

Low-rise Residential Complexes of Petersburg-Petrograd-Leningrad of 1900-1941 Period Peculiarities of a New Residential Planned Unit Formation

Mariia Nikolaevna Rybalkina

***Abstract---** The historical background and characteristic features of the formation of low-rise residential complexes of Petersburg-Petrograd-Leningrad in 1900-1941 has been addressed in the state-of-the-art paper. The development of ideas for rational planning of the city and the self-sufficiency of residential units in its structure led to a rethinking of the historic quarter. In the evolution of the formation of residential planned units low-rise housing estates were the first experimental experience in the construction of a new residential planned unit in Leningrad. A number of advantages of this experience marked the beginning of the organization of construction of a new socially organized environment for the working class, which was a transition to a new stage in the development of Soviet housing architecture.*

***Keywords---** Housing Construction, Low-rise Residential Development, Residential Complexes, Planned Structure.*

I. INTRODUCTION

At the end of the 19th and beginning of the 20th century, the capitalist countries were experiencing a spontaneous expansion of industrial centers and an increase in their population, which led to a deepening of urbanized processes.

Large cities gradually acquired the status of key industrial centers and contributed to the outflow of rural residents from the village to the city in search of work and relatively stable income in the new mechanized enterprises, which began to largely determine the economic development of the new industrial society.

This trend led to the formation of a number of problems in the context of their social arrangement: deterioration of the ecological situation as a result of environmental pollution by industrial waste, social stratification of urban space - allocation of areas within the city structure for wealthy people and peripheral, industrial areas, the spread of infectious diseases in densely populated, low-ecological areas where workers and the poor live.

Most of the experts involved in the analysis of the health and social problems of industrial cities concluded that it was necessary to improve the environmental situation in industrial centers and to reduce the flow of villagers from rural to urban areas.

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These ideas were sought implementation in the context of the so-called Garden City movement. John Ruskin and William Morris, renowned British artists, art historians and social reformers, offered solutions to the environmental and social problems of industrial cities through the construction of new types of settlements (garden cities).

However, the holistic architectural and socio-economic concept of the Garden City was first articulated in the late 19th century by British parliamentary correspondent and social reformer Ebenezer Howard in his essay "Tomorrow:

A Peaceful Path to Real Reform" (1898). In 1902 it was reissued in London as Garden Cities of Tomorrow. In Russia Howard's essay with the author's foreword was first published in 1911 in St. Petersburg under the title "Cities of the Future" [1].

According to the author's idea, cities should be united in larger groups with a single center. The concept assumed the division of the city into six "semi-autonomous" residential formations. The self-sufficiency of residential formation was determined by the establishment of planned boundaries and the construction of a public core with primary service facilities: kindergarten, primary school, shops [2].

New challenges are becoming important in the planning of the territories - improvement of the ecological situation, decomposition of industrial centers, connection of residential areas with industrial enterprises. Residential planned units are included in the practice of urban planning in connection with the search for ideas of rational organization of the city structure based on the functional method [3].

The ideal of functionalism was considered to be Garden Cities, among the studies devoted to the historical formation of the Garden City movement, one can note the works of V. N. Semenov [4, pp. 65-72] and M. G. Dikansky [5, pp. 269-300], Standish Meacham [6], Mervyn Miller [7], Peter Hall and Colin Ward [8].

Ebenezer Howard's idea has gained great popularity in both the West and Russia¹ and has been widely used as a basis for developing proposals to create a system of new satellite settlements around the cities, located in natural surroundings and connected to the existing city by transport links [10].

Since the beginning of the 20th century, the capital of Russia, St. Petersburg - Petrograd, has been developing intensively as a major capitalist city. In the large industrial areas on the outskirts of the city there were workers' slums, deprived of the most basic amenities.

The most striking social and town-planning experiment of the organization of "*working settlements*"² within the urban areas in the pre-revolutionary period are the residential complexes of houses for workers, including institutions of cultural and domestic services:

Havana Working City (Architects: N. V. Dmitriev, V. A. Fedorov 1904-1906) [11,12] and "Ludwig Nobel" plant residential town (Architects: W. Schröter, R. F. Melzer, F. I. Lidval, 1893-1916) [13], built in the Art Nouveau style (Fig. 1, Table 1 (pp. 1-2)).

The complexes had semi-autonomous self-sufficiency. For example, the lower floors of the Havana Working City houses housed a shop and nursery, a tea-dining room, a reading room and library, a four-class school and an outpatient clinic. It was planned to build a chapel, picturesque squares and a playground [12].

The housing estate of the Ludwig Nobel plant included a complex of thirteen residential buildings and school buildings. In the architecture of residential buildings of these complexes the rationality of planning is noted, on the example of complexes a new type of small compact apartments for family and single dormitory with separate rooms and common kitchens was developed and implemented.

The reflection of such democratic tendencies in the architecture of the abovementioned complexes turned the working city into a self-sufficient residential formation with the necessary set of service functions. Being close to an industrial enterprise, such towns became the most important factor in the reconstruction of this or that significant urban industrial area.

The World War of 1914-1918 and the civil war that followed suspended construction in Petrograd. The revolutionary upheavals of 1917 paved the way for a deep dramatic milestone in the history of the country. Having overcome the economic devastation, it was possible to deploy active construction.

The first measure in the field of housing construction was the improvement of the so-called working outskirts, which included the construction of new houses for workers in the new districts of the city [14].

Formation of new "*working settlements*" in the course of continuity of ensemble traditions of St. Petersburg town-planning practice, experimental design of low-rise residential complexes and ideology of the Soviet time allowed to create a unique town-planning example of social-organized environment for the working class.

The plan-scheme of Leningrad shows the most famous objects of housing construction for the working class period from 1900 to 1941, having mainly 4-5 floors (Fig.1, table No.1 (clauses 3-23)) [15]. In the course of the analysis of building tallness, 5 low-rise residential complexes were identified (Table 1 (clauses 3-6, 8)):

1. "Housing estate on Tractornaya Street" (Architects: A. S. Nikolsky, A. I. Gegello, G. A. Simonov 1925-1927) (complex No. 1);
2. "Palevsky Housing estate" (Architects: A.I. Zazersky, N.F. Rybin, 1925-1927) (complex No.2);
3. "Serafimov town" (Architects: A.C. Nikolsky, A. I. Gegello, G. A. Simonov, D. L. Krichevsky, 1925-1928) (complex No.3);
4. "Housing estate on Tkachey Street" (Architects: L. M. Tverskoy, D. P. Buryshkin (Head: G. A. Simonov), 1926-1927) (complex No. 4);
5. "Krasny Oktyabr Housing estate" (Architects: G. D. Grimm, V. A. Alvang (Head: A. A. Ol), 1926-1933) (complex No. 5).

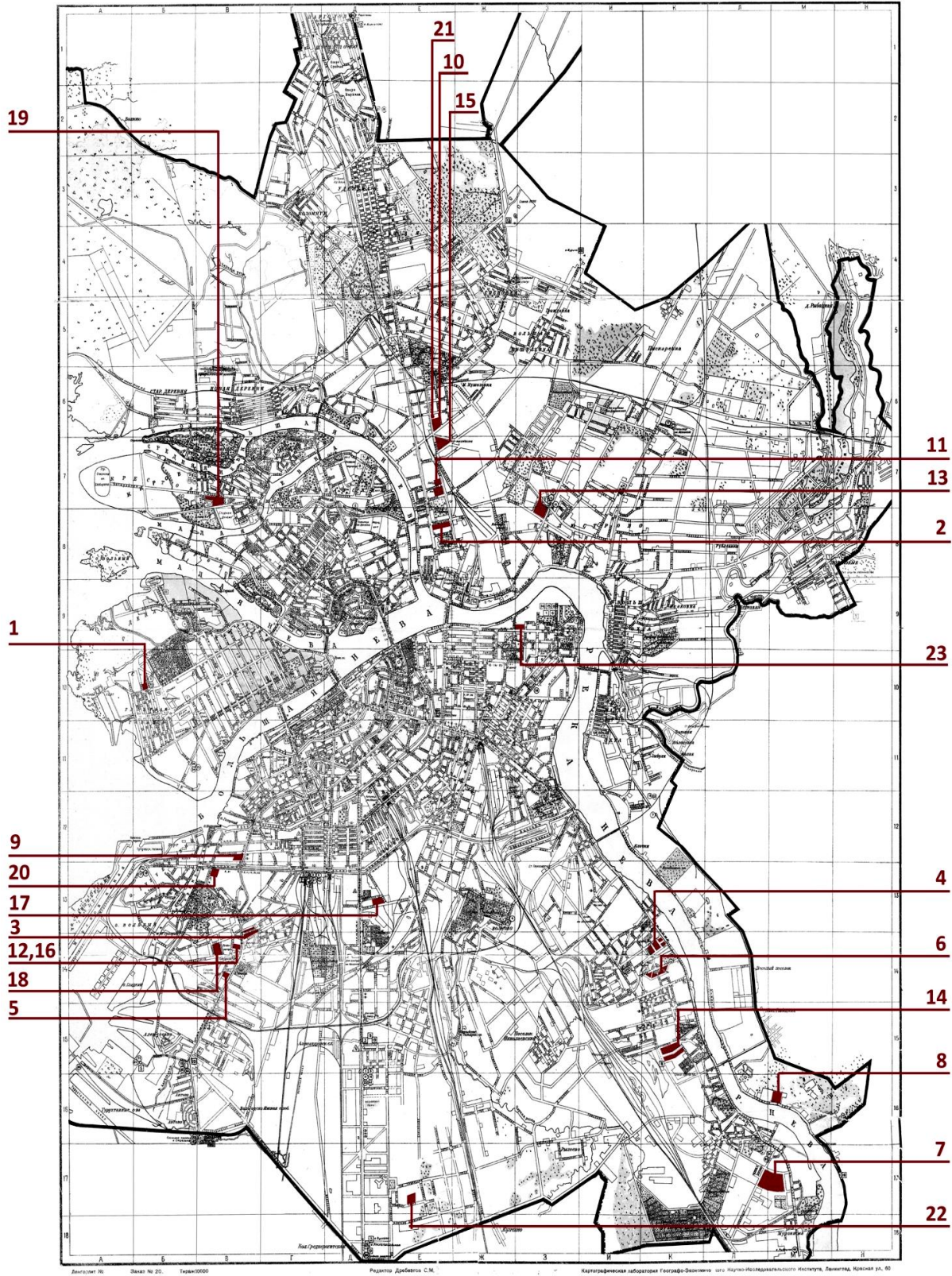
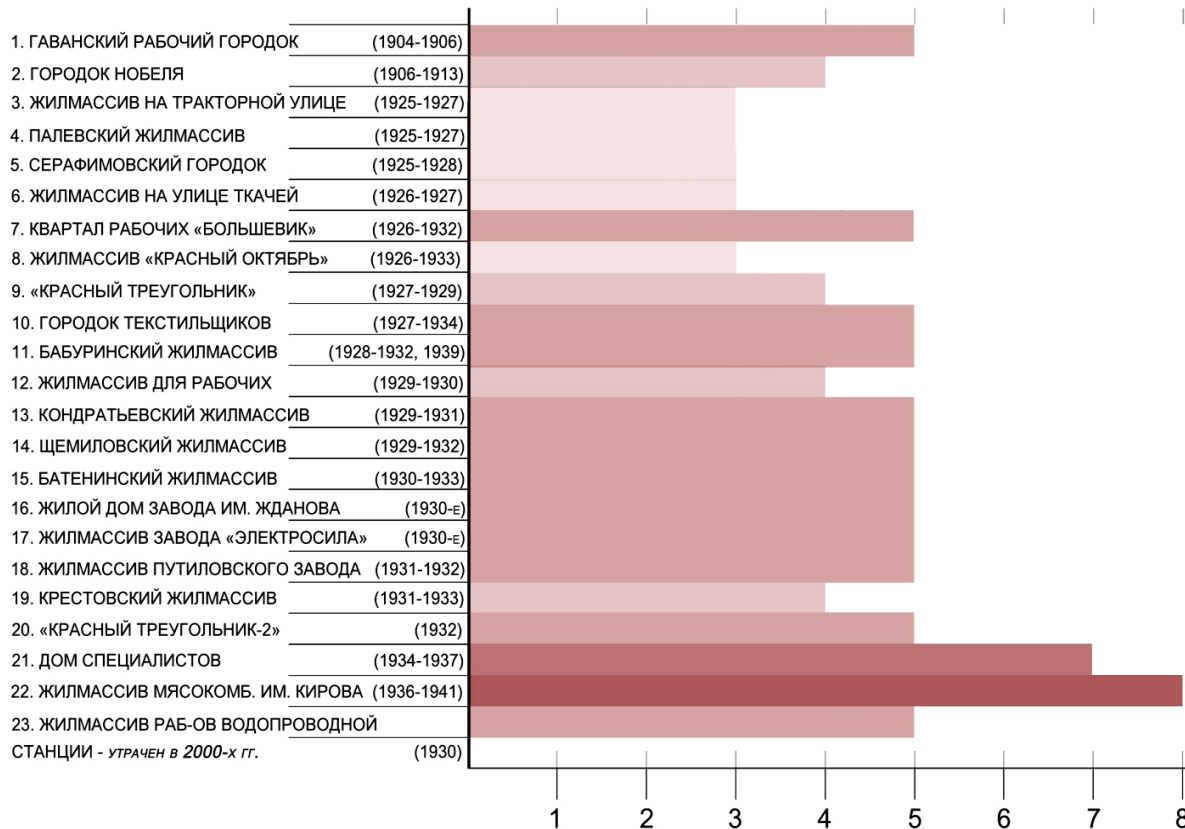


Fig.1: Plan - Scheme of Leningrad with Designation of Housing Construction Areas of 1900-1941 Period. The Cartographic Basis is the Leningrad 1939 Layout

Table 1: Table of Tallness, with the Allocation of Complexes of Low-rise Buildings (High-rise Boundaries: the Number of Storeys - 2-3 Floors).
Chronological Framework of the Study: the Period of 1900-1941



The low-rise residential complexes under consideration were the first experimental models of designing and construction of low-rise complexes during the first decade of Soviet power. The complexes were located in the southern part of the city, in industrial areas, near large transport highways, and were in close proximity to industrial enterprises, which provided transport accessibility of residents to places of work and communication with the central areas of the city (Fig. 1).

The creation of these complexes marked the beginning of the transformation of the unfavorable working environment of the industrial districts of Leningrad. The complexes had a purely residential function, the main cultural and household facilities were located near the residential complexes, and were designed to serve the entire adjacent area. The planning structure of the complexes has an ensemble character of building, which can be divided into compositional-planning and structural schemes of three typical groups (Table 2):

1. Linear (complexes No.1, 3 (dynamic type); No.5 (static type));
2. Regularly directed (complexes No. 2);
3. Central-beam (complex No. 4).

The complexes provided for the presence of public buildings: new, spacious schools included in the ensemble of complexes No. 1 and 4, designed for 1000 (complexes No. 1, 3) and 1500 (complexes No. 2, 4) students, business block (complexes No. 3, 5). Complex No. 2 provided for landscaped yards with fountains, children's playgrounds

and areas for household needs. In this complex, three buildings were designed for household services and children's institutions (Table 3).

Residential complexes, designed in strict, concise and generalized forms, carried the synthesis of two styles - neoclassicism and constructivism. The features of transformation of neoclassics here are merged with the peculiarities of the new architectural movement. The arcade method of uniting the buildings, which created an additional visual and spatial connection in the ensemble, is widely used in the construction of low-rise complexes of the 1920-1930s period (used in complexes No. 1-4, Table 4). It should be noted that during this period experimental design of coloristic solutions of complexes' facades was carried out. Thus, for example, in complex No. 5 the method of special, individual coloristic visual and spatial association of the complex buildings was applied (Table 4).

Table 2: The Planning Structure of the Complexes of Low-rise Residential Buildings of Leningrad in the Period of 1925-1933. (High-rise Borders: Number of Storeys - 2-3 Floors)

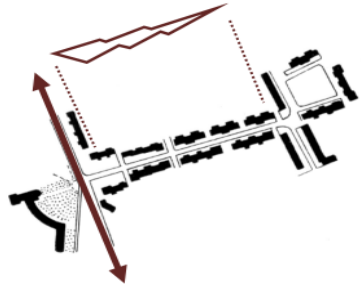
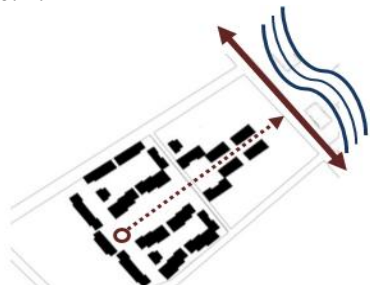
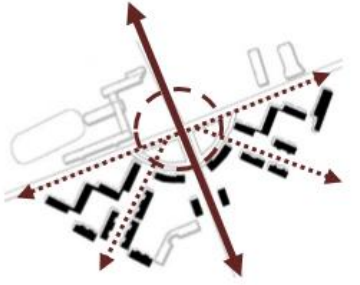
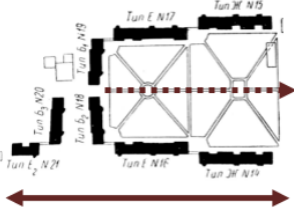
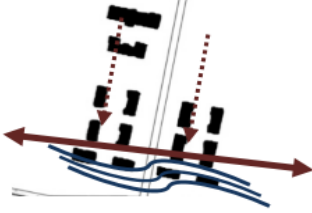
<i>The Planning Structure of the Complexes</i>		
<i>Near a Major Highway</i>	<i>Near the Waterfront</i>	<i>Central Space Formation</i>
<p>No. 1.</p>  <p>"HOUSING ESTATE ON TRAKTORNAYA STREET." (South-western part of the city) - Ensemble, dynamic street development. Gradual narrowing of the street - Location of residential houses with ledges to the depth of the street.</p> <p>←→ – Stachek Ave.</p>	<p>No. 2.</p>  <p>"PALEVSKIY HOUSING ESTATE." (South-eastern part of the city) - An ensemble type of site formation that forms the main axis facing the embankment.</p> <p>←→ – Obukhovskoy oborony Ave.</p>	<p>No. 4.</p>  <p>"HOUSING ESTATE ON TKACHEY STREET" (South-eastern part of the city) - The ensemble type of building, which forms the core of a semi-circular area, which is located on the axis of a major transport highway.</p> <p>←→ – Babushkina Str.</p>
<p>No. 3</p>  <p>"SERAFIMOVSKY TOWN" (South-western part of the city) - The ensemble, the type of formation of the inner courtyard space.</p> <p>←→ – Stachek Ave.</p>	<p>No. 5</p>  <p>"KRASNY OKTYABR HOUSING ESTATE" (South-eastern part of the city) Ensemble type, facing the embankment.</p> <p>←→ – Oktyabrskaya embarkment</p>	<p>Symbols:</p> <ul style="list-style-type: none"> ←→ –highway ⋯→ –compositional ensemble ⚡ – dynamic building ⋯ – water basin (Neva river)

Table 3: Public Buildings in the Structure of Low-rise Residential Complexes of Leningrad in the Period of 1925-1933. (High-rise Borders: Number of Storeys - 2-3 Floors)

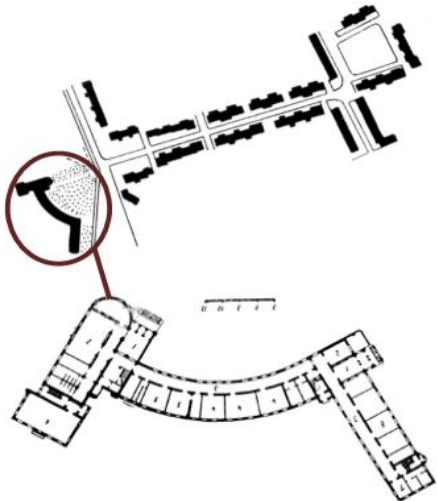


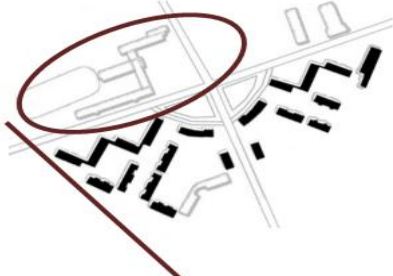
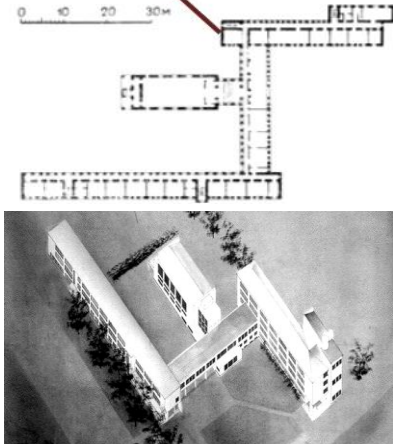

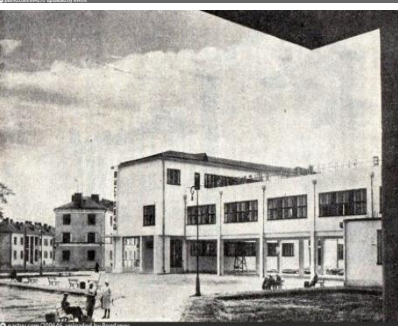
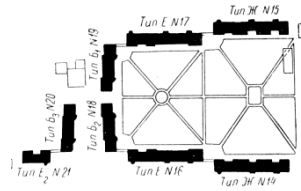

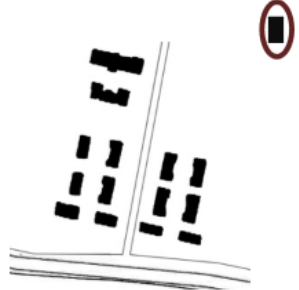







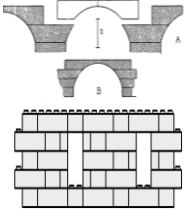




<i>Functional Filling</i>		
<i>Availability of Public Buildings</i>		
<p>School Complexes No. 1 and No. 3</p>    <p>Architect: A.S. Nikolsky. Construction period: 1925-1927.</p>	<p>School Complexes No. 2 and No. 4</p>     <p>Architect: G. A. Simonov, 1927-1929</p>	<p>Business unit Complexes No. 3 and No. 5 No. 3</p>  <p>Laundry</p>  <p>Period of construction: 1925-1928</p> <p>No. 5</p>   <p>Business unit</p>  <p>Architects: G.D. Grimm, W.A. Alvang * Possible initial purpose of the object - boiler room, sauna, laundry room.</p>

Table 4: Volumetric and Spatial Structure of the Complexes of Low-rise Residential Development of Leningrad in the Period of 1925-1933.
 (High-rise Borders: Number of Storeys - 2-3 Floors)

<i>Volumetric and Spatial Structure</i>				
<i>Volumetric and spatial connections in the complexes</i>				
<i>Arcade Method of Combining Housings</i>				
No. 1	No. 2	No. 3	No. 4	No. 5
				
"HOUSING ESTATE ON TRACTORNAYA STREET"	"PALEVSKY HOUSING ESTATE"	"SERAFIMOVSKY TOWN"	"HOUSING ESTATE ON TKACHEY STREET"	"KRASNY OKTYABR HOUSING ESTATE"
<i>Housings Color Design (Outdoor Shooting from 2018 TO 2019)</i>				
				
				
1 2 3	1 2	1	1 2 3	1 2
1 – Color of housings facade details 2, 3 – Coloristic design of the complex housings	1 – Color of housings facade details 2 – Coloristic design of the complex housings	1 – Coloristic design of the complex housings	1 – Color of housings facade details. 2, 3 – Coloristic design of the complex housings	1 - Colour of facade design (50%) - strips; colour of housings facade details 2 – Coloristic design of the complex housings

Table 5: Advantages and Disadvantages of Low-rise Residential Complexes of the 1925-1933 Period. (Tallness Borders: 2-3 Floors)

	+	-
	Creation of a new structure for organizing the life of the working class population	Industrial enterprises reduced the level of environmentally friendly living environment
	The exemplary development of the complexes was opposed to the "well yards" of the central part of the city.	
	Transport accessibility of the population to places of work	
	New, spacious schools and utility blocks were located near the complexes	Low percentage of children's playgrounds and sports grounds
	The accommodation provided for good insolation and aeration of the premises	<ul style="list-style-type: none"> • Due to the acute shortage of housing, all the apartments have become communal. • The kitchens provided space for showers (bathtubs), but they were not installed because they were not produced in the country at the time.
	Individual apartments provided for one or two families	
	Using new architectural techniques	<p>The material used in construction was of moderate to poor quality</p> 
	Low-rise residential complexes of the period 1920-1930s were the first experimental attempt of typification of housing construction for the working class in the Soviet Union.	Difficulties in repair and maintenance works, measures to preserve and renovate complexes.
	It was planned to increase the % of landscaping, due to the construction of green yards with fountains	Due to funding constraints, it was not possible to fully implement the project on beautification and landscaping of the complexes
	A unique ensemble, urban planning and planning example of a social-organized environment for the working class	-

In the evolution of the formation and development of residential planning units, low-rise residential complexes considered in the article, were the first exemplary experience in the construction of a new residential planning unit in Leningrad. A number of advantages of such experience (Table 5) have laid the beginning of the construction of a new type of housing, which was a transition to a new stage in the development of Soviet housing architecture.

Development of ideas of rational planning of the city and self-sufficiency of residential formations in its structure led to reconsideration of the historical quarter. Previously, the neighborhood was considered to be an area limited by passages and consisted of separate households. Gradually, with the introduction of building rules and recommendations for design, the structure and functional filling of the quarter was determined [16].

Experimental design and construction of the period of 20-30 years of the twentieth century has served many creative discoveries of constructivism, both in various functional directions, and, in particular, in housing construction, recognized as the main contribution of Russia to the world architecture of the twentieth century. The considered low-rise residential complexes formed in line with the continuity of the ensemble traditions of St. Petersburg urban planning practice, experimental design of low-rise residential complexes and the ideology of Soviet times are a unique ensemble, urban planning example of social-organized environment for the working class, reflecting the stage of development of Leningrad low-rise architecture.

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