# The Monuments of Gdynia Post-War Construction Pace

*Maciej Niedostatkiewicz*
*Leszek Niedostatkiewicz*

## 1.0 Introduction

The currently erected residential estates, public utility buildings and other structures in the area of Gdynia are characterised not only by high architectural and aesthetic values but also by modern solutions applied in terms of construction and materials used. Such situation was also true in the 1920s and 1930s, which was a period of rapid development of Gdynia. That period originated an exterior shell referred to today as an example of Gdynia Modernism[1,2]. Those years did also bring about a popular term for a fast pace of investments realisation, which has since borne the name of Gdynia construction pace[3]. This pre-war expression became aptly accurate in post-war times, during the period of an intensive reconstruction of the country from the ruins of war, as well as of an increased demand for residential building construction development. The article herein aims at presenting examples of building constructions of the years 1950-1970, which indicate a considerable commitment of all, the designers and the contractors, to introducing technical progress in order to accelerate the investments' realisation pace.

1. Sołtysik M.J.: *Na styku dwóch epok. Architektura gdyńskich kamienic okresu międzywojennego*. Gdynia, Alter Ego Sławomir Kitowski 2003.
2. Kitowski S.: *Gdynia-miasto z morza i marzeń.* Gdynia, Alter Ego Sławomir Kitowski 2005.
3. Niedostatkiewicz M., Niedostatkiewicz L.: *The forgotten constructions of young Gdynia,* [in:] *International Workshop "City of tomorrow and cultural heritage - Pomerania outlook"*, Centre for Urban Construction and Rehabilitation CURE, Gdańsk, v.1, 2005, pp. 17-26.

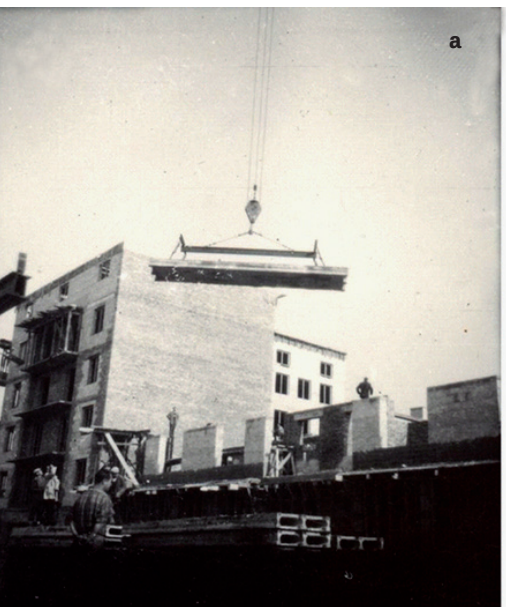
## 2.0 Selected innovative solutions implemented in buildings in the area of Gdynia in the post-war period

### 2.1 The "modified Leningrad" ceilings

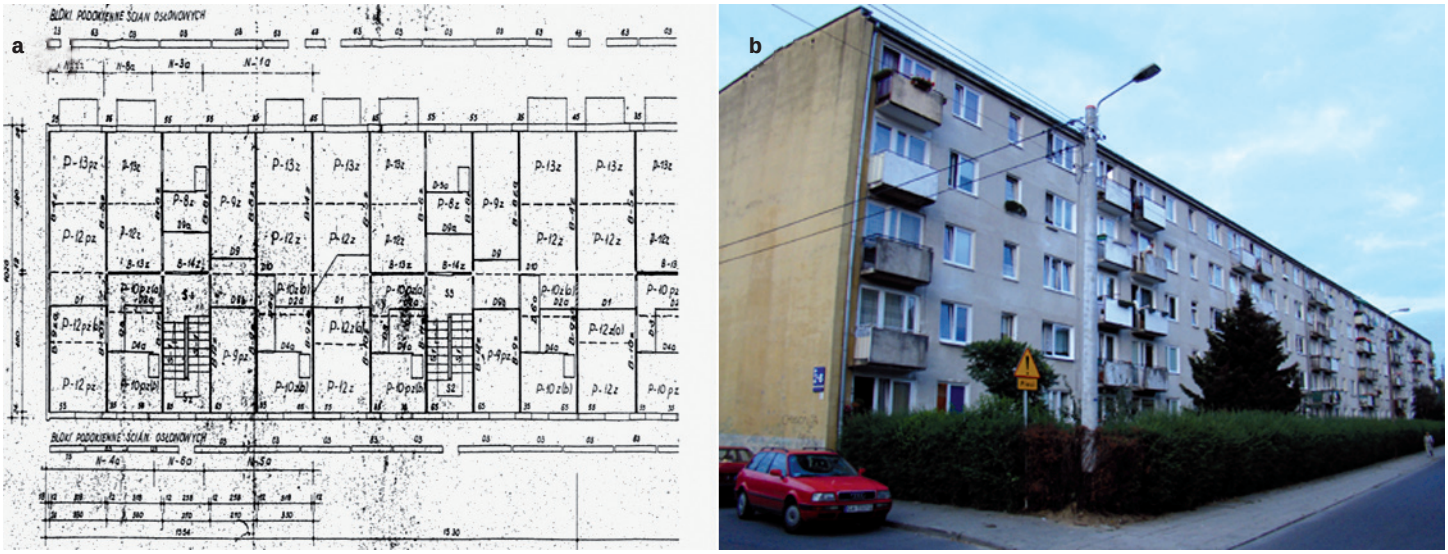
In the second half of the 1950s of the twentieth century, on the basis of the design documentation wrought by Gdańsk General Building Office Miastoprojekt-Gdańsk, prefabricated multidimensional ceilings were used for the first time, which were to replace the DMS ceilings, popular at the time. In order to accelerate the implementation trail, the ceilings were named modified Lenigrad[3,4,7], owing to political implications. The ceilings were used in almost all of the buildings in the vicinity of the so-called fields, i.e. in the area of current Władysława IV Street (Fig. 1). The first modified Leningrad prefabricated ceilings plant was built in what is now Władysława IV Street, in the section between Kwiatkowskiego Street and Obrońców Wybrzeża Street, and thus was probably the first prefabrication plant in Trójmiasto. The building at 36-44 Abrahama Street became the first object where the modified Leningrad ceilings were used. The solution of ceiling boards support deserves particular attention, as it was not used in a similar way not until their implementation in the W70 multiboard system. The modified Leningrad ceilings had been commonly used in

4. Niedostatkiewicz M.: *Analiza budynków mieszkalnych Regionalnego Systemu Budownictwa Wielkoblokowego w aspekcie możliwości ich modernizacji,* "Zeszyty Naukowe Politechniki Gdańskiej", No. 61, 2007, pp. 203-210.

***1.*** *Multi-family residential building at 36-44 Abrahama Street built with the use of "modified Leningrad" ceilings:* ***a.*** *the view during construction,* ***b.*** *a detail of the ceiling boards support,* ***c.*** *the walls structural layout with a reinforced concrete half-skeleton prefabricated from H frames with openwork bolt*








***2.** Multi-family Morek-type residential building **a.** a ground plan of a typical storey of an MBV-P system multi-family residential building (solution according to archived project documentation), **b.** the view of the building in its current state*

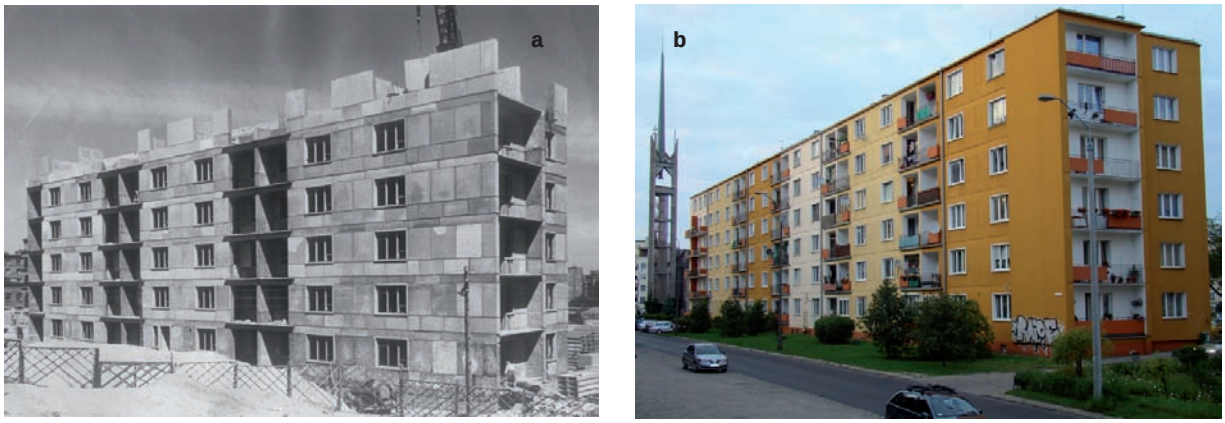
the area of Gdynia until the obligatory order to use typical multichannel boards, the so-called "Żerańskie boards", was introduced. The building at 36-44 Abrahama Street was at the same time the first one where, apart from the modified Leningrad ceiling boards, a reinforced concrete half-skeleton prefabricated from H frames with openwork bolt was used in longitudinal construction layout in the interior wall, which allowed for a collision-safe conduct of piping installations and ventilation channels. The H frames were manufactured in the prefabrication plant in wooden casts. The concept of using the prefabricated H frames was implemented foremost in order to accelerate construction pace and simplify buildings' construction solutions in the vicinity of the staircase.

The building at 50-56 Abrahama Street was the first one where, apart from the modified Leningrad boards, a ground floor exterior walls construction solution in the form of reinforced concrete "Virandella frame" was used. Instead of bringing the ground floor reinforced concrete columns down to the foundation level and conduct a setting irregular in plan in the form of foundation benches and footing, a foundation bench equal in width and a full basement wall of concrete blocks were created, upon which the Virandella frame was set. A massive ground beam leaning on the basement wall as well as columns and reinforced concrete bolt conducted from it, created a complete whole. The solution had been implemented in order to accelerate construction pace and was also repeated at other construction sites in Gdynia.

### 2.2 The grand-block technology

As a solution aiming at completing a considerable number of residential chambers in fast pace, as well as considering the necessity to reduce investments costs, a first project of a grand-block building[4,5,7] on the Polish Coast was designed in 1961 by Gdańsk General Building Projects Office Miastoprojekt-Gdańsk. The design fell into the so-called *Gdańsk Set* which was the beginning of material construction and technological solutions for residential buildings designed within the frames of the Regional Grand-block Building System (Fig. 2). Janusz Morek, MSc. Eng. was the author of the project's architectural part. The residential buildings, popularly known as the *Morki*, had been commonly built in Northern Poland since the beginning of the 1960s until the beginning of the 1980s mainly by the Residential Building Plant (ZBM), later transformed into Gdynia Residential Building Enterprise (GPBM). The initial experimental production of grand-block wall prefabrications, later the grand-boards, as well as their assembly, was conducted in Gdynia in Gniewska Street and in Gdańsk in the so-called Little Seafront (Małe Przymorze). The first residential housing development completed on the basis of the Morek-type building is located in Gdynia, in Chylonia district. During the first phase of construction, since the year 1961, the buildings had been designed in the grand-block technology under the name of MBY-V. Walls at the basement level were made as concrete monolithic ones of 15 cm in gauge. In the overhead part, the supporting interior walls were designed of reinforced concrete monolithic prefabrications of 12 cm in gauge. The height of the prefabrications equalled the height of the storey, whereas the width measured 120 cm and 240 cm. The exterior longitudinal walls were deigned of the petite-dimensional cellular concrete of 24 cm in gauge, whereas the transverse exterior walls, as in the case of supporting interior walls, with additional cellular concrete coat laying of 18 cm in gauge. In 1963 the building's construction technology changed to the grand-board under the name MBP-V. The walls of the ground-penetrating part began to be built using reinforced concrete prefabrications of 15 cm in gauge. The overhead transverse walls were altered in terms of three proportions: the production of prefabrications of 480 cm in span, of even track width, began. The longitudinal exterior wall was also redesigned. Medium-sized prefabrications in banded arrangement were used, consisting of the following: the sub-window, the inter-window and the over-window bands. The sub-window and the inter-window bands were made of autoclaved cellular concrete of 24 cm in gauge; gas concrete inter-window pillars were set directly on the sub-window band. The common use and the popularity of the Morek-type buildings led the Authors Team of Miastoprojekt-Gdańsk to receive in 1964 the Team Prize of the Minister of Building and Building Materials Industry for "implementing a project of a series of typical 5-storey residential buildings constituting an input to the regional typifying an unification in Gdańsk". A particular attention must be drawn to the fact that the Morek-type buildings had practically been the first buildings in the national scale to be built using industrialised technology – the available technical literature provides that grand-block building was introduced to common use in Poland in Warsaw as late as in 1967 under the name of PBU. Moreover, yet another fact deserves special attention, namely the one that the construction plans of the Morek-type building were created in 1961, during a period when there were not yet norms referring to principles of designing prefabricated buildings, neither those containing elements of the improved traditional technology. Not until 1963 did one of the first literature publications concerning the residential buildings design of grand-sized elements appear, another

5. Gdańskie Biuro Projektów Budownictwa Ogólnego Miastoprojekt-Gdańsk: *Dokumentacja techniczna powtarzalnego budynku mieszkalnego MBY-V*, *MBP-V, MBP* (archival materials), Gdańsk, 1961, 1963, 1968.




***3.*** *A Multi-family residential building at 37, 3 Maja Street, built with grand-block prefabrications in banded arrangement plastered in prefabrication plant:* ***a.*** *the view during construction,* ***b.*** *the current state*

one in 1967[6]. The principles of prefabricated elements calculations, which were applied in residential buildings, were presented in commonly available technical literature no sooner than at the end of the 1970s. Currently, most of the Morek-type buildings have been undergoing revitalisation consisting mainly of exterior walls thermorenovation as well as heating installation and electric installation systems modernisation.

At the turn of the 1950s and 1960s Miastoprojekt-Gdańsk introduced cavity concrete to building, which was made of post-war brick rubble. The first monolithic buildings raised with funnel cavity concrete in Poland were completed in Gdańsk-Wrzeszcz in Grunwaldzka Street (next to the famous Cristal consumption place). Immediately on completion of those buildings, the construction of a designed grand-block building in banded arrangement was commenced in Gdynia at 37, 3 Maja Street, with the use of cavity concrete prefabrications already plastered in the prefabrication plant[7]. The cavity concrete prefabricated elements plastered in prefabrication plant, however, had in practice shown multiple damages at the edges and quoins, due to the imperfections in prefabrication technology and the lack of proper means of transportation (Fig. 3). Eventually, it necessitated putting up the scaffolding and mending the elevation layout damages. Due to the technological solutions imperfections, constructing grand-block buildings of cavity concrete in banded arrangements with plastering done in prefabrication plant, were discarded. In the case of Gdynia, the experiment concluded with only one building having been raised according to that project solution.

### 2.3 Nylon housing development

Political transformations which occurred in the country after the year 1956 were the beginning of a change in attitude of authorities towards single-family detached building, which was also reflected in the construction industry in the area of Gdynia (Fig. 4). The first single-family detached housing development built in the post-war period in Gdynia-Orłowo was the so-called "nylon housing development". The development was built within the framework of enterprises of a housing association established at the Polish Ocean Lines company – the name of the housing development derives from the period of sailors' private import of nylon tights. Due to the lack of building ceramics, a national competition for a house designed with material alternative to ceramic brick was announced. The winner in the competition was Warsaw University of Technology. The use of an unconventional grill ceiling supported by 4 columns at its perimeter and one column at the plan centre was an entirely prototypical solution. Also, another novelty was to build the exterior walls of "concrete tiles" with the finishing made of rinsed gritting, which were rusticated with cement joint only. The implemented project solution had lived up to the hoped expectations ensuring a high standard of housing during the construction of the nylon housing development buildings (also known by the nickname of wristwatch housing development). Currently, the housing development buildings are undergoing modernisation consisting mainly of exterior walls thermorenovation.

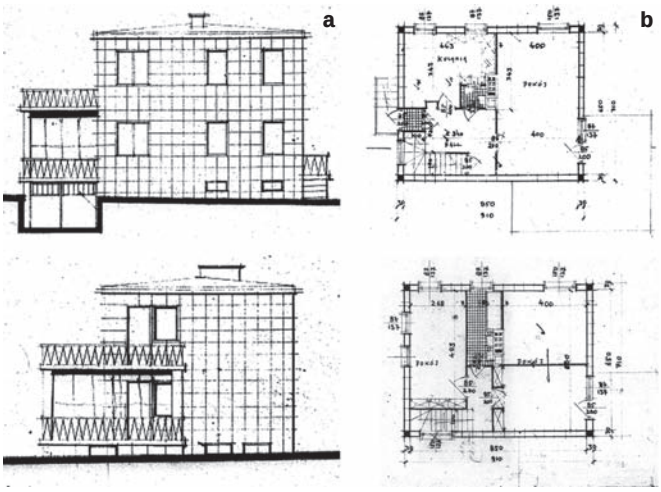
### 2.4 Others innovative solutions

Other examples of modern engineering solutions whose aim was to increase the pace of building works realisation in the area of post-war Gdynia comprise: portal frames over a high-pressure gas pipeline (buildings along Abrahama Street), the building of a prototypical underground car park (a building at 1-3 Obrońców Wybrzeża Street) as well as an experimental exterior walls thermal insulation (buildings at 15, 21 and 25 Warszawska Street). Additionally, the analysis of urban acoustics problem also deserves particular attention (with the example of an acoustic screen built in the post-war period along railway tracks at the extension of Dworcowa Street)[3,7].

### 3.0 Summary

The impressive pace of building objects realisation in the 1950s and 1960s was a continuation of the traditional Gdynia building pace of the pre-war period. A particular attention and admiration must be reserved for the use at almost every construction site in Gdynia, especially in the district comprising the so-called fields, of a considerable quantity of prototypical material/construction solutions implemented above all in order to simplify technology and accelerate the pace of building objects realisation. In most cases, those pioneering solutions have not been recorded anywhere.

***4.*** *A single-family detached building of the nylon housing development:* ***a.*** *elevation plan,* ***b.*** *ground floor the first floor plans (solution according to archived project documentation)*




6. Lewicki B., Karwowski A., Pawlikowski J.: *Budynki mieszkalne ze ścianami monolitycznymi. Obliczanie, konstrukcja i technologia wykonania*. Warsaw, Arkady 1967.
7. The authors' own materials.

## *INFORMATION ABOUT THE AUTHORS*

**Waldemar J. Affelt**, Dr. Eng., Gdańsk University of Technology, Faculty of Civil and Environmental Engineering

**Ewa Barylewska-Szymańska**, Ph.D., the Institute of History of the Polish Academy of Sciences and Uphagen House (a branch of the Gdańsk History Museum)

**Barbara Bielinis-Kopeć**, Ph.D., Lubuskie Provincial Conservation Officer, Member of the Polish National Committee of ICOMOS

**Ulrich Borgert**, architect, conservator; "Brenne Architekten" in Berlin, member of DOCOMOMO

**Aneta Borowik**, Ph.D., art historian, assistant professor at the Department of Art History, University of Silesia

**Renāte Čaupale**, Dr. Eng., architect, MFA, associate professor at Rēzekne Higher Education Institution in Latvia and Riga Technical University

**Elisabeth Chauvin**, architect; Le Havre's (France) city administration; involved in the protection of modernist heritage in cooperation with the UNESCO

**Marek Czapelski**, Ph.D., assistant professor at the Modern Art History Unit, Faculty of History, University of Warsaw;

**Edward Denison**, Ph.D., academic at the Bartlett School of Architecture, historian of architecture

**Małgorzata Dolistowska**, Dr. hab., art historian, assistant professor at the Faculty of Architecture, Białystok University of Technology

**Thomas Flierl**, Ph.D., writer, politician and researcher, former Senator of Berlin for science and Culture

**Jeremy Gould**, Prof., School of Architecture, Plymouth University, United Kingdom; member of Architects Registration Council of UK, RIBA and other associations

**Marcin Górski**, Dr. Eng., architect, assistant professor at the Faculty of Architecture, Warsaw University of Technology; member of ICOMOS

**Hanna Grzeszczuk-Brendel**, Ph.D., art historian, Faculty of Architecture, Poznań University of Technology

**Denis Haberland**, M.Sc., the Institute of Monuments of the Slovak Republic

**Jörg Haspel**, Prof. Dr. Eng., director of Landesdenkmalamt Berlin; the chairman of ICOMOS Germany and a lecturer at the Berlin University of Technology

**Robert Hirsch**, Dr. Eng., architect, Faculty of Architecture, Gdańsk University of Technology, Department of History, Theory of Architecture and Heritage Conservation; City Conservation Officer in Gdynia

**Jeremie Hoffmann**, Dr. Eng., architect, Director of the Department of Conservation of Tel Aviv-Jaffa; on behalf of UNESCO responsible for the protection of the White City; lecturer at the university in Tel Aviv

**Werner Huber**, architect; since 2001 the editor of "Hochparterre" in Zurich

**Barbara P. Jekot**, Dr. Eng., architect, designer and researcher, professor at the Faculty of Architecture, University of Pretoria, South Africa

**Veronika Kapišinská**, Dr. Eng., architect, Institute of Monuments of the Slovak Republic;

**Karolina Kosiacka**, MA, member of the Association of Art Historians

**Anna Kriegseisen**, MA, conservator and heritage expert; head of the Chief Conservator's Department, the National Museum in Gdańsk

**Paul Lankamp**, architect, project manager of Amsterdam North; deputy chairman of the board of the Bond Heemschut, National Association for the Protection of Cultural Heritage; member of ICOMOS

**Jakub Lewicki**, Prof. Dr. Eng, historian of architecture and conservator, head of the Department of Heritage Conservation, Cardinal Stefan Wyszyński University, vice president of the Polish section of DOCOMOMO, member of ICOMOS

**Beata Makowska**, Dr. Eng., architect, Faculty of Architecture, Kraków University of Technology, Unit of Drawing, Painting and Sculpture

**Monika Markgraf**, architect; since 1997 a researcher in the Bauhaus Dessau Foundation; member of ICOMOS and DOCOMOMO;

**Johan Mårtelius**, Prof., KTH Royal Institute of Technology, Stockholm;

**Aleksandra Narczewska**, M.Sc. Eng., architect, City Conservation Office in Gdynia

**Liutauras Nekrosius**, Dr. Eng., architect, the Department of Architectural Fundamentals and Theory; Faculty of Architecture, Vilnius Gediminas Technical University

**Bernd Nicolai**, Prof. Dr., lecturer at universities in Edinburg, Berlin and Trier, professor of history of art and conservation at the University of Bern in Switzerland

**Maciej Niedostatkiewicz**, Dr. Eng., Gdańsk University of Technology, Faculty of Civil and Environmental Engineering

**Leszek Niedostatkiewicz**, Dr. Eng., Gdańsk University of Technology, Faculty of Civil and Environmental Engineering and the Gdynia City Hall, Department of Buildings

**Aino Niskanen**, Dr. Eng, architect, lecturer of history of architecture at the School of Design and Architecture, Aalto University in Helsinki

**Joanna Olenderek**, Prof. Dr. hab. Eng., architect, Łódź University of Technology, works for the Institute of Architecture and Urban Planning, head of the Unit of Design of Public Utility Architecture

**Maciej Olenderek**, Dr. Eng., architect, assistant professor, Łódź University of Technology, Institute of Architecture and Town Planning, Unit of Design of Public Utility Architecture

**Andrzej K. Olszewski**, Prof. Dr., Cardinal Stefan Wyszyński University in Warsaw, art historian, member of DOCOMOMO and Art Déco Society of New York

**Anna Orchowska-Smolińska**, Dr. Eng., architect, Gdańsk University of Technology

**Jadwiga Roguska**, Prof. Dr. hab. Eng., architect, Faculty of Architecture Warsaw University of Technology, head of the Unit of the History of General Architecture; member of the Committee of Architecture and Town Planning of the Polish Academy of Sciences

**Małgorzata Rozbicka**, Prof. Dr. hab. Eng. architect, academic at the Faculty of Architecture, Warsaw University of Technology, the Director of the National Heritage Board of Poland in Warsaw

**Petro Rychkov**, Prof. Dr. hab., Faculty of Architecture and Construction, National University of Water Management and Natural Resources, Rivne, Ukraine

**Svitlana Smolenska**, Prof., National University of Construction and Architecture in Kharkiv, Faculty of Design and Architecture

**Maria Jolanta Sołtysik**, Prof. Dr. hab. Eng., architect, Gdańsk University of Technology, head of the Department of History, Theory of Architecture and Monument Conservation, vice president of the Gdańsk branch of the Association of Monument Conservators;

**Aleksandra Sumorok**, Ph.D., art historian, assistant professor at the Academy of Fine Arts in Łódź

**Anna Syska**, M.Sc. Eng., architect, the Silesia Centre for Cultural Heritage in Katowice

**Wojciech Szymański**, MA, art and architecture historian; the Uphagen House (a branch of the Gdańsk History Museum)

**Stanisława Wehle-Strzelecka**, Prof. Dr. hab. Eng., architect, Kraków University of Technology, Institute of Urban Design, Faculty of Architecture

**Ewa Maria Wolańska**, M.Sc. Eng., architect, the ETH Zürich

**Bożena Zimnowoda-Krajewska**, Ph.D., architect, assistant professor at the Nicolaus Copernicus University in Toruń; member of the Chief Conservation Committee of the State Monument Conservator, member of ICOMOS and the Association of Monument Conservators

**Maria J. Żychowska**, Prof., Dr. hab. architect, Faculty of Architecture, Kraków University of Technology