/45 grade architectural concrete, reinforced with steel rods and dispersed fibre (Fig. 8), protected against water penetration by hydrophobisation, were used for the external wall cladding. The total number of precast elements is almost 2,500 pieces in more than 370 types. The method of surface finish was chosen after analysis of three mock-up versions (Fig. 9) (Maćków “Biurowiec Nowy Targ we Wrocławiu”).

In all parts of the building, it is evident that the legacy of the 20<sup>th</sup> century – the principle of *less is more* – is trans-



Fig. 9. Wrocław, Nowy Targ Office Building,  
detail of the concrete façade, designed by Atelier Maćków, 2019  
(photo by M. Charciarek)

Il. 9. Wrocław, Biurowiec Nowy Targ,  
detal prefabrykowanej fasady, proj. Atelier Maćków, 2019  
(fot. M. Charciarek)

lated into the principle: *more by less*. Analysing the elements and their structural affiliation, the designer divides the parts of the building into those created by measure and technique, order and light, and the physicality of transformed concrete. The quality of the building suggests that there is no good architecture without sensitivity and consistency; what is needed is the designer’s specific sensitivity, but also his knowledge and precision in the technical action and elaboration of the details, accompanied by an awareness of the matter in the careful workmanship of specialised craftsmen.

### Conclusions

Nowadays, concrete architecture, due to the high-quality requirements for materials, is increasingly subject to prefabrication. The cited application examples of modular façade solutions prove that they do not have to limit the architect’s design freedom and, in addition, the use of prefabrication technology can offer an alternative to the outgoing trend of monolithic concrete construction. This



process also results from the savings planned by investors – energy and implementation time – as well as due to the complexity of the structures being implemented and the expected quality of elements that play a key role in shaping the aesthetics of façades. The presented objects, in which prefabricated façade solutions were used, show that the technology of making a modern façade is consistently introduced into the landscape of Polish architecture. This is due to the properties of the material itself and almost complete freedom in shaping the form and aesthetics of individual building elements. The variety of solutions and selection of prefabricated elements in terms of aesthetics, statics, structure and dimensions allows designers to freely implement the idea of architecture by moving within the framework of the desired aesthetic features contained in prefabricated concrete.

This requires a not inconsiderable amount of knowledge about prefabrication in terms of logistics (delivery to site of prefabricated elements), the sense of seriality and repe-

tion of elements (lower cost of construction), dimensional and execution modularity – everything related to a rational and economical approach to design and construction. Such a point of view does not exclude thinking of architecture as a unique work, created for the viewer in unison by the architect, the specialists and the investor, who are looking for architecture in an individual guise.

The presented experience of using precast concrete demonstrates that architecture as a physical-prefabricated structure is still the construction of an idea, so that the material logic of the building must be recognisable along with the idea being realised. This specific interdependence in the presentation of the concept and the material of architecture seems to be an attempt at the absolute self-determination of one's architecture – between the idea and the material of the work.

Translated by  
Krzysztof Barnas

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## Streszczenie

### *Użycie betonowych prefabrykatów elewacyjnych w wybranych realizacjach nowych polskich budynków użyteczności publicznej. Znaczenia formalne i technologia*

W artykule zaprezentowano wybrane przykłady polskich budynków użyteczności publicznej będących próbą poszukiwania współczesnych znaczeń architektonicznych w technologiach prefabrykacji betonowej. Prefabrykacja – coraz bardziej widoczna w polskim krajobrazie – nie tylko staje się alternatywą budowlaną dla systemów monolitycznych, ale także jest wybierana przez architektów jako idealna technologia do realizacji autorskich zamierzeń estetycznych. Dodatkowym celem autora jest analiza dostępnych źródeł poruszających tematykę prefabrykacji betonowych

rozwiązań elewacyjnych pod kątem oddziaływania na wyraz estetyczny obiektów architektonicznych oraz ukazanie wybranego typu prefabrykacji poprzez detal techniczny i budowlany.

Współczesna architektura betonowa coraz częściej podlega prefabrykacji ze względu na coraz wyższe wymagania techniczne i jakościowe. Cytowane wzorce zastosowań modułowych rozwiązań elewacyjnych dowodzą, że nie muszą one ograniczać swobody projektowej architekta i mogą stanowić alternatywę dla wyjścia z utartych nurtów monolitycznego budownictwa betonowego.

**Słowa kluczowe:** beton, prefabrykacja, architektura polska