

Ministry of Education and Science of the Russian Federation
Federal State Budgetary Educational Institution of Higher Education
«Nizhny Novgorod State University of Architecture and Civil Engineering»

O.V. Orelskaya, A. A. Khudin

**Comprehensive Methodological Approach
to Designing Buildings
in a Historical Environment**

Educational-Methodological Manual

for Students in the direction of training 07.03.01 «Architecture»,
Profile «Architecture»

FOR INTERNATIONAL STUDENTS IN ENGLISH

Nizhny Novgorod
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The methodological recommendations address the methods of comprehensive research on historical and architectural environments, as well as the types of analysis applicable to them. A comprehensive approach to design enables a competent and professional methodology for designing buildings of various functional purposes within historical quarters of city centers. This methodological guide will provide effective assistance to bachelor's students in conducting pre-design research and design work on the aforementioned topic.

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1. Purpose, Objectives, and Structure of the Project

The bachelor's graduation project is dedicated to the reconstruction of a block in the historical center and the design of a new public building (administrative, banking, or museum) within it. It is carried out by 5th-year students specializing in "Architecture" at NNGASU and is one of the most complex among the course projects provided by the architectural design program for senior students.

The project aims to familiarize future architects with the specifics of designing the reconstruction of blocks in the historical centers of cities. The development of this project, based on a real-world assignment, serves as comprehensive preparation for architects in their future creative work in urban planning departments, subdivisions of the Ministry of Culture, cultural heritage preservation authorities, design and scientific-production organizations, and private architectural studios dealing with the challenges of designing and reconstructing historical city centers. It also assists in the practical exploration of the specific territory in question.

The first part of the project is urban in nature. During their studies in the "Architecture" program, students have already been introduced to urban planning design (suburban settlements, microdistricts, new towns).

For the development of the block reconstruction project, students are provided with the territory of "Zapochainye" in the area of Ilyinskaya Street, which is part of the historical area of "Old Nizhny." Similar projects on this topic have been carried out at the Department of Architectural Design for 20 years. They have always been based on real sites (the historical center of Balakhna, the "Bolshiye Ovragi" district in Nizhny Novgorod, blocks adjacent to the historical streets of Bolshaya Pokrovskaya, Rozhdestvenskaya Street, and the "Zapochainye" territory). Over this time, practical experience in developing such projects has been accumulated, and a methodology for designing in historical centers has been established.

Under the guidance of their instructors, students explore various concepts, which they test in their projects. This allows the city to obtain numerous options for developing the territory, which can be analyzed and serve as the basis for further design work. Specific recommendations can also be developed based on these options.

In the process of completing this project, students address the following tasks:

1. Conducting pre-design research, which includes:
 - Assessing the initial urban planning situation;
 - Familiarization with literary sources (studying the history of the place);

- Familiarization with archival materials;
- On-site inspection and photographic documentation;
- Studying historical plans of the territory from various historical periods and comparing them with existing ones to identify changes in the planning structure (retrospective analysis);
- Conducting a historical and architectural analysis of the development, determining its value (assessment based on value, construction period, and stylistic affiliation);
- Preparing a historical and architectural reference plan and a project for protective zones of cultural heritage sites (architectural and historical monuments);
- Studying the existing functional zoning of the territory;
- Studying existing transport and pedestrian connections;
- Preparing a schematic landscape analysis, which allows for the study of visual relationships between the development and the natural environment.

When designing protective zones and determining their boundaries, the zone of compositional influence of a cultural heritage site (architectural monument) and its visual connections with the surroundings are identified. The contour of the protective zone on the reference plan takes on a complex configuration, taking into account various points of perception and the surrounding context of the monument.

2. Developing a concept for the development of the block's territory based on the data obtained from the pre-design analysis and preparing a planning project with elements of a development project.
Proposals for improving functional zoning, transport and pedestrian connections, and landscaping are also put forward. Transport schemes for the adjacent territory are developed with suggestions for their improvement. Efforts should be made to reduce the load on the historical center and, where possible, create pedestrian streets and zones.
3. Working out silhouette characteristics, compositional modeling of the panorama or development layout of the area allocated for the project (from the river side, the opposite side of the ravine, or the other side of the street).

While working on the project, students familiarize themselves with the law on the protection of cultural heritage, the problem of preserving cultural heritage sites, the issue of combining tradition and innovation in architecture (the issue of continuity), and address the challenges of tactfully integrating new buildings into the historical environment.

By studying and preserving the valuable planning, architectural, and artistic features of the heritage, along with their unique characteristics, students propose a tactful renewal of the architectural appearance of the district. They aim to create favorable and comfortable living, everyday, and recreational conditions for residents, reinterpreting all artistic components of the development.

Students are expected to provide specific original proposals for improving functional zones, enhancing the efficiency of land use, organizing public services and recreational areas, improving the architectural and artistic appearance of the public center, preserving the historical landscape, and enhancing the design area (e.g., a block).

Since the "Zapochainye" territory contains a significant number of architectural monuments from the 17th to 19th centuries, special attention is paid to preserving the scale, maintaining the artistic qualities of the architectural environment, and reviving the former harmony between buildings, their surroundings, and natural factors. This becomes the primary task, overriding all other requirements.

At the pre-design analysis stage, students identify discordant objects and propose ways to neutralize them. They consider religious landmarks, determine zones of optimal perception and visibility around them, and outline regulatory zones with varying levels of strictness: a museumification zone, a restoration and reconstruction zone, and a modernization zone. Establishing regulations for new construction and reconstruction ensures the preservation of historical development, landscape, and individual character, contributing to the harmonious development of the historical center.

Thus, as a result of working on this project, students study:

- The principles of approaching historical heritage from the perspective of a systemic analysis of the interconnections of its elements (city, ensemble, building);
- Identifying characteristic patterns in the development of spatial characteristics of the historical city center;
- Identifying the historical and cultural values of the given territory;
- The challenge of using cultural heritage as the primary means of preserving the values of the past;
- The challenge of tactfully integrating new structures into the historical context.

The varying degrees of value of the development elements require different scales of intervention in this historical zone. On this territory, the main approach to reconstruction is preserving the structure while selectively rebuilding individual objects, constructing new buildings as isolated insertions into the historical fabric of the center, and improving infrastructure and ecology.

The fundamental principles of the methodology involve utilizing and developing the traditions of the place, its urban planning features, adhering to existing building lines, strictly regulating building height, preserving the scale of development, maintaining architectural and artistic (and in some cases, stylistic) characteristics of the environment, restoring monuments, and reviving lost elements of the historical setting.

Working in conjunction with historical and cultural heritage is a responsible and multifaceted task. Any actions in the historical center require thorough research to identify its unique features and preserve its distinctive appearance. The integrity of the historical center is achieved through the clarity of the compositional concept, the unity of scale, and the harmonization of new structures with the existing development at morphological, typological, tectonic, decorative, and coloristic levels.

Project Composition:

1. A schematic map of the "Zapochainye" territory in the historical center of Nizhny Novgorod, indicating the location of the designed block; scale 1:50,000.
2. A landscape analysis diagram of the block with landscaping; scale 1:2,000.
3. A transport and pedestrian connections diagram of the block; scale 1:2,000.
4. A functional zoning diagram; scale 1:2,000.
5. A historical and cultural reference plan and a project for protective zones of cultural heritage sites in the historical block; scale 1:500 or 1:1,000.
6. A reconstruction project for the historical block; scale 1:500 or 1:1,000 (master plan with site improvements, showing both new (designed) and old (existing) developments).
7. Two elevations; scale 1:500 or 1:200.
8. An axonometric representation of the block's development (with a volumetric solution for the future designed object).

The project is executed on a 1x1 meter board.

Thus, the work on the project consists of **two main design stages**:

1. Pre-design research (various types of development analysis).
2. A design proposal for the reconstruction of the historical block.

2. Methodology for Researching the Historical and Architectural Environment (Architectural Heritage)

The relevance of this project is evident. The historical centers of ancient Russian cities are in decline: valuable old buildings and cultural heritage sites are deteriorating, requiring significant expenses for repair, restoration, or reconstruction. Currently, city budgets lack the necessary funds for such measures. As a result, there is an unjustifiably high rate of demolition of historical buildings, which often leads to irreparable losses, particularly the loss of the unique historical appearance of the city as a whole. To change this negative trend, it is essential, first and foremost, to recognize the value of the historical environment that has developed over centuries in the centers of Russian cities.

While the 1976 law on the protection of historical and cultural heritage focused on preserving only individual buildings and ensembles of high artistic value, the new Federal Law "On Objects of Cultural Heritage (Monuments of History and Culture of the Peoples of the Russian Federation)" of 2002 emphasizes a comprehensive approach to preserving cultural heritage. Article 59 clearly defines the concept of the subject of protection for a historical settlement: "In a historical settlement, all historically valuable urban-forming objects are subject to state protection: layout, development, composition, natural landscape, archaeological layer, the relationship between various urban spaces, the volumetric-spatial structure, fragmentary and ruined urban heritage, the form and appearance of buildings and structures united by scale, volume, structure, style, materials, color, and decorative elements, their relationship with the natural and man-made environment, the various functions of the historical settlement acquired during its development, as well as other valuable objects."

The historical centers of cities represent a heterogeneous environment characterized by diversity. Students face the task of comprehensively studying and identifying the artistic uniqueness of the environment in historical city centers. A thorough and all-encompassing examination of all its components is necessary. The historical center of a city should be considered as an integral architectural and natural complex. Alongside the study of architectural objects and ensembles, it is essential to study the natural environment and conduct a systematic typological analysis of the landscape based on compositional and visual characteristics. The methodology for researching cultural heritage is based on the sequential collection of information, systematization of initial data, analytical processing, identification of principles and patterns in the formation of the historical environment, and consideration of local traditions, architectural, and urban planning features.

In pre-design research, it is important to determine: the historical and artistic-urban planning value of the urban environment; stable traditional techniques and features of the formation of the planning structure and spatial composition of the development; all types of heritage (valuable landscape, layout, development); discordant inclusions in the historical silhouette; and the characteristic, specific, and unique features of the historical environment. A comprehensive study of the historical and architectural environment includes various types of analysis:

Historical analysis provides data on the history of the city, its parts, and its architectural objects from literary sources and archival materials, as well as from the register of historical and cultural monuments or an annotated list of state-protected objects, and from photo archives.

Retrospective analysis is carried out by comparing city plans from different historical periods, scaled to a uniform size, and allows for the identification of stable trends in the continuous development of the planning structure and

functional zoning of the territory. Such analysis is important for establishing the boundaries of the historical city center and changes in the planning structure. The ideas of continuity primarily contribute to preserving the integrity of the urban environment and culture.

Morphological analysis involves studying the structure of an architectural object to identify its features. This reveals the principles of form construction: the architectural work undergoes a certain transformation, allowing the complex form to be represented as consisting of simple architectural forms (three-dimensional figures) or geometric shapes (when considering the facade plane). This analysis also applies to all characteristic elements of decorative facade ornamentation. Morphological analysis is combined with compositional analysis (when analyzing the silhouette, use of color, and texture). The composition and morphology of the development provide a complete understanding of the evolution of the architectural appearance of the historical city.

Compositional analysis aims to determine the basic principles and techniques of architectural composition (in this case, the type of composition is identified), the principle of symmetry or asymmetry, the technique of dividing the whole into individual parts (horizontal and vertical divisions), and to identify compositional axes, accents, rhythm, meter, scale, proportions, etc. Here, it is important to conduct a comprehensive compositional analysis, identify differences in composition, and the presence of specific techniques that result from the individuality of a particular solution. Compositional analysis may also include aesthetic analysis, which reveals the features of the work in terms of artistic perception of the object (how the composition affects the viewer). The aesthetic impact of architecture also depends on the surrounding space.

Stylistic analysis allows for the identification of a set of characteristic features and traits that enable the classification of the analyzed object to a specific historical era, movement, style, region, or the creative work of a particular architect with a pronounced individuality. In stylistic analysis, the method of comparative analysis with well-known examples of the style is widely used. Stylistic analysis is closely related to other types of analysis. The method of comparative analysis with characteristic, vivid examples of the style is extensively applied in stylistic analysis. The carriers of style in architecture are often the details of buildings (windows, doors, pediments, towers, bay windows, roofs, columns, etc.) and elements of facade ornamentation.

Since architectural objects must be considered from various perspectives, other common types of analysis are also important, such as **structural (architectonic)**, **functional-planning**, and **typological** analysis. The study of architectural typology, functional and typological diversity of the urban center are essential conditions for preserving historical heritage.

Urban planning analysis includes: characterization of the landscape, study of the functional and architectural-planning structure, transport structure, zones of optimal visual perception of architectural monuments, placement and role of urban planning dominants, and visibility basins of architectural dominants.

When researching historical and cultural heritage, a **visual analysis** of the historical environment is necessary to assess its integrity, identify the specifics of a particular historical city, and determine visual reference points and the visual structure of the city (silhouette, panorama, perspective, elevations of fragments, spatial scale of squares). It is essential to clarify on-site the zones of optimal perception of architectural monuments and zones of strict regulation (determined by the height of the monument, e.g., 5-6 times its height). Similar measures should be applied to trees located at least 20 meters away from monuments to ensure the best visual perception of the object from nearby viewpoints. An open, free space should be maintained in front of the monument to allow for its optimal perception.

Attention should also be paid to the visual connections between dominants located in the historical center, which not only aids in navigating the spatial structure of the historical center but also highlights the varying degrees of value of development elements, requiring different scales of intervention in this historical zone. On this territory, the primary approach to reconstruction is preserving the structure while selectively rebuilding individual objects, constructing new buildings as isolated insertions into the historical fabric of the center, and improving infrastructure and ecology. The fundamental principles of the methodology involve utilizing and developing the traditions of the place, its functional and architectural features, adhering to existing building lines, strictly regulating building height, preserving the scale of development, maintaining architectural and artistic (and in some cases, stylistic) characteristics of the environment, restoring monuments, and reviving lost elements of the historical setting.

Landscape analysis makes it possible to identify the features of the landscape (floodplain areas, ravine slopes, landslide-prone slopes, former cemeteries, areas of discordant landscaping, zones of visual perception of the historical landscape, features of perceiving natural dominants, etc.).

A comprehensive and thorough study of the historical and architectural environment of the city center will allow for recommendations on the choice of reconstruction strategy, specific types of reconstruction: conservative, artistic, or modernist, as well as consideration of the individual characteristics of the specific location. The ideas of continuity primarily contribute to preserving the integrity of the urban environment and culture, as well as the tactful integration of new objects with historical development.

3. Pre-Design Research and Brief Recommendations for Preparing the Historical and Cultural Reference Plan and Protective Zones for Cultural Heritage Sites

The materials from pre-design research should form the basis of the historical and cultural reference plan and be plotted on a geodetic base. In the specified sequence, the following are marked: cultural heritage sites (architectural monuments, historical monuments, garden and park art monuments), areas of the historical environment, zones of optimal visual perception, buildings proposed for demolition, discordant objects, sites of lost monuments to be reconstructed, and other relevant elements.

The historical and cultural plan serves as the initial material for drafting the project of protective zones for historical and cultural monuments. In this student project, the historical and cultural reference plan and the project of protective zones are combined on a single drawing. Here, students use symbols to mark the boundaries of protective zones, building regulation zones, protected landscape zones, and indicate their usage regimes.

3.1. Historical and Cultural Reference Plan

The historical and cultural reference plan is a drawing executed on a geodetic base, summarizing the results of historical, archival, and field research. It graphically records the stages of the historical development of the territory, combining historical-architectural, historical-urban planning, and historical-landscape reference plans.

The historical and cultural reference plan for a block in a historical city is prepared at a scale of 1:500 or 1:1000 and contains comprehensive historical information. It evaluates the development, layout, landscape, and greenery solely from the perspective of their historical and architectural value. For this purpose, conventional symbols are used.

List of Conventional Symbols:

- Cultural heritage sites (architectural monuments under state protection);
- Cultural heritage sites (historical monuments under state protection);
- Cultural heritage sites (architectural monuments recommended for state protection);
- Valuable historical and architectural environment;
- Ordinary historical and architectural environment;
- Architectural monuments and valuable buildings from the Soviet period;
- Neutral buildings;
- Discordant buildings slated for demolition;
- Discordant buildings requiring neutralization;
- Sites or remains of lost structures;

- Historical green spaces;
- Points of visual panoramic views;
- Industrial and warehouse territories;
- Residential block territories;
- Public green spaces.

In addition to the symbols, the drawing should include an explication of cultural heritage sites under state protection, with corresponding numerical designations on the plan.

The purpose of preparing the historical and urban planning reference plan is to identify all historical and urban planning heritage for its subsequent mandatory consideration and use in the development of restoration projects, the master plan of a historical city, development projects (detailed planning projects), and urban planning activities.

3.2. Project of Protective Zones for Cultural Heritage Sites

The project of protective zones for cultural heritage sites is a planning and legal document that designates the territories and usage regimes of cultural heritage sites, ensuring the preservation of these sites and their historical environment in the adjacent areas.

Urban planning documentation prepared prior to the approval of the project of protective zones for cultural heritage sites must be adjusted to account for the regimes and urban planning regulations established by the protective zones project.

The system for protecting cultural heritage sites, comprising protective zones for monuments, regulation zones, landscape protection zones, and cultural layer zones, is complemented by the organization of historical and architectural reserve districts or historical parts of the city.

The main goals and objectives of the historical and cultural reference plan are:

- Preserving the individual appearance of the historical city;
- Identifying and protecting all historical and cultural values present in the historical settlement;
- Establishing regimes for new construction and reconstruction that ensure the preservation of historical development, landscape, and individual character, while promoting the harmonious functional development of the public center.

The design solution involves determining the territories and boundaries of protective zones for monuments and establishing regimes for their maintenance.

Protective zones for monuments are divided into the following types of territories with varying protection and usage regimes:

1. Territory of cultural heritage sites.
2. Protective zones of cultural heritage sites.
3. Historical and architectural reserve territories.
4. Territories of modern architectural and urban planning ensembles.
5. Building regulation zones (with subdivisions into several regimes of varying strictness: A, B, C).
6. Protected green spaces.
7. Landscape protection zones.

Territory of a cultural heritage site refers to the area directly adjacent to the site, forming a historically established whole with it. It is established around the most important cultural heritage sites under state protection or proposed for state protection and serves to physically preserve the site. The territory of a cultural heritage site is defined within the boundaries of the property, in some cases smaller, down to the size of the monument itself. This territory is not subject to construction, alteration, installation of utilities unrelated to the monument, road construction, or parking facilities. Archaeological research and measures to reconstruct lost parts of the monument may be conducted within this territory.

Protective Zones of Cultural Heritage Sites are areas surrounding monuments, directly adjacent to them, intended for their physical preservation and optimal visibility. The boundaries of these zones are determined based on the area of best visibility, tied to the local terrain.

The boundaries are defined considering the sector and basin of visibility, both towards and from the cultural heritage site, as well as the presence of adjacent valuable elements of historical planning, development, and landscape (or lost elements that can be restored). The boundaries of the protective zone should align with natural or planning landmarks: the boundaries of blocks, streets, squares, and the most expressive landforms—riverbanks, water bodies, ravines.

The usage regime of the protective zone implies the preservation of the planning structure and the historical spatial-compositional environment. Discordant buildings are subject to modification or demolition. Within the protective zone, the territory of the monument may be delineated. On the territory of cultural heritage sites, the design and execution of land management, earthworks, construction, reclamation, economic, and other activities are prohibited, except for works aimed at preserving cultural heritage sites.

Protective zones for cultural heritage sites are established for monuments, ensembles, landmarks, as well as historical cities and historical-cultural reserves.

Historical and Architectural Reserve Territories aim to preserve the historical appearance and ensure the harmonious functional use of the area. In addition to restrictions on height and dimensions of new developments, preservation and repair of existing buildings, adherence to block red lines, and elimination of discordant elements, functional restrictions are introduced to protect the area from moral degradation.

Territories of Modern Architectural and Urban Planning Ensembles are designated to preserve the appearance of these areas for history. This includes the first blocks of socialist cities from the 1920s-1930s and blocks from the 1940s-1950s. Within the boundaries of urban planning ensembles, alterations to facades, additions, and extensions that distort their appearance are prohibited on all buildings.

Here, all types of construction are regulated. **Building Regulation Zones** are determined based on the visibility zones of historical dominants and the preservation of the historical appearance. These zones are subdivided into several gradations depending on the degree of preservation of the historical appearance. Development is regulated in terms of density, height, dimensions, length, architectural character, wall materials, and the principles of new construction placement. Urban planning regulations correspond to the regimes developed by the project of protective zones for cultural heritage sites, tailored individually for each zone, and include special requirements for the reconstruction of existing buildings and structures.

Within building regulation zones, the red lines of the historical planning structure are preserved, road and transport construction is limited, and the expansion of existing industrial and warehouse enterprises, as well as the placement of new ones, is prohibited.

Building Regulation Zones vary in the strictness of their regimes:

A – Zone of Strict Urban Planning Regulation, Conservation, and Museumification (in close proximity to cultural heritage sites and their protective zones). This area contains the most historically and architecturally valuable development, which forms a unified whole with the landscape and urban planning context. Here, it is necessary to preserve the historical layout, valuable elements of historical development, and ensure that new construction aligns in scale with the historical surroundings. All design proposals must undergo state historical and cultural expertise.

B – Zone of Less Strict Urban Planning Regulation, Restoration, and Reconstruction (in areas not directly adjacent to monuments with valuable surroundings but adjacent to or near their protective zones). In this case, it is essential to preserve visual openings towards cultural heritage sites and prevent the emergence of discordant backgrounds. Height restrictions for new buildings are

introduced in this zone. Typically, this zone is dominated by brick or mixed-material houses built for the middle class in the late 19th to early 20th centuries. These blocks are similar to those in Zone A, with high building density and limited intra-block greenery, but differ in terms of value, style, and scale characteristics of the existing development. The primary task of new construction in this zone is to ensure continuity in the formation of compositional principles. New buildings should serve as a background for preserved cultural heritage sites. A gradual transition from the stylistic characteristics, dimensions, and scale of old buildings to the style and scale of modern architecture is necessary here.

C – Modernization Zone (areas located away from monuments, lacking valuable historical and architectural planning or development, but situated within protective zones). In these urbanized territories, historically developed areas that exert a compositional influence on cultural heritage sites are included in the building regulation zones. Architecturally, it is necessary to ensure that new construction aligns in scale with preserved monuments and their surrounding context. Direct visual connections may exist between zones adjacent to Zone B. Here, alongside areas of demolition or renewal of historical estate-type development (belonging to ordinary background development), free territories are developed. New structures in this zone may have significant volume and size. However, the most effective approach is a combination of low-rise and high-rise buildings, utilizing variable heights.

The purpose of establishing **Protected Natural Landscape Zones** for cultural heritage sites is to preserve the most favorable points of visual perception, both towards the cultural heritage site and the natural landscape compositionally linked to it.

Protected Green Spaces include parks, squares, boulevards, and necropolises that were created alongside the historical and architectural environment of the settlement and complement or define its historical appearance.

Landscape refers to natural formations, including ravine slopes, river floodplains, arable lands, forested areas, and urban landscapes occupied by single-story estate-type development combined with open and green spaces. The usage regime identifies discordant or historically inappropriate landscape elements that must be eliminated or neutralized. During landscape analysis, the boundaries of landscape influence are determined by visibility basins.

4. Project for the Reconstruction of a Historical Block

The reconstruction and modernization of residential blocks represent a continuous process of transforming and updating the layout and development to improve the living conditions of the population and ensure the efficient functioning of all urban elements. As a result of the reconstruction of residential blocks, the quality of the external living environment should also improve: conditions for

recreation and social interaction, cultural and domestic services, transportation, microclimate, and ecology.

Reconstruction measures can be of three types:

1. **Comprehensive reconstruction**, carried out simultaneously with the complete transformation of the block, including the demolition of dilapidated buildings, the construction of new ones, and the repair of key buildings.
2. **Selective reconstruction**, carried out sequentially and locally, involving the demolition, replacement, or repair of individual key buildings.
3. **Local modernization** of a complex of buildings, structures, and architectural forms within the block's structure, ensuring a change in the usage regime of the territory.

4.1. Formation of the Reconstruction Composition of a Block in the Center of a Historical City and Design Proposals for Improving the Planning Structure

The reconstruction project is developed for urban areas with valuable heritage, typically encompassing the entire historical center. The reconstruction project usually includes: a reference plan, a diagram of the current use of buildings, a section determining the economic efficiency of demolition or preservation of buildings, and a section justifying the functional use of historical monuments.

The reconstruction concept should reflect the strategy for transforming the urban environment, including the preservation of historical and cultural heritage, changes in the functional, planning, and compositional structure of the district, updating the development, zoning the territory by density, and determining the sequence of reconstruction measures.

Continuity in the development of cities with cultural heritage is not a mechanical combination of works from different eras but a unity based on the interaction of monuments with historical and artistic value and modern or planned objects. Pre-design research is mandatory and precedes the planning and design work for the reconstruction of the historical city center.

The general goals of reconstructing cities with valuable historical and cultural heritage are:

- Preserving valuable heritage (while potentially adapting cultural heritage sites to new functions);
- Ensuring comfortable conditions for the functioning of all elements of urban development;
- Improving the ecological situation;

- Enhancing the architectural and artistic appearance of the city and its center (achieved by improving the quality of new development, which should harmoniously blend with the existing environment).

In the reconstruction project of the historical center or a block within it, the problems of reconstruction are specified. Issues of functional use of the territory in the historically established zone, organization of public services, transportation systems, and regulations on building height are detailed, and the demolition of dilapidated buildings is justified. Reconstruction in the center of a historical city is primarily associated with the formation of urban ensembles of city-wide significance. At the same time, the main focus is on improving the architectural and artistic appearance of the center and its landscaping.

In this student project, a hypothesis for the prospective development of the center's structure is first developed. For example, from a forecasting perspective, the historically established center retains a clearly defined compositional structure, such as the radial-semi-circular structure in Nizhny Novgorod, to which all development is subordinate.

Each historical city requires a unique approach and specific methods of working with it. For example, in the territory of **Zapochainye**, it is proposed to develop the high shoreline of the **Dyaltov Hills**, oriented towards the main compositional axis of the city—the **Volga River** (starting from the **Strelka**) or the **Oka River** (up to the **Strelka**).

In addition to the linear-axial compositional approach, this historical territory also requires the use of a **depth-spatial compositional method** for the system of ensembles. This method is based on the adjacent placement of developments, where the space of one compositional group flows into the space of another.

Attention must also be paid to the formation of a series of **mini-squares**, which can be created within the boundaries of large blocks or on undeveloped territories (for example, **Maslyakov Square**, which belongs to the modernization zone). The historical fabric of the city consists of residential buildings and public buildings, which are either dispersed or concentrated around squares.

New residential and public buildings should not obscure the historical silhouettes of urban dominants or disrupt the perception of the architectural appearance of the historical development. When reconstructing the center, it is essential to consider the expressiveness of its appearance and silhouette. For this purpose, elevations of blocks, streets, and embankments are created, as well as panoramas from the river. The panorama provides a spatially multi-layered perception of the city center's appearance with a broad visual scope. For riverside

cities, the organization of embankments and river facades becomes particularly important.

In the historical center of the city, the compositional characteristics of structures—their scale, proportions, and rhythm—take on special significance.

Research by Nizhny Novgorod scholars has identified the following characteristic volumetric-spatial types of historical block development in the historical center:

- **Dense perimeter development,**
- **Loose perimeter development,**
- **Dispersed or estate-type development,**
- **Mixed development.**

Each of these types of development has its own compositional solutions for integrating new objects into the historical environment.

In this project, students may incorporate individual historical objects into the spatial, compositional, and planning structure of their buildings if there is a justified need for it.

4.2. Functional Zoning of a Historical Block

Students prepare a diagram of the existing functional zoning of a specific block. Based on this, they propose a forecast for the development of the area and the placement of a system of public buildings, either by developing traditional functions for each specific location or by potentially replacing certain functions.

The **public zone** in the reconstructed block is an area of individual public buildings integrated into a unified planning and architectural-spatial system with the surrounding residential development. This zone may include administrative, cultural, educational, commercial, and communal service institutions that serve both occasional and periodic needs of the residents of the historical **Zapochainye** area. The territory of such centers is clearly divided into functional zones corresponding to homogeneous groups of institutions. In some cases, depending on the specific situation, it is possible to create small specialized centers with mono-functional rather than poly-functional purposes.

On the diagram of the existing functional zoning of the block, the following zones are identified and marked:

- Administrative institutions,
- Trade and dining,
- Cultural and educational institutions,
- Healthcare,

- Recreation and sports,
- Green spaces,
- Architectural monuments.

Conventional symbols are used to highlight or design these zones on the diagram.

An important characteristic reflecting both the existing and modeled situation is the territorial balance of the block, i.e., the correlation of areas occupied by different functional zones; the ratio of built-up and open spaces; and the total area occupied by public buildings. The composition of the block's functional zones and their dimensions are determined, meaning the territory is allocated and assigned to specific functions.

The reconstruction of residential blocks in a historical city is associated with the modernization of cultural and domestic service systems for the population. Based on the projected density of the housing stock in the reconstructed area, calculations are made for the composition and placement of shops, kindergartens, schools, service points, etc.

Simultaneously with the improvement of the city-wide service system, the issue of rational organization of transport and pedestrian traffic arises. The reconstruction project of the historical block includes plans for landscaping the territory and creating open or underground parking lots.

4.3 Typology of objects forming the public zone in a neighborhood

The public zone of a neighborhood is expressed through the typology of its objects. This is typically a mono- or multi-functional hub (center) designed to provide primary, periodic, and daily services to the residents of the neighborhood and its surrounding areas. The public zone of a neighborhood may include public and business institutions: offices, bank branches, cultural institutions (clubs, museums, libraries), retail establishments: minimarkets, supermarkets, grocery stores, general merchandise stores, specialized stores (dairy, bakery, produce), service facilities: housing maintenance offices, hair salons, tailoring shops, shoe and clothing repair shops, photo studios, medical institutions: clinics (for children or adults), beauty salons; sports and wellness centers, swimming pools, preschool institutions: nurseries, kindergartens; educational institutions: schools.

During the reconstruction of a neighborhood, it is important to determine whether there is a need for new public buildings, what types are required in the area, and what their capacity should be. Capacity is determined based on the number of staff, and the land area for administrative buildings is allocated according to the standard area per employee. All necessary calculations are performed based on SNiP 2.07.01-89. When designing the reconstruction of a

neighborhood, SNiP is used to select the required types of educational, healthcare, catering, and consumer service institutions, as well as administrative, financial, and communication facilities, and housing and communal services. Based on SNiP, calculations are made for parking spaces and landscaped recreational areas.

4.4 Compositional Structure of the Model for a Reconstructed Neighborhood, Considering Factors Influencing Its Formation

In the context of reconstructing a neighborhood in a historic city, the processes of preservation, development, consolidation of disparate functions, relocation of objects outside the historic neighborhood, demolition of dilapidated and low-value structures, and construction of new buildings are distinguished. The main approaches to redeveloping a historic neighborhood in the city center include:

- Preserving the neighborhood's structure while selectively rebuilding individual objects and improving amenities;

- Preserving the structure and buildings of the historic neighborhood and creating complexes of new public buildings in the central district or near its boundaries;

- Constructing new residential and public buildings in the historic neighborhood on the site of demolished low-value structures.

Urban planning practice demonstrates a wide variety of directions, development approaches, and compositional solutions for the reconstruction of neighborhoods in historic cities. As cities develop, the planning and compositional structure of neighborhoods becomes more complex and spatially expansive.

One of the main tasks in forming neighborhood ensembles is the search for a unique architectural identity for each neighborhood. Special attention should be paid to architectural and spatial composition. At the same time, it is necessary to achieve harmony with the planning structure, the scale of the city, and to continue the urban planning traditions of the city.

In historic city centers, the primary challenge is resolving the complex **problem of integrating the new with the old.**

The image of a block can, in the case of a compact design, be revealed simultaneously. However, more often, it unfolds sequentially in space and time, as one moves through it. Its integrity can be discussed when it is formed as a spatial system, as an architectural ensemble. Integrity is achieved through the clarity of the compositional concept, the unity of scale, and the harmony of their architecture. An integral part of the block is the central courtyard space, which is landscaped and greened.

The uniqueness of the block, its individuality, is largely determined by the compositional structure and architecture of the residential and public buildings. It is the composition that allows for the integrated solution of functional and artistic tasks. When creating the overall idea of the compositional structure of the block,

the classification of spaces (closed, open, and mixed) and the development of a scenario for their perception are of great importance.

As a result of the on-site survey of the **Zapochainye** territory, it was found that there are no well-maintained embankments (such as **Fedorovsky Embankment**) or the edges of ravine slopes, for example, the **Pochainsky Ravine**. It is necessary to consider the possibility of organizing a wide access to the embankment and forming recreational complexes.

In the **Zapochainye** territory, there are localized green areas, but their arrangement does not form a unified, interconnected greening system. In the project, an attempt should be made to create a continuous, unified system of green spaces, which will contribute to improving the sanitary, hygienic, and ecological qualities of the urban environment, as well as enhancing the aesthetic appearance of the historical territory.

One of the main challenges in improving the historically established compositional and planning structure of the city center is resolving the organic interconnection with natural components.

The schematic model of the compositional and planning structure of the block is built on the basis of a working hypothesis for forecasting the development prospects of the planning structure of the **Zapochainye** territory. The main goal is to determine the direction of the block's development and its transformation. If the master plan stage identifies priority construction and the formation of basic compositional principles, the next design stage proposes the creation of cohesive blocks and the architectural-spatial composition of residential development.

When reconstructing blocks in a historical city, the primary methods are those of **continuity** and the **environmental approach**, ensuring the possibility of harmoniously combining existing and new development.

When working on the project, it is not enough to preserve only individual cultural heritage sites without also preserving the valuable historical and architectural environment that surrounds them.

5. Methodological Approaches to Designing New Objects in a Historical Environment

The structure of comprehensive scientific research on heritage includes historical and archival studies, as well as on-site investigations, which form the basis for the historical and architectural reference plan and the project of protective zones. These materials serve as the foundation for developing the reconstruction project of the historical territory. The varying degrees of value of development elements require different scales of intervention in this historical zone. On the studied territory, the primary approach to reconstruction is preserving the

compositional structure while selectively rebuilding individual objects, constructing new buildings as isolated insertions into the historical fabric of the center, and improving infrastructure and ecology.

The fundamental principles of the methodology involve utilizing and developing the traditions of the place, its specific features, adhering to existing building lines, strictly regulating building height (studying urban planning regulations), preserving the scale of development, maintaining architectural and artistic (and in some cases, stylistic) characteristics of the environment, restoring monuments, and reviving lost elements of the historical setting.

In the second part of the project, in addition to familiarizing themselves with the typology of the new public building they are to design, students must address the important professional task of integrating the new object into the historical context. For this, they turn to the **environmental approach** as the primary method of contemporary design in a historical environment. Currently, the stylistic trend of **contextualism** is one of the most relevant in modern architecture when working in a historical setting. It depends on its surroundings, with which it seeks to engage in dialogue within certain boundaries.

Contextualism is a stylistic trend in contemporary architecture based on the environmental approach. It undoubtedly expands the palette of means and techniques for artistic expression in the compositional system of modern architecture. The contextual method is not an entirely new phenomenon in architecture, as it has almost always been present in the architecture of various historical eras. However, for the most part, it did not claim independence as a stylistic trend in architecture and was considered merely a creative method of the architect. By the end of the 20th century, contextualism emerged in the West as one of the constituent elements of the umbrella, hybrid style known as postmodernism. The renowned theorist **Charles Jencks** acknowledged its existence in his work *"The Language of Post-Modern Architecture,"* assigning it a place among the six main trends of postmodernism.

In Russian architecture, contextualism was professionally recognized only in the post-Soviet period. In the 1990s, contextualism became a distinctive feature, particularly of the emerging regional Nizhny Novgorod architectural school, which rose to leading positions in Russian architecture on the wave of this trend.

In the last decade of the 20th century, new construction shifted to the historical center of Nizhny Novgorod. Architects began to pay more attention to the problems of preserving cultural heritage.

The dialectical nature of the historical process of style development in the 1990s led to the rejection of the preceding rationalist stage and a return to the decorative line of historicism. With architecture's turn towards a new eclecticism, emerging in opposition to the technologism of previous decades, the architecture of

new buildings began to strive to conform to the scale, material, and stylistic features of their immediate surroundings. This allowed it to easily adapt to the historical context. Many buildings began to blend into it through the use of decorative techniques characteristic of 19th-century eclecticism. The prevailing eclectic environment of the ancient city contributed to the revival of fine facade detailing, the fragmentation of forms, and attention to silhouette, especially in residential architecture.

Buildings in contextualism began to exhibit neutrality. However, not all architects were satisfied with this leveling of their creative "self." This led to further explorations, which resulted in a reinterpretation of architectural imagery at the level of associations and a desire to revive the "spirit" of the place. An important aspect of Nizhny Novgorod architecture was the absence of precise copying of past eras and the desire to return to the past. The search was more interpretive in nature. The new eclecticism of the 1990s applied familiar means and details, combining historicism with modernity, which led to the birth of the distinctive Nizhny Novgorod architectural style.

However, contextualism is multifaceted by nature. It can be fundamentally devoid of decoration, or it can be fundamentally decorative—it all depends on the specific urban planning situation and the specific location.

A feature of the contextualism development period is also the fact that the shift from standardized to individual design led to residential buildings losing their definition as "mass construction" and acquiring a new status—"unique works," akin to the role and significance of public buildings. The issue of artistic expressiveness, imagery, and stylistic affiliation began to be discussed even in the context of residential buildings.

Architects did not always follow the path of stylization; at times, they chose to create an associative image of a residential building, reminiscent of the appearance of lost houses demolished before the start of construction.

When integrating into the frontage of historical street development, architects began to consider the proportions of neighboring buildings, as well as the dimensions and rhythm of window openings. Color also played a role in finally uniting history and modernity into a cohesive fragment of development.

Through contextualism, architects were able to give an ensemble-like character to the development at the intersection of two streets.

An analysis of the surrounding 19th-century architectural monuments, which will neighbor the new object, allows for the development of an authorial concept of gradual transformation of the architectural appearance of each block of the residential building. As the distance from the architectural monuments increases, the influence of stylistic ties to historicism weakens.

A common technique in Nizhny Novgorod for the reconstruction and modernization of historical blocks has been the creation of stepped, tiered compositions of residential buildings. These buildings face the street with a low-rise volume along the building line and increase in height towards the inner courtyard space. This helps solve the problem of preserving the scale of the street facade while organically integrating new objects into it.

Thus, in each specific case, architects, relying on their professional skills, integrate into the historical development of the city in different ways.

The problem of combining the old with the new in Nizhny Novgorod architecture is given significant attention. Contextual architecture sensitively responds to changes in the urban environment, and architects deliberately seek ways and means to solve the complex professional task of preserving and creating the unique appearance of the city.

Residential development in the historical center of Nizhny Novgorod was mainly formed at the turn of the 19th and 20th centuries and requires transformations related to preserving the external appearance, reorganizing the internal structure, improving the quality of apartments, enhancing living comfort, improving sanitary conditions, landscaping the surrounding environment, and changing the functions of some buildings.

Comprehensiveness is the primary method of reconstruction. A careful attitude towards heritage is the starting point for transforming the environment and erecting new objects within it. The wear and tear of buildings is noted, despite their high artistic and architectural value.

The design solution for the reconstruction of existing development should be based on considering and interlinking diverse requirements for preservation, renewal, and the development of changing functional processes.

When designing a new volume within the structure of a reconstructed block, techniques of environmental adaptation of the new object to the surrounding context should be used.

This task can be addressed by:

- **At the compositional level**, when it is necessary to use well-known compositional tools (meter, rhythm, horizontal and vertical divisions, contrast and nuance, scale, proportioning, etc.);
- **At the morphological level**—by considering the form-making of the surrounding development (taking into account volumes, masses, modularity, silhouette characteristics);
- **At the typological level**—by referring to the typological characteristics of the immediate surroundings;

- **At the planning level**—by considering the configuration of plans and the planning structure of neighboring buildings that form the block;
- **At the stylistic level**—when the new building aligns with the historical development stylistically, using the principle of free stylization based on the dominant style or applying the principle of fragmentary quotation;
- **At the coloristic level**—when the new building is executed in the same color as the neighboring structures;
- **At the plastic (decorative-ornamental) level** of facade design—when the new building integrates into its surroundings through fine decorative or ornamental detailing;
- **At the associative-imagery level**—when the new building interacts with the environment through an imagery-driven solution that conveys the "spirit" of the specific place.

In cases where the building is designed within a natural landscape setting, the new structure organically integrates into the surrounding context based on one or several of the aforementioned levels. In this case, stylistic adaptation techniques are not applied.

APPENDIX

1. DEFINITIONS. KEY CONCEPTS

Reconstruction – "the revival of the appearance of a completely lost object or its fragment based on historical materials, with the addition of details not documented, derived from hypotheses and possible analogies" (A.A. Kedrinsky. *Fundamentals of the Restoration of Architectural Monuments*. Moscow, 1999. Chapter IV. P. 13); "the adaptation of objects to modern conditions or alterations caused by their use for new purposes" (A.A. Kedrinsky. *Fundamentals of the Restoration of Architectural Monuments*. Moscow, 1999. Chapter IV. P. 13).

Compensatory Construction – new construction to replace lost or demolished historical buildings, fully subordinate to the established urban structure and based on historical traditions. As a rule, compensatory construction involves preserving, primarily, the dimensions (in plan and height) of the lost or demolished buildings and maintaining their typological features.

Regeneration – "restoration, renewal, or compensation of something in the process of development, activity, or processing" (S. Ozhegov. *Explanatory Dictionary of the Russian Language*).

"Regeneration of historical development or the natural environment of a cultural heritage site" – "restoration of development in places of lost characteristic environmental development" (*Draft Regulations on Protective Zones of Cultural Heritage Sites of the Russian Federation*. Moscow, 2003. Chapter 2).

Restoration of Lost Cultural Heritage Sites (Monuments) – if such restoration is historically documented and does not disrupt the perception of monuments,

ensembles, or landmarks of greater historical and cultural value than the lost monument, belonging to earlier periods or the memorial period established for the given protective zone (*Draft Regulations on Protective Zones of Cultural Heritage Sites*. Moscow, 2003. Clause 7.2.5).

Cultural Heritage Sites (Monuments of History and Culture) – (in the context of this work) – buildings and structures, burial sites, other immovable objects or complexes of objects (with their historically established territories, defined as territories of cultural heritage sites), as well as archaeological heritage sites and monuments of monumental art, included in the Unified State Register of Cultural Heritage Sites (*State Lists of Historical and Cultural Monuments of the Nizhny Novgorod Region as of 01.01.2000, with additions as of 01.01.2002*) and in the List of Newly Identified Historical and Cultural Monuments of the Nizhny Novgorod Region as of 01.01.2002. Cultural heritage sites may include monuments, ensembles, and landmarks (for definitions, see Federal Law No. 73-FZ of 25.06.2002. Article 3).

Landmarks – creations made by humans or joint creations of humans and nature, including places where folk arts and crafts are practiced, centers of historical settlements, or fragments of urban planning and development; memorial sites, cultural and natural landscapes associated with the history of the formation of peoples and other ethnic communities on the territory of the Russian Federation, historical events, and the lives of prominent historical figures; cultural layers, remains of ancient cities, settlements, etc.

Cultural Heritage Sites of Federal Significance – objects possessing historical, architectural, artistic, scientific, and memorial value, having special significance for the history and culture of the Russian Federation, as well as archaeological heritage sites (Federal Law No. 73-FZ of 25.06.2002. Article 4).

Cultural Heritage Sites of Regional Significance – "objects possessing historical, architectural, artistic, scientific, and memorial value, having special significance for the history and culture of a subject of the Russian Federation" (Federal Law No. 73-FZ of 25.06.2002. Article 4) – for the Nizhny Novgorod Region.

Cultural Heritage Sites of Local (Municipal) Significance – objects possessing historical, architectural, artistic, scientific, and memorial value, having special significance for the history and culture of a municipality (Federal Law No. 73-FZ of 25.06.2002. Article 4) – for the city of Nizhny Novgorod.

Valuable Objects of the Historical Urban Environment – preserved historical buildings and structures "characteristic of a given historical settlement," possessing distinct architectural, artistic, typological, historical, and stylistic features, having memorial significance, urban-forming value, and being part of architectural (urban planning) ensembles or complexes. The quality of these objects (based on any of the above parameters or a combination thereof) provides grounds for conducting a

historical and cultural examination to potentially include them in the state register of cultural heritage sites of regional or municipal significance.

Ordinary Objects of the Historical Urban Environment – preserved historical buildings and structures that do not possess distinct architectural or artistic features and stylistic qualities (or have completely lost these qualities due to repairs and reconstructions), yet are elements of the historical urban environment; "characteristic buildings for a given historical settlement, being part of the historical urban environment or urban planning ensembles of streets and squares, recommended by project developers for preservation" (*Methodological Recommendations for the Development of Historical and Architectural Reference Plans and Projects for Protective Zones of Historical and Cultural Monuments in Historical Settlements*. Moscow, 1990. Chapter 3, Clause 3.5).

Protective Zone of a Cultural Heritage Site – "a territory within which a special usage regime is established to ensure the preservation of the cultural heritage site in its historical landscape setting, restricting economic activities and prohibiting construction, except for the application of special measures aimed at preserving and regenerating the historical urban or natural environment of the cultural heritage site" (Federal Law No. 73-FZ of 25.06.2002. Article 34, Clause 2).

"A section within the protective zones of a cultural heritage site where a usage regime is established to ensure the physical preservation of the cultural heritage site (monument, ensemble, landmark), historical landscapes, historical hydrological systems, as well as favorable visual perception of the monuments and their historical environment in the adjacent territory" (*Draft Regulations on Protective Zones of Cultural Heritage Sites of the Russian Federation*. Moscow, 2003. Chapter 2).

Zone of Building and Economic Activity Regulation – "a territory within which a land use regime is established, restricting construction and economic activities, and defining requirements for the reconstruction of existing buildings and structures" (Federal Law No. 73-FZ of 25.06.2002. Article 34).

"A section within the protective zones of a cultural heritage site where building and other economic activities are regulated by height, length, volume, functional purpose, density, scale, configuration, compliance with building lines, historical land and property boundaries, and the architectural appearance of buildings, structures, and built-up areas. These are established to preserve and restore the existing planning structure and ensure the harmonious unity of new development with the historically established one" (*Draft Regulations on Protective Zones of Cultural Heritage Sites of the Russian Federation*. Moscow, 2003. Chapter 2).

Urban Planning Regulations – a set of established "Land Use and Development Rules" specifying the types and parameters of permitted use of land plots and other real estate objects (buildings, structures, facilities), as well as permissible changes to real estate objects during urban planning activities within each zone recorded on

the legal zoning map of Nizhny Novgorod. (*Land Use and Development Rules of Nizhny Novgorod – 1st Edition – 2004*).

Urban Planning Regulations – the permitted uses of land plots established within the boundaries of the corresponding territorial zone, as well as everything above and below the surface of the land plots used in the process of their development and subsequent operation of capital construction projects, the maximum (minimum and/or maximum) sizes of land plots, and the maximum parameters for permitted construction and reconstruction of capital construction projects, as well as restrictions on the use of land plots and capital construction projects (Urban Planning Code of the Russian Federation, dated 30.12.2004). The boundaries of territorial zones are indicated on the urban planning zoning map as part of the Land Use and Development Rules in the city of Nizhny Novgorod.

Urban Planning Regulations for the Protection of Cultural Heritage Sites – the proposed maximum parameters for permitted use, reconstruction of capital construction projects, and restrictions on the use of land plots and capital construction projects within each protective zone, as outlined in this project, for subsequent inclusion in the "Land Use and Development Rules of Nizhny Novgorod" and the introduction of corresponding amendments regarding permitted uses.

Protected Viewpoints and Panoramas – the zone of optimal visual perception of architectural monuments – is determined by a distance of 200 to 350 meters from the monument, depending on the quality and visibility of all its details. The configuration of the zone is determined empirically on-site and depends on the terrain, layout, and surrounding development. The visibility basin of architectural ensembles and dominants is determined by the general nature of the terrain, the location of the ensembles and dominants, and their height. The boundary of the visibility basin can only be established on-site, guided by the impression of the maximum distance of emotional influence of historical ensembles and dominants (*Methodological Recommendations for the Development of Historical and Architectural Reference Plans and Projects for Protective Zones of Historical and Cultural Monuments in Historical Settlements*. Moscow, 1990. Chapter 3, Clause 3.5).

Protected Landscape Zone – "a territory within which a land use regime is established, prohibiting or restricting economic activities, construction, and reconstruction of existing buildings and structures to preserve (regenerate) the natural relief and historical appearance of the landscape, which influences the integrity of the perception of the historical settlement and individual cultural heritage sites" (Federal Law No. 73-FZ of 25.06.2002. Article 34).

"A section (or sections) within the protective zones of a cultural heritage site where a usage regime is established to ensure the preservation of territories (open and closed spaces) that include valuable historical, cultural, and natural landscapes

influencing the integrity of the perception of the monument and historical settlements. Within this zone, measures are provided to preserve the natural relief and historical appearance of the landscape" (*Draft Regulations on Protective Zones of Cultural Heritage Sites of the Russian Federation*. Moscow, 2003. Chapter 2).

Historical Buildings and Structures – buildings and structures (both preserved and lost) constructed at least 40-50 years ago, with their construction dated no later than the mid-20th century (before 1965).

Historical Building Lines (Red Lines) – building lines established by the early 20th century (1917) and existing until the mid-20th century.

Red Lines – lines that mark the existing, planned (modified, newly formed) boundaries of public territories, boundaries of land plots where engineering and technical infrastructure networks, power lines, communication lines (including linear cable structures), pipelines, roads, railway lines, and other similar structures are located (Urban Planning Code of the Russian Federation, dated 30.12.2004. Chapter 1. Article 1).

Stable Elements of the Planning Structure – fragments of the layout and development that are valuable in terms of their urban planning and architectural-artistic parameters, retaining their urban-forming significance for at least 50 years and prospectively (at least 20 years), which should be considered as reference points in urban planning design.

Architectural (Urban Planning) Dominants – architectural ensembles or individual structures that organize the surrounding space, form the compositional system, and play an active urban-forming role.

Architectural Accents (Local Architectural Accents) – individual structures or parts of structures that stand out compositionally or stylistically in the surrounding development.

Zone of Optimal Visual Perception of Architectural Monuments is determined by a distance of 200 to 350 meters from the monument, depending on the quality and visibility of its details. The configuration of the zone is established empirically on-site and depends on the nature of the terrain and surrounding development.

Boundary of the Visibility Basin is established only on-site, guided by personal impressions of the maximum distance of emotional influence of historical ensembles and dominants. The visibility basin is determined by the general nature of the terrain, the location of the ensembles and dominants, and their height.

2. ON THE STATE OF ARCHITECTURAL HERITAGE IN THE ZAPOCHAINYE TERRITORY

Features of the Historical Architectural Environment of Zapochainye

In Zapochainye, more than anywhere else in our city, the historical and architectural environment has been significantly preserved. What is important to emphasize is not individual houses, but rather the unique urban environment. This situation is largely explained by the natural and historically established territorial isolation of Zapochainye, which was formed due to its unique landscape: the Pokhvalinsky Ravine, steep descents to the Nizhny Bazaar, the Pochaina River, and later the deep Pochainsky Ravine separated it from the main city. Today, this part of the city retains, as much as possible under modern conditions, its distinctiveness.

The Ilyinskaya Street area represents a unique zone in terms of architectural and spatial composition, distinguished by the integrity of its architectural appearance. For the city, this is a unique zone, both in terms of urban planning and natural landscape, based on a terraced principle due to the significant elevation difference from Rozhdestvenskaya Street to the southern boundary of the project area (Maslyakov Street).

Zapochainye is characterized by a diversity of historical development:

- By building type: residential, public, commercial;
- By construction period and architectural style: from the 17th to the early 20th century, i.e., from ancient Russian architecture to classicism, eclecticism, modernism, and retrospectivism;
- By material: wooden, wooden with plaster, and stone. A significant portion of the development consists of modern buildings from the 1960s to the 1990s. However, it should be noted that the development from the 1960s and 1970s has a discordant character, represented by typical multi-story box-like buildings.

All historical development up to the 1910s was united into a single architectural and spatial composition, where two- and three-story buildings were combined with silhouette-expressive religious structures.

One of the most important tasks today is identifying the architectural and aesthetic features and specifics of the architectural environment.

Regarding the historical development of Zapochainye, the following features should be noted:

- Good preservation of individual fragments of the architectural and historical environment;
- **Polystylism** (as it includes cultural heritage objects from the 17th to the 20th centuries);
- A combination of professional and non-professional architecture;
- The presence of works by capital city architectural masters;

- The presence of several urban planning dominants—churches (17th to 19th centuries)—requiring restoration and reconstruction;
- Isolated inclusions of wooden historical buildings requiring special attention;
- Predominantly low-rise historical development (1-3 floors);
- Division of 19th-century development by social class (noble, merchant, petty bourgeois, peasant) and professional affiliation (carpenters, coachmen, soldiers, etc.);
- Organic connection with the natural landscape;
- The presence of a pronounced specific terrain: slopes, inclines, ravines;
- The absence of strict regular planning (some streets follow the terrain);
- Panoramic views of the development towards river vistas and the Nizhny Novgorod Kremlin;
- Functional saturation is dominated by residential development, although by the late 20th century, the residential function in some historical houses began to be replaced by public functions: commercial and office spaces.
- The architectural facades of historical streets are of particular interest. Analyzing them provides insight into the scale of development, the silhouette, and the dynamic construction of each street at different historical stages. The architectural and plastic design of the facades of historical buildings, along with their decorative elements, is of significant importance.
- A morphological analysis of the architectural details of the houses that form the main fabric of this territory demonstrates their considerable diversity and uniqueness. This applies to window frames (the main elements shaping the character of the facades), as well as attics, pilasters, porches, turrets, balconies, etc.
- The ordinary development here is characterized by less decorativeness and opulence compared to cultural heritage sites.
- The silhouette plays a crucial role in preserving the uniqueness of the architectural environment. An analysis of the development in Zapochainye shows that its height has changed only slightly. Traditionally, a relatively uniform height of development prevailed here, dominated by tall religious structures. However, with the loss of these dominants, they were replaced by multi-story standardized buildings, whose crude and laconic silhouettes disrupted the integrity of the architectural environment.
- The coloristic solution of the historical environment is of particular importance. It is characterized by a variety of colors, primarily associated with the use of different building materials.
- A distinctive feature of the architectural environment of Zapochainye is its human scale, the intimacy of courtyard spaces that create coziness, and the spirit of the patriarchal past.
- When discussing the stylistic features of the historical development, it is important to emphasize the dominant role of eclecticism. Buildings in the styles of classicism, modernism, and retrospectivism are isolated inclusions in the eclectic fabric. Against this backdrop, examples of 17th-century

Russian architecture, represented by both residential buildings—merchant chambers—and religious structures, are perceived as precious pearls. To enhance the role of medieval Russian residential buildings, it is necessary to address the issue of their museumification, freeing them from inappropriate office functions and opening them up to tourists.

- Despite the apparent diversity, the eclectic development here has a stylistic coherence and creates a certain unity.
- A comprehensive approach to studying all components of the architectural and historical environment will allow for a scientific solution to the tasks at hand.

Historical and Architectural Characteristics of Ilyinskaya Street

Ilyinskaya Street is one of the oldest streets in Nizhny Novgorod. Its origin is connected to the road that led to Vladimir and Moscow, which passed through this area. The direction of Ilyinskaya Street was preserved in the 1770 city plan developed by A. Kvasov, which first introduced regularity to urban development. The street was primarily settled by merchants. The general trend of urban development led to the densification of plots and the replacement of wooden houses with stone ones, which was also evident on Ilyinskaya Street. This is clearly seen when comparing plans of Nizhny Novgorod from different periods. For example, on the 1767 plan, Ilyinskaya Street only sporadically shows existing buildings with numerous dead ends and alleys, while the main space between the street and the Pochainsky Ravine was occupied by gardens and vegetable plots. The Ascension Church and the square around it are particularly highlighted on the plan.

On the detailed 1799 plan, a city estate belonging to the Bespalov merchants is shown next to the Ascension Church. Its main manor house—one of the first stone buildings on Ilyinskaya Street (now house No. 56)—stands out. The rest of the houses on Ilyinskaya Street remained wooden. The greater regularity of the city plan, confirmed in 1804, shows new construction along almost the entire building line of the street, except for the area where a branch of the Pochainsky Ravine met the street (now between houses No. 62 and 64). The street ended at its intersection with Malaya Pokrovskaya Street, beyond which lay the Yamskaya Sloboda (Coachmen's Settlement), a place known as "The Grate" due to the checkpoint with a grate that was locked at night. The 1804 plan shows a guardhouse, a chapel, and a tavern here. However, not everything depicted on the 1804 plan was realized. For example, the street leading from Pokrovskaya Church through the Pochainsky Ravine to Ilyinskaya Street was never built. The embankment of the Pochainsky Ravine, shown on some drawings, also remained unrealized—the ravine was bordered by the backyards of estates with gardens, vegetable plots, and outbuildings, separated by fences.

By the early 19th century, with the relocation of trade and industrial enterprises and offices to Rozhdestvenskaya Street and the Volga River Embankment, Ilyinskaya Street finally became "a quiet, secluded street of merchant mansions, with perpetually locked bolts, gates, and fierce dogs in the courtyards," as noted by N.N. Khramtsovsky in 1859. He also observed: "Most of the buildings on Ilyinskaya Street are stone, and almost all the houses belong to merchants. Few artisans live here, and there is not a single tavern or eatery. In short, this street is quiet and solid, like a merchant's wife at a gathering or a promenade." Among the notable buildings of this period were the houses of the honorable citizen Akifyeva (No. 56), the first children's shelter (No. 78), and the heirs of the merchant Rychin (opposite the shelter). By the 1880s, all empty plots along the building line had been developed (except for the corner plot at Malaya Pokrovskaya Street). Intensive development of intra-estate spaces began, with the appearance of residential wings, service buildings, and outbuildings. Eclecticism almost completely dominated the architecture of the development. Many houses that previously had a classical appearance were rebuilt.

The even side of Ilyinskaya Street, from the Ascension Church to Malaya Pokrovskaya Street, largely retains its late 19th-century appearance. The height of the buildings on this section of the street does not exceed two or three stories. The street maintains a human scale and reflects provincial patriarchalism. In the architecture of the street's development until the mid-19th century, elements of Russian classicism were still used, but they gradually gave way to eclecticism. By this time, even small residential buildings, whether wooden or stone, received as much attention as larger structures. In the second half of the 19th century, ordinary buildings were rebuilt and acquired the external features of fashionable styles. Narrow plots were developed with small mansions facing the street, while service buildings extended deep into the block, creating a complex system of inner courtyards. The facade-oriented development, with certain intervals, gave way to almost continuous facade development. Houses lost their strict geometric shapes in plan and acquired more complex configurations due to numerous additions.

Despite the apparent diversity, the eclectic development has a stylistic coherence and creates a certain unity. The plasticity of the buildings is defined by the decoration of their facades. The owners of mansions began to equate beauty with rich ornamentation. Most of the buildings preserved in the Zapochainye territory date back to this period.

Temple Architecture in the Zapochainye Territory

It is important to note a distinctive feature of the Ilyinskaya Sloboda that sets it apart from other areas of "Old Nizhny"—the preservation of religious buildings, primarily all parish churches. During the Soviet era, these churches were rebuilt, stripped of their domes, and repurposed, but they survived and do not need to be recreated from scratch.

The methodology for analyzing historical heritage is currently being tested on the territory of Zapochainye, which is part of the historical center of Nizhny Novgorod. This area is characterized by a relatively intact historical environment and a significant concentration of historical and cultural heritage sites (17th to 19th centuries). A program has been developed to transform this territory into a protected and tourist zone of the city. This program is being developed as part of an initiative by the administration of the Presidential Envoy to the Volga Federal District.

The methodology is being tested in coursework and diploma projects at the Institute of Architecture and Civil Engineering of NNGASU.

The Program for the Reconstruction of Zapochainye and Its Implementation

Since 2002, a program to restore the vertical and compositional dominants—the churches—has been underway in Zapochainye. The domes of the Sergius Church on Sergius Street, the Church of the Myrrh-Bearing Women on Dobrolyubov Street (formerly Myrrh-Bearing Women Street), and the Church of the Praise of the Blessed Virgin Mary above the Pokhvalinsky Descent have been restored. The bell tower and refectory of the Assumption Church on Ilyinskaya Hill have been reconstructed, the dome of the bell tower of the Ascension Church on Ilyinskaya Street has been gilded, and the crowning part of the Church of St. John the Baptist on Ivanovsky Descent and the Church of the Prophet Elijah on Ilyinskaya Street have been restored. A new Church of the Kazan Icon of the Mother of God has been built on the site of the one lost in the 1930s on Zelenksy Descent. The restored and reconstructed churches have returned the system of dominants to the historical territory of Zapochainye, which is now defined as a "landmark site." All churches have been transferred to the diocese and are now operational.

Improvements to the territory have also begun. The slopes of the high bank of the Oka River near Fedorovsky Embankment have been cleared, terraced, and equipped with descents and viewing platforms, contributing to the formation of the city's river facade. The facades of several 19th-century houses on Sergius Street, near the newly gilded domes of the five-domed Sergius Church, have been restored.

However, due to the economic crisis, the unique estate development on Ilyinskaya Street has largely remained unrestored (a rare exception being the Markov Mansion at 61 Ilyinskaya Street and house No. 51 at the corner of Voznesenskaya Street). The appearance of cultural heritage sites under protection continues to deteriorate. For example, the vases that adorned the high attic of the Chesnokov Merchant's House have disappeared, the wooden house at No. 84 has partially burned down, the stucco decorations on most facades are crumbling, the facade of house No. 55 is deforming and collapsing, and house No. 76 has recently

disappeared. The attic on the facade of house No. 23 has been lost, and the unique 17th-century stone chambers of the Pushnikov, Olisov, and Chatygin merchants remain inaccessible to tourists and have not been adapted as museums. The situation is even worse for the houses on Gogol Street and Plotnichny Lane.

The organically formed historical development of this territory is disrupted by the inclusion of discordant multi-story residential buildings (for example, within the block bounded by Gogol Street, Nizhegorodskaya Street, Ilyinskaya Street, and Sergius Street, even though this area falls within the visibility basins of urban planning dominants—religious structures, as was the case in the 1970s (for instance, near the Church of the Myrrh-Bearing Women, typical 9- and 12-story standardized buildings were constructed). However, there are also examples of tactful integration into the surrounding context (for example, the building at the intersection of Ilyinskaya Street and Sergius Street, near the Ascension Church on Plotnichny Lane).

Of course, regulations regarding building height, wall materials, proportions, facade plasticity, etc., must be strictly adhered to in the landmark areas of historical cities. Architects must continue to prioritize the harmonious combination of new and old development.

The decorative ornamentation of the facades of historical buildings also holds artistic value, showcasing stylistic and morphological diversity. An analysis of the development has revealed its distinctive features, characteristic traits, and techniques.

First and foremost, this applies to window frames, the spaces between them, attics, pilasters, porches, and doors, where floral decor predominates, including garlands, rosettes, acanthus leaves, wreaths, flowers, and branches. For eclectic buildings, which make up the majority here, a richness of decorative ornamentation is characteristic.

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