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Fig. 1 Photograph of Ploče (Upper Ploče, on the left, the hotel, the cultural centre and the cinema) $-\,A\,2024$ photograph

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MODERN PORT-INDUSTRIAL TOWN OF PLOČE, CROATIA RESEARCH ON PUBLIC ARCHITECTURE (1952-1970)

ARCHITECTURAL HERITAGE MODERN ARCHITECTURE PLOČE, CROATIA PUBLIC ARCHITECTURE TOURIST POTENTIAL

Ploce is the only town in Croatia that was planned and built on the Adriatic coast as a result of social planning after World War II. As a planned port-industrial town, Ploce has been neglected in architectural research by experts and the wider public. Therefore, the subject of this research is the unexplored modern public architecture (built 1952-1970) that contributed to the transformation from a port-industrial town to a town with increasingly urban characteristics. The work is based on the research of scarce pri-

mary archival material, field research and comparison of public buildings of the same purpose built in Croatia in the same or similar time period. As Ploće has become increasingly urban over time, green areas have been analysed and arranged as one of the indicators of urbanity. Research and valorisation of the contemporary public architecture of Ploće has shown that it represents a piece of valuable Croatian architectural heritage, which has been neglected until now.

INTRODUCTION

o matter the size of an agglomeration, it must possess certain functions that confer its characteristics as a town, both in terms of external appearance and internal organization (Marinovic-Uzelac, 1986: 129). Industrial functions have often caused the rapid growth and development of agglomerations. Given their historical layering, industrial agglomerations do not necessarily qualify as urban agglomerations. Therefore, one of the most challenging urban planning tasks within urban areas is planning the relationship between industrial zones, residential areas, and the core of the agglomeration. Strict zoning often causes negative consequences such as strict separation of industry from the agglomeration, while a simplified solution can cause socio-professional and economic-technical issues (Marinović-Uzelac, 1986: 129-141). A key aspect of a town's character is its center, including its functions, facilities, and traffic management. Achieving this requires the optimal sizing of areas and facilities (Maretic, 1996).

The assessment of the spatial quality of an agglomeration can be monitored through various urban indicators at the global (UN Habitat), but also at the local micro level (Mlinar, Šmit 2008; Laznibat, Šcitaroci, 2018).

In Slovenia, new towns were built after World War II, requiring engaged social planning and construction that were to take on urban char-

acteristics from industrial agglomerations. Nova Gorica and Velenje were built that way (Di Battista 2011; Di Battista, Čelik, 2012). It is interesting how the urban visions and architecture of the newly planned town of Velenje are the basis for contemporary tourist promotion (Poles, 2013). With the construction of the port (1937-1942) along the mouth of the river Neretva and the construction of the Ploče-Sarajevo narrow-gauge railway line soon after World War II, the requirements for the planning and building of a new, modern port-industrial town of Ploce were met. Due to post-war industry development goals and the previously initiated river regulation projects on uninhabited (partly swampy and rocky) terrain. Ploce underwent heavy urbanisation and littoralisation after World War II. Ploce is the only Croatian town that was planned and constructed in the post-war period, with the goal of concentrating economic activity and population along the Adriatic coast. As a planned port-industrial town, Ploce was often overlooked by both the professional community and the general public. failing to recognize it as a valuable architectural complex. Its modern architecture. which reflects significant Croatian built heritage, remains underappreciated. This lack of recognition makes the modern architecture of Ploce – designed and constructed during its planning period – particularly intriguing and serves as the primary motivation for this research.

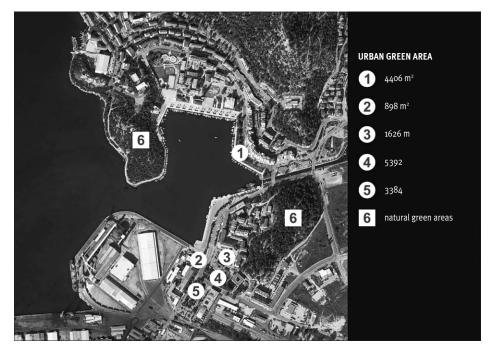
This paper focuses on the public architecture across a wide range of typologies built between 1952 and 1970 (Fig. 1). It briefly outlines the hypotheses and the methodological approach used to study the public architecture of Ploče.

METHODOLOGY AND AIM

The aim of this paper is to systematically research and present the almost completely unknown public architecture of Ploče, to research its authorship and to record, analyse and valorise this architecture, as well as to contextualise it within the Croatian architecture of the 20th century. The unexplored potential and value of this neglected segment of built heritage was the main impetus for this research.

Various research methods were applied with the aim of integrating different sources in order to analyse the unexplored corpus of Croatian modern architecture and present it to the scientific and professional public. Initial research focused on an exhaustive study of scarce archival sources, field research, and professional and scientific literature. This created a basis for the analysis of the public architecture of Ploče and its comparison with

buildings of the same purpose that were built at the same or similar time in Croatia, especially in relation to the floor plan, design, and valuable architectural contribution. As an extension of the basic research, i.e. when the port-industrial town is characterized by a real urban space, the constitutive urban indicators for the empirical valorisation of Ploce, such as urban greenery, were analysed using an empirical method, after the basic urban indicators (water supply and sewage network and waste disposal) were satisfied. The indicators were included with the aim of assessing the quality of public architecture as an integral part of urban space and the possibility of its use by the local population. There are very few written works related to Ploce, both in Croatia and abroad. Prior to analysing the development of modern architecture in Ploce, maps and documentation regarding the regulation of the Neretva delta, urban development plans of Ploče, and aerial photographs of the bay were researched. The studied modern architecture was contextualized, analysed, and valorised within the framework of contemporary achievements and the typologically and chronologically related achievements of modern architecture (Fig. 2). This paper builds on the detailed valorisation of the urban planning of Ploče achieved in 2024 (Kranjčević, Barišić Marenić, Jelčić, 2024: 294-307). The research of modern architecture in Ploče was based on collecting and researching the original archival material (Town of Ploce, Archives; Croatian State Archives in Zagreb; Croatian State Archives in Dubrovnik, Metkovic Branch; Croatian Railway Museum, and a series of other institutions - libraries). The challenge lay in the very difficult research of primary archival sources because the materials in the Ploče archives are not systematically archived or organised by exact addresses, and the local Heritage Collection space in Ploce was under renovation and not accessible. Ivo Oresković made a significant contribution with an inventory list of materials (Town of Ploce, Archives). Several published books about Ploče by Ante Kovačević contributed to this research on public architecture (Kovačević, 1989, 1992, 1996, 2003). The preserved architectural documentation of Ploce is scarce, it does not cover all buildings, and even in the preserved inventory units not all documentation is complete. The rarely preserved project documentation is difficult to read due to very faded Ozalid copies of the plans, and its reproduction is complicated. The study of modern architecture in Ploce was supplemented by the field research of the urban planning and architecture of Ploce and by photographing the current state. Furthermore, thematic interviews were conducted with the residents of the town and its surroundings, with a focus



on the contemporaries of the realization of Ploce. Various online sources were also researched to form a more complete picture. A challenge was that no architecture researchers have previously focused on the architecture and urban planning of Ploce, and there are very few scholarly sources available on this topic. Therefore, this paper represents an original contribution to the research of the modern public architecture in Ploce, as initial research of the material currently available.

URBAN PLANNING AND MODERN PUBLIC ARCHITECTURE OF PLOČE

Only after the demanding regulation and reclamation of the Neretva River mouth were achieved did the construction of the port and the narrow-gauge railway along the south-eastern zone of the deep Ploce Bay begin (1937-1942). The requirements for developing the urban development plans for the new modern town were then met, coinciding with the end of World War II.

Due to its specific technical and technological functions, as well as its connection to the railway line, the port necessitated specialized expertise from professionals and required tailored urban development plans and projects. After World War II, a company from Zagreb named Projekt (Smoljan, 1996) was appointed to plan a port with five piers, which have not been built to this day. Parallel to the port plans, the Urban Planning Institute of the Socialist Republic of Croatia was appointed to draft the first urban development plans

FIG. 2 ORTHOPHOTO OF PLOĆE WITH INDICATIONS OF PUBLIC BUILDINGS: (1) CULTURAL CENTRE AND CINEMA (FORMER HOME OF THE YUGOSLAV PEOPLE'S ARMY); (2) PLOĆE SCHOOL CENTRE; (3) TOLERO HOTEL (UPPER PLOĆE / NORTHERN PLOĆE); (4) HEALTH CENTRE; (5) TRAIN STATION; (6) CUSTOMS OFFICE (LOWER PLOĆE / SOUTHERN PLOĆE)



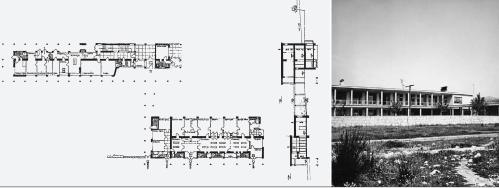


Fig. 3 Health Centre with Inpatient Clinic, so-called Port Clinic (Zoja Dumengjić, 1952-1955) – Photographs of the Original Condition, the ground floor plan and the cross section

for the new town with all the necessary functions (Urbanistički institut 1987, 1997).

During the conceptualisation of Ploce, two concepts were considered: linear and homogeneous type of town. Due to the terrain, the routes of roads and waterways, and other limiting factors, the idea of a linear town was abandoned. The concept of a homogeneous town was selected because of the natural environment and functional connectivity of the town. Thus, the new town was situated on the southwestern slopes of Stražnica Hill, which has a gentle amphitheatre shape, with streets and buildings most often aligned parallel to isohypses (Urbanistički zavod Dalmacije, 1973). In short, the port was situated on the flat part of the Neretva delta, and the new town was planned to the east and north of the port. In that first phase, wooden barracks were replaced by new residential buildings in the area closest to the port, on Prisnica Hill from 1947 and on Stražnica from 1950, which is yet to be researched in more detail.

After the construction of the port (1937-1942), the shores were regulated and gradually reclaimed, and the rocky terrain of the deep bay and the newly planned port-industrial town of Ploce was intensely urbanised into two spatial units colloquially called Lower or Southern Ploce and Upper or Northern Ploce. Lower Ploce is located to the southwest of the Neretva sidearm's mouth (Crna Rijeka), encompassing Prisnica and the flat terrain in the contact zone towards the southern port complex and the ferry port. The southeastern zone of Ploče Bay is dominated by the complex of the company Poduzece Luka i skladista (Port and warehouse company) with grand port infrastructure.1

Northern or Upper Ploce cover the area northwest of the mouth of Crna rijeka and the southern coast, predominantly the southern slopes of Stražnica and the western Milosavac peninsula. The public architecture of Ploce is presented in chronological order across the two sections mentioned.

Ploče is a unique modern town in southern Croatia, developed after World War II. In the short period between 1945 and 1970, a series of high-quality modern buildings were designed, i.e. realized. They were designed by renowned modern architects from Zagreb, Split, and Dubrovnik, as well as by lesser-known architects from places like Ploče, Sarajevo, Belgrade, and the like (Town of Ploče, Archives; Kisic, Mikić, 2005; Uchytil, Barisić Marenic, Kahrović, 2009).

SOUTHERN, OR LOWER PLOČE

With the port as the motivation for building the town, the most important initial phase of building the town was the realization of typical residential buildings in the valley of Southern Ploče, facing Prisnica, to the south of the mouth of the Crna Rijeka, as well as a series of public buildings.

HEALTH CENTER WITH INPATIENT DEPARTMENT (ZOJA DUMENGJIĆ, 1952-1955)

In the southern part of the Ploce bay, in the contact zone of the port complex and the urban tissue of the town, a health centre with an inpatient department, called Port Health Center, was built (King Tomislav Square 25). The project was commissioned by investor Poduzeće luka i skladišta Kardeljevo to architect Zoja Dumengjic², who worked in Arhitektonsko-projektni zavod in Zagreb and specialised in healthcare architecture. Given that hospitals were built in Dubrovnik and Split, this primary healthcare complex unifies a health center and an inpatient department with 26 beds (HR-MGZ-The Legacy of the Dumengjić Architects; Barisić Marenić; Šerman, Uchytil, 2011).3 The dual function of the health centre for out- and inpatient care was articulated by spatial division into two parallel wings which are shifted relative to each other to provide open views for the inpatients in the western wing (Fig. 3).

The architect skilfully utilises the warm Mediterranean climate, designing semi-public communication areas as ground-level porches connected by a passageway. This reinterprets the theme of streets and shaded ground-level porches of Adriatic towns and reduces costs of heating and minimises the need for air conditioning. The upstairs inpatient rooms have a single-track layout4, with balconies in front of them unified into a gallery. This gallery enables internal communication among patients and visitors, and offers a place for patients to meet, talk and share their worries, which supports their psychosocial well-being and healing. The ground-level longitudinal wing of the health centre features a series of parallel zones: a long high ground-floor porch, a lower section with a windbreak and sanitary facilities, a high waiting room that also serves as an internal corridor, and a series of health centre spaces. The internal waiting room is naturally well-ventilated and lit through skylights, allowing for its greater height compared to the northern clinic spaces and smaller-scale areas by the ground-level porch. The articulation of the transverse section is designed for optimal natural lighting and ventilation of the interior, critical for reducing infection risks. The humanisation of health care architecture is a characteristic of architect Dumengjic's approach from the 1950s, characterising her series of health centres built in Zagreb (in neighbourhoods Trnje /1953-1961/, Črnomerec /1953-1962/ and Medveščak /1960-1962/), Kutina /1953-1957/, Omiš /1957-1959/ and Ploce (Barisic Marenic, 2020: 84-85). By masterfully handling the constructive, functional, spatial, and design aspects of architecture, she developed an individual expression and approach that culminated in the completion of the Split General Hospital in Firule (1951-1969), her major work (Barisić Marenić, 2014: 16-27). Recent extensions⁵ and the closing of the upstairs inpatient clinic gallery (Town of Ploce, Archives, sg. 14/ 226/429, 1997) have disrupted the original porous structure of the healthcare complex, while provisional inappropriate colour interventions have altered the original character of this modern building.

The Dubrovnik Health Centre on Boninovo today operates in a building built as the District Office for Workers' Insurance (1938) according to a design by Bela Auer and Zvonimir Vrkljan. The classical symmetrical layout, stone cladding and sloping roof reveal traditional and classical elements of architecture, while the modernist vocation of the architects is evident in the subtle details of design, spatial organization and construction. The influence of the construction cycle of health centres by Zoja Dumengjić in the 1950s and 1960s is noticeable in the realization of Zvonimir Pavesic, the Health Centre on Pescenica in Zagreb, and, for example, the realization of Žarko Vincek in Vrtlarska Street in Zagreb.

Architect Nada Šilović realized the health centre in Umag (1954), and its specificity is represented by the access ramp. Domination in the field of health architecture, or rather the construction of health centres, after Zoja Dumengjić, was taken over by Prof. Mladen Vodička in the 1960s, and his outstanding achievements are the health centres in Labin (1963-1969) and Samobor (1962-1965, 1977-1980) (Barisic Marenic, 2022: 83, 87).

PLOČE TRAIN STATION (1964-1967)

The Neretva mouth was the Adriatic exit port for the continental hinterland in Bosnia and Herzegovina. The first station, reflecting traditional stone construction6, was built in 1942 during World War II (sic!) due to the strategic importance of the Mostar-Metkovic (1885) and Ploče (1942) narrow-gauge railway line. (Staklarević, Štefanac, 2015). The Ploce-Metkovic-Mostar-Sarajevo "standard gauge" railway line (Kovacevic, 1996: 98-99) was constructed between 1965 and 1967. The northern track of the Ploce railway was constructed for passenger trains, while the southern track extends to the freight port, branching for ship-to-rail transfer. The modern train station (Fig. 4; King Tomislav Square 19), built from 1964 to 1967 (Kovačević, 1996: 98; Staklarević, Štefanac, 2015: 294), is located in the south of the Lower Ploce urban area, below Prisnica and south of King Tomislav Square.

The building was designed by an unknown architect and is an exceptionally interesting





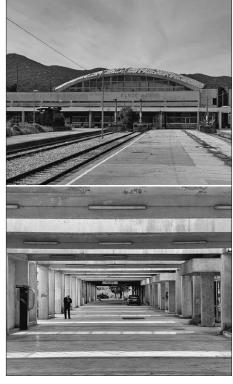


Fig. 4 Ploče Train Station under construction WHEN THE FIRST BROAD GAUGE TRAIN ARRIVED IN PLOČE AND CONTEMPORARY PHOTOGRAPHS OF THE WESTERN ENTRANCE FACADE AND THE EASTERN FACADE WITH THE ARCADE

Compared to port activities, the industrial complexes are of a modest scale (the Kartonplast factory by architect Ivan Franic, and the Azbest factory). The Pletionica slippers factory and the weaving mill were not built (Town of Ploce, Archives, sg. 15/7/7, 15/7/21 and 15/7/23, 1961).

She initially realised the project between 1952 and 1954. Later, between 1954 and 1955, she supervised the construction in its final phase as part of the independent bureau Arhitektonsko-projektni biro Dumengjić (Barišić Marenić, 2020: 84-85).

The clinic includes a general practice clinic, a dental clinic and a mother and child counselling centre. The inpatient clinic contains a centre with 16 beds, a maternity ward with 10 beds and a section with a laundry room and supporting facilities (HR-MGZ-The Legacy of the Dumengjić Architects).

Located above the ground-floor wing of the clinic.

Konstruktor inzenjering d.d. from Split, Damir Colnago 1997 (Town of Ploce, Archives, sg. 14/226/429 1997).

The old station was used as a restaurant from 1966 until its demolishment at the end of the 20th century (Staklarević, Štefanac, 2015: 294).



Fig. 5 Customs Office (Vuko Bombardelli, 1970) – A 2024 photograph

modern creation, a rare typological realisation of Modernism in Croatia, completely unknown to the professional and scientific community. The architectural documents are not preserved in the Ploce Archives (Town of Ploce, Archives). The train station, with a béton brut style, features a shell-like reinforced concrete structure over a two-storey waiting and ticket hall, about 15×30 meters in size. This double-curved reinforced concrete shell is a rectangular shell fragment, and it dominates the station and the surrounding area. Its grand, airy interior is enhanced by the reinforced concrete shell vault supported by two transverse arched beams and is supported at the perimeter and in the corner zones. Below the perimeter arched beams are skylights that provide natural lighting for the waiting room. The central area of the waiting room is lined with the station administration space, offices and meeting rooms. The elongated, spacious waiting room is positioned perpendicular to the tracks. On the ground floor, it is bordered to the northwest by the entrance area facing the town park on King Petar Kresimir Square, and to the southeast by the exit area leading to the porch at the southern end of the railway tracks of the train station. With the northern extension of the porch, stretching to the northeastern street, the porch is longer than 100 meters. This prominent porch or promenade is distinguished by a tectonic framework of columns and beams, with overhead lighting provided by polycarbonate arches. North of the train station, the PTT Ploce Business Facility (now Croatian Post; Town of Ploce, Archives, 14/209/390 1990; 14/216/398 1991, 14/217/ 400 1991, 14/218/401 1991) was added between 1990 and 1991, adjacent to the northern extension of the railway station porch.

In front of the railway station, a public town park has been arranged with a sculpture in front of the western entrance, while the eastern hypertrophied porch has been extended to the northern bus station. Both public spaces connect to the railway station building, specifically to the internal waiting area. The magnificent concrete shell of the station roof, seen from Milosavac, dominates the silhouette of Donje Ploče and is in harmony with the contours of the nearby southeastern hills south of the Neretva mouth.

After Croatia's independence, passenger traffic decreased. The station was used for passenger transport until 2013. In 2022, a seasonal Sarajevo-Ploče line was introduced, and is currently the only passenger route available. Due to disuse and a lack of maintenance, the station building has fallen into disrepair. Entry has been prohibited for safety reasons, and renovation is needed.

A contemporary project is the ongoing construction of the Zabica railway station complex in Rijeka by Studio 3LHD (web: 3LHD). The unique reinforced concrete shell vault, curved in both directions, is a rare feature in recent Croatian architecture. It is also featured in the Split project by architect Ante Kuzmanić, the Church of St. Matthew in Ravne Njive (2000-2003; Tušek, 2020: 299).

CUSTOMS OFFICE (VUKO BOMBARDELLI, 1970)

The Customs Office building (King Tomislav Square 26) was designed by Split architect Vuko Bombardelli in 1970 (Tušek, 2020: 30-31). It is located in close vicinity to the port. Unfortunately, the archival documents are not preserved in the Ploče Archives, and there is little published about the building beyond its date and architect (Tušek, 2018: 30-31). This late modern creation is characterised by a restrained expression, with smooth wall surfaces, vertical sliding exterior shutters, and an inverted shallow-pitched gable roof profile (Fig. 5).

The typology of customs houses within the framework of Croatian architecture has not been researched in more detail, therefore this restrained achievement of late modernism represents a rarity in the framework of professional and scientific literature.

NORTHERN, OR UPPER PLOČE

Northwest of the mouth of the Crna rijeka, on predominantly rocky, hilly terrain, residential buildings and social standard i.e. public buildings were built. The reclamation of the swampy area south of the Stražnica slopes created a flat terrain (now the area around Ban Josip Jelačić Square and its surroundings). Subsequently, the southern waterfront, now known as Dr. Franjo Tuđman Coast, was filled and developed.

CULTURAL CENTRE AND CINEMA (ORIGINALLY JNA HALL; UNKNOWN AUTHOR, 1965-1968)

The location for the JNA Hall (Yugoslav People's Army; Silvije Strahimir Kranjčević Street 4) of the new port town was planned to be on an elevated position, west of the town's waterfront, today's Dr. Franjo Tuđman Coast (Fig. 7). The prominent position in the townscape is in accordance with the significance of the typology of the original JNA Hall during socialism. The location on the ridge of the Milosavac peninsula is like the one of the Acropolis, from which there are exceptionally beautiful views of the indented coast, the

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town harbour of Ploce and the more natural western environment. The serpentine bend of Silvije Strahimir Kranjčević Street borders the location from the south, or southeast. Today, the building houses the Cultural Centre and the Mediteran Cinema. The complex is formed by two mutually perpendicular longitudinal wings connected by a connecting wing with the main entrance. The longer axis of the complex is basically an extension of the axis of Tin Ujević Street, which is located more to the north and runs northwest-southeast. The main entrance to the complex is from the northeast at the level of the high ground floor and is reached by wide stone stairs into a bright entrance hall with glazed façades. The northwestern large cinema hall is double-height, and office spaces line the southeastern hall of the cultural centre. The grand southeastern terrace offers impressive views of the town and the port (Fig. 6).7

The late modern representative building is dominated by a grand southern terrace above the street serpentine, sleek façade surfaces, large fenestration areas, and partial cladding with roughly hewn stone. Elements of traditional architecture in a Mediterranean climate area offer better heat protection. The architect and the exact date of this interesting work are unknown, but verbal reports suggest it was built between 1965 and 1968 (Interview, 2024). The main project for the Home of the Yugoslav People's Army access and bypass road dates to 1962. (Town of Ploce, Archives, 14/12/39 1962). Apart from the main project of the Home of the Yugoslav People's Army access and bypass road (Town of Ploče, Archives, 14/12/39 1962), documentation on the late modern building is not preserved in the Ploce Archives, and it is not documented in professional or scientific literature.

In contrast to the unexplored JNA Hall in Ploče, the JNA Hall in Šibenik (1947-1961) and in Komiža (Island Vis) stands out as an affirmed example of modern architecture (Segvic, 1986; Premerl, 1999; Briški Gudelj, 2019; Skaric, 2012). The iconic structure by Ivan Vitic, recently renovated for the Town Library, is one of the key buildings of his oeuvre. The JNA Hall in Split was located on the waterfront in the original Ambasador Hotel by architects Josip Kodl, Vojin Simeonovic, Helen Baldasar and Emil Ciciliani (1934-1937; Tušek, 2020: 123). Franjo Zvonimir Tišina's JNA Hall in Zagreb was built in 1949 in the courtyard block in Zvonimirova 12 (Šegvić, 1986:



103, 137; Grimmer, Kisić, 2005; Premerl, 1999). The prominent typology of JNA halls across Croatia was constructed on significant sites by renowned architects, which makes it puzzling why this interesting building in Ploce has not attracted the attention of the professional community.

FIG. 6 CULTURAL CENTRE AND CINEMA (ORIGINALLY Home of the Yugoslav People's Army, unknown AUTHOR, 1965-1968) - SITE PLAN WITH THE ACCESS ROAD, AND 2024 PHOTOGRAPHS

PLOČE SCHOOL CENTRE (MLADEN FRKA, OLIVERA BRAVAČIĆ, MILE JOVANOVIĆ, 1966, 1969)

The Dubrovnik project team made of Mladen Frka, Olivera Bravačić and Mile Jovanović from the architectural bureau Arhitekt - projektni biro Dubrovnik designed and built a dual school centre, a high school and an elementary school in Ploce (Tin Ujević Street 3 and 5; Town of Ploče, Archives, 14/19/51 1966 and 14/21/56, 1969). The school complex is located southwest of Tin Ujević Street, of the so-called building with officers' apartments, and east of the small harbour with boats. The designers positioned the streetlevel wing along the street, with the areas for the performance hall, music room, library, etc. Perpendicular to it are two three-storey school wings (because of the slope of the terrain towards the western coast), which are characterised by a 50-ground layout break. enabling the southern orientation of the school wings as well as open views, and achieves integration into the dimensions of the plot of land. Unfortunately, after the construction of the southern Sports Centre in 1977 (Town of Ploce, Archives, sg. 14/80/ 150 and 14/81/151 1977), the views from

Fig. 7 Cultural Centre and Cinema (Originally HOME OF THE YUGOSLAV PEOPLE'S ARMY, UNKNOWN AUTHOR, 1965-1968) - A 2024 PHOTOGRAPH TAKEN FROM THE SOUTH



Shaded ground-level colonnade tucked under the terrace with steel skeleton system and stairs provides a southern entrance to a Cultural Centre wing.

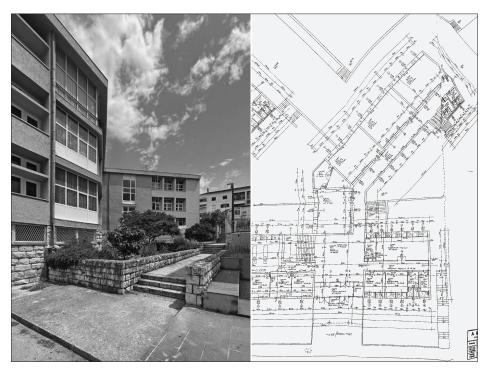


FIG. 8 PLOCE SCHOOL CENTRE (MLADEN FRKA, OLIVERA BRAVACIC, MILUTIN JOVANOVIC, 1966, 1969) — A 2024 PHOTOGRAPH OF THE CURRENT CONDITION AND THE MAIN DESIGN — NORTHERN AND ENTRANCE WING PLAN. 1969

the southern wing of the elementary school were lost.

A loggia is located in the bend of the school wing, creating a spatial-formal division between one southeast-oriented classroom in the west and three south-oriented classrooms in the east. The single-track school wings feature a deep zone of the southern façade with horizontal and vertical brise-soleils and niches along the bright and airy northern corridor. The entrance niche faces a classroom, while three eastern niches serve as a seating and storage area in the corridor zone, which also functions as a student lounge outside school hours. The far west corridor segment is lit from the gable, with restrooms and a secondary staircase to the north. The gable roofs of this school complex represent the intent to adapt to the climate and ensure better insulation for upper floors in the warm Mediterranean climate. Today, Fra Andrije Kacića Miošića High School operates in the northern part, and Vladimir Nazor Elementary School is in the southern part. This building has not been published in literature or highlighted in the context of the works by architects Frka, Bravacic, or Jovanovic (Fig. 8).

Initially, in 1952, the unbuilt project for the Ploče Elementary School was designed by architect Zoja Dumengjić from Arhitektonskoprojektni zavod in Zagreb (Barišić Marenić, 2020: 268). The project included two school wings elevated on pillars, positioned parallel to the terrain contour lines and connected by

a corridor). Additionally, two elementary school projects by architect Ivan Vitic from Zagreb remained unbuilt: the 1958 Elementary School I and the 1959 Elementary School II. These projects were not featured in the monographic edition of the Arhitektura magazine dedicated to this remarkable modern architect (Grimmer, Kisić /eds./, 2005). The 1963 school project by architects Marin Šabić and Jozef Kortus8 from Projektni biro za urbanizam i arhitekturu - Srbija in Belgrade also remained unbuilt. Two parallel southoriented wings connected by three corridors characterise the unbuilt design for a school in the northernmost area of Gračka Street (Town of Ploce, Archives, sg.14/14/43 1963). This deviant layout is unique in Croatian school typology. It reflects the adaptation to a constrained plot of land and the enabling the views. Similar efforts also characterise specific Antun Ulrich's 1952 Pantovčak Elementary School in Zagreb (Mikic, 2002; Begovic /ed./, 2003; Mikic Brodniak, 2002). The Maritime Technical School on Lapad in Dubrovnik (1951-1953) by architect Lovro Perkovic is a reference project for its indented floor plan, the removal of school wings, the sloping roof and the use of stone in the exterior (which in Ploce was used only in the base). The Catering School on Ploce in Dubrovnik (1963) is a reference for its use of horizontal sunshades that articulate the southern facade and control the strong southern sunlight (Uchytil et al, 2009: 160, 193).

TOLERO HOTEL (DEVAHIRA BAŠIĆ, 1970)

The company Luka i skladište Kardeljevo commissioned the unbuilt project of the hotel and the cinema to architect Zoja Dumengjic, 1952 (Barišić Marenić, 2020: 267). The unbuilt project is characterised by an elongated two-storey base along the coast

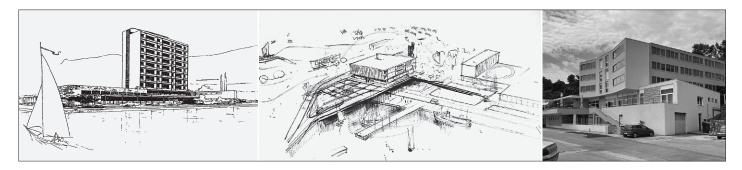
⁸ Jozef Kortus (1917 Bláhov, Czech part in Austro-Hungarian Empire – 9/7/1996 Belgrade, Serbia) studied at the Czech Higher School of Architecture and Civil Engineering in Prague (1936-1939), graduated from the Architecture Department of the Technical Faculty in Belgrade in 1941. Employed in the Ministry of Construction of the FNRJ, later in the Projektni biro za urbanizam i arhitekturu Serbia in Belgrade.

⁹ Zoja Dumengjić (18/12/1904, Odessa, Russian Empire – 14/5/2000, Zagreb, Croatia) (Barišić Marenić, 2020: 4, 48).

¹⁰ Vuko Bombardelli (22/9/1917, Split, Croatia – 8/10/1996, Split, Croatia) (Tušek, 2020: 3; Domljan, 1989).

¹¹ Mladen Frka (28/4/1929, Lopud – 27/7/2011, Dubrovnik) (Božo Benić Archives).

¹² The Vila Dubrovnik Hotel located above the sea and contrastingly articulated horizontal white corpus of the rocky cliff of the coast south of Dubrovnik's Old Town (recently renewed following the design by Jelena Skorup Juracic and Dražen Juracic); see Juracic, Skorup Juracic, 2011: 134-145).



(which includes a two-storey high cinema and shared public facilities of the hotel). The stationary part of the hotel with rooms forms an eight-storev skyscraper rising above the base (Fig. 9).

Architect Ivan Vitic designed two unbuilt hotel projects in 1959. The Hotel I variant (Grimmer, Kisić /eds./, 2005: 166) features a twostorey square hotel building with an inset ground floor and a system of loggias or vertical brise-soleils on the room levels. The design for Hotel I is part of Ivan Vitic's series of hotel and motel designs along the Adriatic, including notable motels for the Slieme agricultural-industrial company (Preluka-Rijeka, Biograd and Trogir, 1965). The hotel (King Petar Kresimir Coast IV 1) was eventually built in 1970 (Fig. 9), based on the design by Sarajevo architect Devahira Basic from the architectural bureau Javor Sarajevo – Preduzeće polumontažnih i montažnih objekata – biro za projektovanje (Town of Ploče, Archives, 14/23/59 1970). Built west of the southern waterfront, it is characterised by a wide twostorey base with an articulated eastern seafront façade, ground-floor porch, stairs, an upstairs terrace, and semi-public hotel amenities. The rooms are arranged in two wings forming a V layout with a polygonal entrance facade for the three-storey main body. The partial cladding with roughly hewn stone harmonises the Mediterranean ambiance of this building. The Tolero Hotel has not been published in professional literature, and details about the architect are unknown.

The hotel built at the foot of Milosavac Hill (King Petar Krešimir IV Coast) is characterized by a wide base in which social and public facilities are located, while the accommodation units are located vertically. The hotel can be connected in terms of design to the hotel built by the sea, the Hotel Marian in Split (1961-1963, 1978) by architect Lovro Perkovic, which dominates the western coast of Split with the emphasized horizontals of the wide base (to which the Maritime Industry Building by Neven Šegvić is attached), and the high corpus of the stationary part of the hotel (Uchytil et all, 2009: 161). The Excellsior Hotel

in Ploce in Dubrovnik, designed by architect Neven Segvic, dominates the views of the old town port of Dubrovnik, and is marked by an entrance from the northern elevated road. The specificity of the Hotel Tolero in Ploce, designed by Sarajevo architect Devahira Basic, is marked by a tall building (V-shaped floor plan), which achieves a southern orientation of the southern wing, while the northern wing opens views to the northeast, and the west-facing rooms to the town bay.

DISCUSSION

The specificity of Ploce, a newly planned town in southern Croatia and the exit port to the Adriatic for its hinterland in Bosnia and Herzegovina, is represented by design contributions of architects from Croatia, but also from Bosnia and Herzegovina and Serbia (Fig. 10).

The most significant contribution to public architecture is made by architects from Croatia. Architect Zoja Dumengjić⁹, a graduate of the Department of Architecture at Polytechnic of University of Zagreb, head of the APZ project group, specialized in healthcare architecture, was entrusted with the building of the Health Centre. She received the highest professional awards for lifetime achievement (the Viktor Kovacic Award of the Croatian Architects' Association in 1997 and the Vladimir Nazor Award in 1995; Barisic Marenic, 2020: 217).

Architect Vuko Bombardelli10 (1917-1996) was an architect from Split, with a degree from the Faculty of Architecture in Belgrade (1940). He obtained his first professional experiences in Belgrade (1946-1950), and his entire creative life is connected to Split (Tušek, 2020: 30-31).

Little is known about the exceptional Dubrovnik architect Mladen Frka.11 He graduated in 1955 from the Department of Architecture of the Technical Faculty, University of Zagreb (Obad Šćitaroci /ed./, 2000: 315) and is best known for the building of the exceptionally refined modern Vila Dubrovnik Hotel in Dubrovnik.12

FIG. 9 UNBUILT DESIGNS OF PROJECTS (PERSPECTIVES OF THE 1952 HOTEL DESIGN BY ZOJA DUMENGJIĆ AND OF THE 1959 DESIGN OF HOTEL I BY IVAN VITIĆ) AND A CONTEMPORARY PHOTOGRAPH OF THE BUILT TOLERO HOTEL (DEVAHIRA BAŠIĆ, 1970)



Fig. 10 Portraits of architects who designed THE BUILT PUBLIC BUILDINGS: ZOIA DUMENGIIĆ. Vuko Bombardelli, Mladen Frka, Olivera BRAVAČIĆ, MILE JOVANOVIĆ

Architect Olivera Bravacic¹³ graduated in architecture in Belgrade. She lived and worked in Sarajevo (1954-1958) and then Dubrovnik for the rest of her life (Ivanović, 2021: 51).

There is a lack of published information on architects Mile Jovanovic14 from Dubrovnik and Devahira Basic from Sarajevo. The presence of a series of unknown architects highlights the need to continue researching modern architecture in Ploce, and to expand the research in other neighbouring countries, such as Bosnia and Herzegovina and Serbia, given that some designs and some buildings were designed by architects from those countries. Furthermore, the architects of many buildings are unknown due to incomplete documentation in the Ploče Archives (Town of Ploce, Archives).

Looking at the construction of Ploce, the majority of public buildings were designed by graduates of the Zagreb Faculty of Architecture. The phrase Zagreb School of Architecture comes to the fore here, presenting a rational approach, subtle design, as well as functional spatial solutions that emerged from the analysis of spatial data, while the design solutions were created in accordance with the genius loci. The work of Sarajevo architect Devahira Basic, who deviated from orthogonal schemes of public architecture, is represented by the work of the architect from Dubrovnik, while the architects based in Dubrovnik subordinated the "break" of the school's dimensions to the southern insolation of the school wings and adapted the entrance tract to the street route.

Ploce is specific because it features contributions from as many as three female architects educated in three different republics: Zoja Dumengjić, who designed the health centre; Olivera Bravačić, who co-designed the school complex; and Devahira Basic, who designed the hotel. This offers an opportunity to compare the styles of different schools of architecture. It also suggests that peripheral areas of the country might offer more opportunities for female architects to realize architectural designs.

A series of unbuilt designs by established modern architects and those unknown in the professional literature speaks in favour of the thesis of the need for further and more detailed research into this so far unjustifiably unexplored topic of modern architecture in the newly planned town of Ploce, which was almost entirely constructed during the socialist period. The general public's lack of awareness of the value of modern architecture is partly a consequence of the exceptionally rich heritage of historical built heritage in Dalmatia, which is the reason why modern architecture is not perceived as a form of built heritage (Tables I and II).

The transformation of a port-industrial town with growing urban features can be assessed through various urban indicators, including the analysed public architecture, to ensure the fulfilment of basic social needs such as health preservation and improvement, education, transportation accessibility (including port facilities, roads, and railways), leisure activities. and urban greenery. These indicators are considered after the primary urban infrastructure, like the water and sewage network and waste collection systems, have been adequately established. In the town itself, there are several parks with a total area of 15,706 m², but in addition, the Mali Milosavac hill and the Prisnica hill constitute natural greenery that is not systematically managed. Although Ploce is interwoven with stairs as public areas and greenery, due to unresolved ownership and legal relations, it is not possible to monitor the transformation of green areas as an important urban indicator (Fig. 11)

CONCLUSION

The results are mostly based on field research because the material in the archives is very scarce and on the available spatial indicators for the analysis of green areas.

The urban planning principles of the modern town of Ploce reflect a clear deviation from the rigid postulates of the modern town and the imperative of a southern orientation. Such an approach also marks the urban renewal of Zadar after the destruction of its old town during the bombing of the Allies at the end of World War II. The restoration of the ancient orthogonal matrix according to Bruno Milic's plan (Arbutina, 2002, 2018; Arbutina et al., 2018; Mlikota, 2021) was chosen as a means for implementation. The newly planned port and industrial town of Ploce is marked by urban matrices subordinated to the topography of the terrain, to winding streets which overcome the growth of the terrain with a route close to the terrain contour lines, and with longitudinal buildings offset with the aim of opening views to the south and the port, as well as to the provision of good insolation. Good views are an imperative of the planning disposition of the urban structure of Ploce, and they also mark the public buildings of the health centre, school and hotel, and the INA hall. In the warm Mediterranean climate in the south of Croatia, modern architecture is enriched with porches, galleries, and terraces, which enable the use of outdoor spaces all year round. The use of modern construction techniques and materials combined with traditional roughly hewn stone cladding, given the southern Dalmatian context, characterises several public buildings in Ploce. The reinforced concrete porch system of the health centre, the steel colonnade of the JNA Hall, and the grand concrete shell of the railway station are clear examples of the application of contemporary architectural expression in the late 20th century and the use of contemporary construction technology and bold construction solutions (train station) seen in the public architecture of Ploce.

The hypotheses of this paper were confirmed. In Ploce, most of the buildings for public use were located and mostly attributed. Established or up-and-coming architects were commissioned for their designs. Although Zagreb architects such as Ivan Vitic and Zoja

Dumengiic were first commissioned in the conceptual design phase for projects such as the hotel or the school (examining the feasibility and justification of the investment, i.e. questioning programs and architectural-urban designs), in the following decades the realization was entrusted to architects from Dubrovnik and Sarajevo.

The basic characteristics of most of the researched realizations of public architecture in Ploce are the dissection of architectural complexes. Strong features are provided by planned public green areas as well as those that enrich residential areas (the subject of other research). Their characteristic is a high proportion of public space available to citizens even outside the working hours of public buildings. This undoubtedly enhanced the public space of the city. The terrain's topography influenced the horizontal division of territory and the placement of public buildings. The lack of research on the architecture of Ploce is completely unjustified considering its significant contribution to Croatia's architectural and built heritage. This paper contributes to understanding a series of significant architectural achievements in modern public architecture in small towns built in late 20th century. Since initial texts in professional literature during the realization of the modern newly planned town (*** 1955), comprehensive research has not been conducted. The architecture of Ploce has largely been absent from professional and scientific literature and thus missing from concise monographs on Croatian modern architecture (Segvic, 1986; Uchytil, Barisic Marenic, Kahrovic, 2002; Hrzic, 2012). Although modern architectural achievements in Ploce are not the most prominent examples of modern architecture in Croatia, these overlooked buildings are a valuable contribution to the modern Croatian architectural heritage and the topic of Modernism in southern Croatia.

Along with Licki Osik, Ploce is one of two fully planned and realized towns in Croatia during the socialist period. Despite this specificity, this research for the first time presents five completely unknown and unexplored public architecture buildings within the framework of Croatian modern architecture. By researching and promoting the modern architecture of the port-industrial town of Ploce, awareness of modern built heritage is encouraged, along with the potential development of cultural tourism in the southern part of the eastern Adriatic coast and the diversification of tourist routes away from overcrowded historical sites.

[Translated by Prof. Ana Uglesić]

TABLE I OVERVIEW OF THE DESIGN AND CONSTRUCTION OF PUBLIC ARCHITECTURE BUILDINGS IN PLOCE

Public building	Year of planning / construction	Architects who participated in the design and year	Address in Ploče, status 2025
Health Centre	1952-1955	– Zoja Dumengjić, 1952	King Tomislav Square 25
Train Station	1964-1967	– unknown	King Tomislav Square 19
Culture Centre and Cinema (former JNA Centre)	1965-1968	– unknown	S.S. Kranjčević Street 4
School Centre	1966-1969	 Zoja Dumengjic, 1952 Ivo Vitic, 1959 Marin Śabic i Jozef Kortus, 1963 Mladen Frka, Olivera Bravacic, Mile Jovanovic, 1966 	Tin Ujević Street 3-5
Customs Office	1970	– Vuko Bombardelli	King Tomislav Square 26
Hotel Tolero	1970	 Zoja Dumengjić, project, 1952 Ivan Vitić, project, 1959 Đevahira Bašić, project and realization, 1970 	Petar Krešimir IV Square 1

TABLE II OVERVIEW OF BUILDING SURFACES AND CADASTRAL PLOTS OF PUBLIC ARCHITECTURE BUILDINGS IN PLOČE

Public buildings	Number of cadastral parcels in a cadastral municipality	The surface of the construction plot (in m²)	The area of the building (in m²)	Property
Health Centre	2250	4181	417	Health centre of Ploce
Train station	2075	1769	441	HŽ Infrastructure
Culture Center and Cinema (former JNA Centre)	817	3147	1243	Town Ploče
School Centre	425	313	313	Town Ploče
Customs Office	2079/2	892	594	Republic of Croatia
Hotel Tolero	1167	4230	985 m² main building + 16 m² auxiliary building	Kavala d.o.o.

¹³ Olivera (Vera) Bravačić (14/3/1930, Šabac, Serbia 25/3/2024, Dubrovnik, Croatia) (Božo Benić Archives).

FIG. 11 SPATIAL DISPOSITION OF PUBLIC ARCHITECTURE BUILDINGS



¹⁴ Mile Jovanović (9/3/1902, Ristovac, Serbia – 14/ 5/1994, Dubrovnik, Croatia) (Bozo Benic Archives).

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