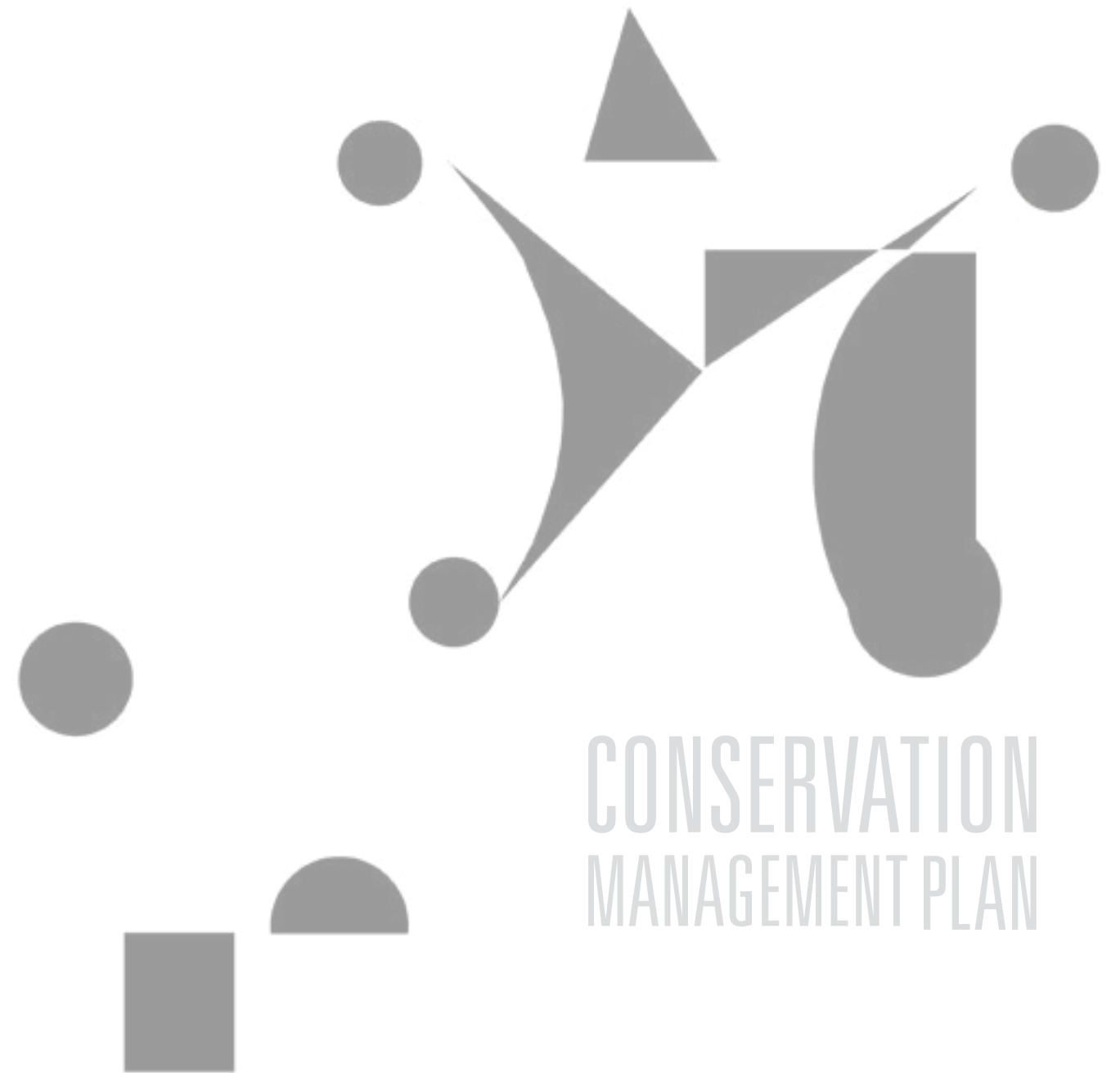


The background of the entire page is a complex, abstract pattern made of various shades of wood. The pattern consists of overlapping circles, triangles, and other geometric shapes, creating a mosaic-like effect. The wood grain is visible throughout, adding texture to the design.

TBILISI CHESS PALACE AND ALPINE CLUB

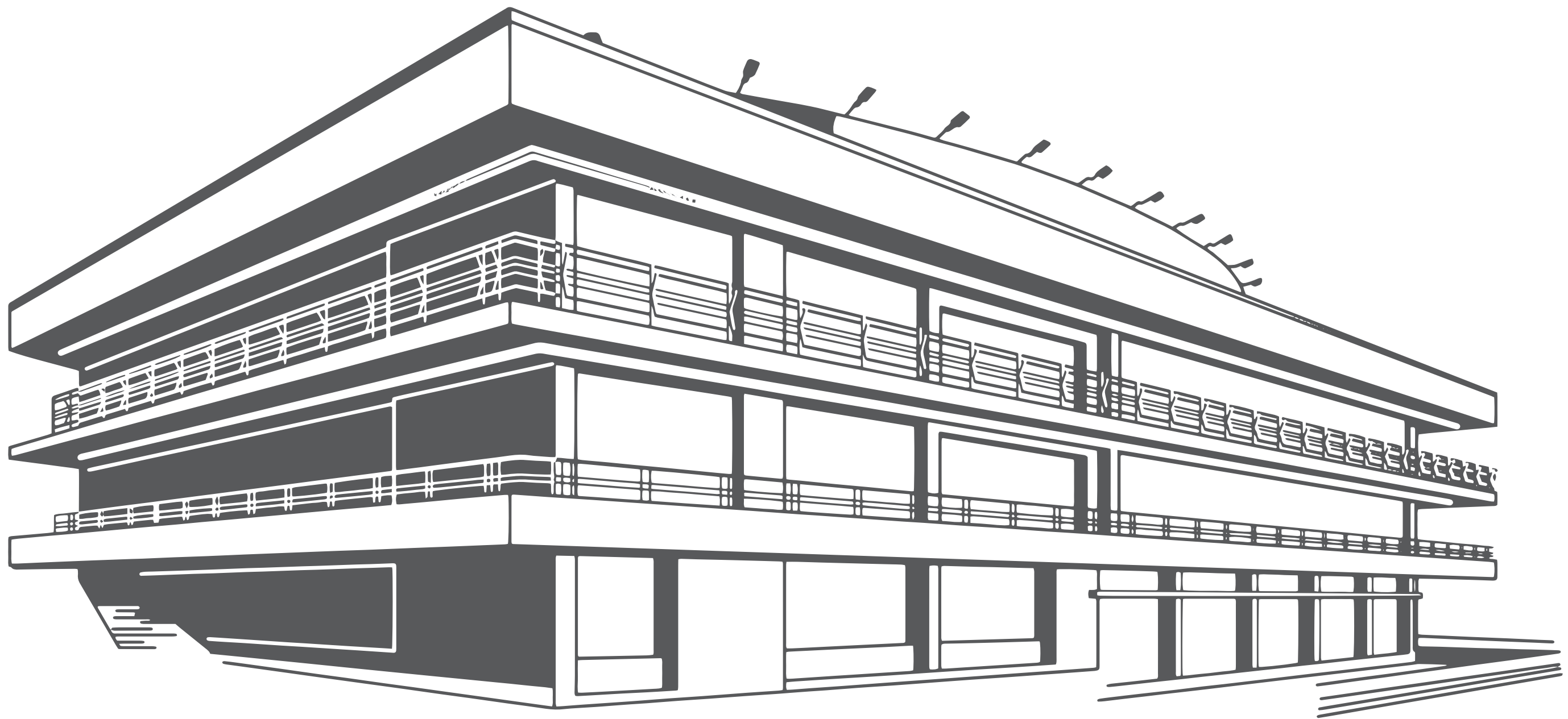
CONSERVATION MANAGEMENT PLAN

TBILISI CHESS PALACE AND ALPINE CLUB



CONSERVATION MANAGEMENT PLAN

TBILISI 2021



The Conservation Management Plan of Tbilisi Chess Palace and Alpine Club was created within the project *Conservation of Modernist Architecture and its Sustainable Use in Georgia* implemented by the Georgian National Committee of the Blue Shield during 2018–2020 and supported by the Getty Foundation through its Keeping It Modern initiative.

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Foundation

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FOREWORD



In 2018, the Getty Foundation awarded a Keeping It Modern grant to the Georgian National Committee of the Blue Shield in Tbilisi for the development of the comprehensive Conservation Management Plan (CMP) presented in this handsomely produced book. The field of architectural conservation has evolved its best practices to embrace CMPs—forward-thinking, strategic conservation-planning documents that articulate a building’s value, feature results from investigations into a site’s historical fabric, and outline policies and steps for future preservation. Because of their adoption of the CMP methodology, the Georgian National Committee of the Blue Shield, along with the building’s owner, stands at the forefront of the preservation field. The plan itself serves as a record of the architectural and historical significance of the Tbilisi Chess Palace and Alpine Club, not only as a beloved community gathering spot but also as a notable example of Late Soviet Modernism.

Modern buildings face substantial conservation challenges, given that their architects pushed the boundaries of the built environment by embracing experimental materials and engineering techniques. The Getty Foundation launched Keeping It Modern in 2014 to support the conservation of these pioneering 20th-century buildings. Because Getty believes that comprehensive research and planning lie at the heart of successful conservation initiatives, Keeping It Modern grants predominantly support the thorough investigation of building conditions; the testing and analysis of modern materials; the development of research-based conservation protocols; and the creation of CMPs, like this document, to guide long-term maintenance and policy.

Among many grant-funded activities taken on by the Tbilisi Chess Palace and Alpine Club project team, were a structural engineering study, tests on materials samples, assessments of the HVAC and other systems, a public-facing exhibition of historical photos and videos, plus several workshops aimed at enhancing the architectural knowledge and skills of local students and graduates. In addition, as a result of the team’s advocacy efforts, on May 27, 2019, according to the Order of Georgian Government, the building was granted the status of an immovable cultural heritage site. Congratulations to the project team and Tbilisi City Hall on this monumental accomplishment!

I would like to recognize the dedicated conservators, architects, engineers, and cultural heritage professionals—led by the Blue Shield Georgia team—who have meticulously researched and documented the building, and made this plan possible. Because of your hard work, not only will future stewards of the Tbilisi Chess Palace and Alpine Club rely on this document’s recommendations but so will other professionals preserving similar Soviet modernist buildings from the era.

Architectural conservation is just as much about preserving a physical site as it is ensuring that the next generation has access to these important buildings and the techniques to care for them. I am confident that because of the work put into this strategic document, Georgians and visitors from around the world will be able to enjoy the Tbilisi Chess Palace and Alpine Club for years to come.

Antoine M. Wilmering
Senior Program Officer, Keeping It Modern Initiative
Getty Foundation



It goes without saying that diversity is one of the main characteristics of Tbilisi. This is best expressed specifically in the architecture of the city. Every period of history with its characteristic architectural style is continuously presented in the architecture of Tbilisi. Each style is valuable to the city as they represent different periods of its development. Each has its own distinct representative and they need special care and appreciation.

Tbilisi Chess Palace and Alpine Club is a distinctive representative of its historical period and style, known as Late Soviet Modernism. In addition to its architectural merit, it also has a great historical value, which allows us to confidently recognize it as a monument, and its young age will not prevent us from doing so.

It was a great honor for Tbilisi Municipality to be given the opportunity to support and collaborate with a group of professionals promoting the monument, the group that managed to raise funds for the development of a Conservation Management Plan for the building. I would like to express my gratitude to them for this comprehensive document, as well as for the efforts made during these two years to raise awareness of the values and the protection needs of the late Soviet-period architecture and enhance knowledge among heritage conservation specialists, students, and young professionals.

I am also pleased to have had the chance to support the process of granting monument status to the Chess Palace and Alpine Club building in 2019. This is an important first step towards the protection and promotion of this monument and its values.

The present document, the Conservation Management Plan, which is remarkably the first document of its kind produced in Georgia for a monument of this period, highlights its various values, analyzes its current state of conservation, and clearly specifies the steps necessary to be taken towards preservation of these values and its sustainable development.

Although the implementation of the Conservation Management Plan will be a long-term process, Tbilisi Municipality City Hall hopes to mobilize resources for it, and in a couple of years, be able to celebrate the half-century anniversary of the monument by initiating this insistent endeavor.

Finally, I am extremely grateful to the Getty Foundation and its *Keeping It Modern* initiative, which chose the building and placed it among the masterpieces of 20th-century modernist architecture. Our Division will not spare efforts to assist the monument to regain its original architectural value and, by preserving both its physical fabric and functional authenticity and better interpreting and presenting its historical values, proudly appear on the map of 20th-century modernist monuments as the conservation best practice example of late Soviet Modernist Architecture.

Temur Bolotashvili
Head of Tbilisi Municipality City Hall Architecture Service

A handwritten signature in dark ink, appearing to read 'თ. ბოლთაშვილი'.

ACKNOWLEDGMENTS

The team of authors of the Conservation Management Plan of the Chess Palace and Alpine Club would like to express gratitude to the following individuals and institutions who supported their work:

- **The Getty Foundation** *Keeping It Modern* initiative for selecting the project for funding and its Senior Program Officer, **Antoine Wilmering**, for his trust, professional advice, and support in the project design and implementation;
- **The Tbilisi Municipality City Hall** and its Architecture Service, Department of Culture, Education, Sport and Youth Affairs, and Tbilisi Municipal Property Management Agency for their involvement and support to the project;
- **Germane Ghudushauri**, one of the architects of the building, for his valuable first-hand information during an interview on the construction history, and for the permission to use his private archive of the original project design of the building, drawings, and photos.
- **Alexandre Slovinski**, one of the interior designers of the building, for valuable pieces of information regarding the original design elements;
- **Aliosha Japaridze Georgian Alpine Club** and its deputy director, **Givi Kartvelishvili and United Federation of Georgian Mountaineers’** representatives; **Georgian Chess Federation** and especially its Vice-President, **Zurab Mikadze** for their support throughout the study of the building, allowing access when needed, and their active involvement in the project;
- **Rand Eppich**, a conservation architect and a dear colleague and friend for his invaluable support from developing the project idea to its implementation and his enthusiastic review and editing of almost the entire document;
- **Nato Tsintsabadze, ICOMOS Georgia** President for her guidance throughout the document drafting process;
- **International Scientific Committee for Documentation of Cultural Heritage (CIPA)** for their support in the successful implementation of the capacity-building component of the project.

The team is also immensely grateful to the translators, **Ilia Bezhashvili, Rusudan Dzigrashvili, Tamar Kvividze** and **Nino Mataradze**; Editors of the Georgian texts, **Manana Goshadze** and **Nino Guraspauli**, and the designer of the document, **Nino Kublashvili**.

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The Chess Palace and Alpine Club. East Façade
Photo: National Archives of Georgia

EXECUTIVE SUMMARY

This Conservation Management Plan (CMP) for the Chess Palace and Alpine Club is the first document of its kind to be created in Georgia for a modern 20th-century building. Just shy of 50 years, the Tbilisi Chess Palace and Alpine Club is an outstanding example of Late Soviet Modernist Architecture in Georgia, which to this day, has mostly retained its original functional use, material authenticity, and preserved its character-defining values.

The CMP responds to the past inappropriate changes in spaces and materials, incompatible uses, current needs, and challenges of the building while aiming to ensure its material and functional continuity through the coming years. This plan is a compilation of findings from numerous studies analyzed by the team and discussed rigorously among the stakeholders. As a result of the initial efforts to create this plan, the Chess Palace and Alpine Club has gained protected status as a landmark.

The document presents a wide historical and contemporary context, both local and regional, and delves into the values that make this building unique including the use-value of retaining its intended function as home to two very different sports – Chess and Mountaineering. It discusses its historic and associative values related to the popularity of both sports and the so-called *Georgian Phenomenon* – legendary victories of Georgian women chess players for three decades. The architectural and artistic values manifested among others in the open and airy spaces, spatial layout, organic merge with the environment as well as the thoughtful interior design of high craftsmanship, receives significant attention. Its social and educational values, being a hub for sports education as well as a space for the interpretation of the building, its values and the history and significance of two sports housed there is greatly emphasized. Its economic value, although presently inappropriately exploited, is underscored at numerous occasions in the document and is believed by the authors to rise significantly following the implementation of the CMP.

The CMP also assesses the present state of conservation. While it is a durable building, the hardships of the 1990s experienced by the country (economic crisis following the independence from the Soviet Union, Civil War, etc.) had their toll on it as it suffered

from a decade-long lack of maintenance and inadequate use. All of these resulted in damages, losses, and deterioration of some of the character-defining elements, material authenticity, and inherent values.

Based on those, concrete conservation principles and policies are outlined with their main goals:

- Reverse the intrusive changes and incompatible interventions within the building;
- Conserve, restore, and maintain the preserved character-defining authentic elements;
- Restore the original spatial planning of the building;
- Continue the building’s purpose and function – to foster an appreciation of and education for the game of chess, and support and enhance the sport of mountaineering.

By meeting these goals, the plan hopes to protect the values that define the significance of the building, preserve its original function, and increase its economic potential and sustainability by carefully adapting some spaces for new compatible uses.

In addition to outlining the conservation needs, goals, and strategies, the document provides a thorough Building Maintenance Plan with practical checklists for the building manager, adaptive reuse proposals for selected spaces of the building, management recommendations related to various aspects, and an action plan for the implementation of the CMP.

Adaptive reuse proposals and economic justification thereof, as well as the management recommendations related to better interpretation and presentation, accessibility, etc., will steer the users of the document towards a comprehensive conservation and adaptation project focused on realizing the present document’s goals. An Action Plan with a timeline for achieving the main goals will guide the owner through the next phases of implementation of the CMP.

Measures have been taken so that this plan is adopted and is used actively by the owner and users of the building, while also serving as an example for others who would like to develop similar documents for other modern buildings in need of such.

ABOUT THE PROJECT

Conservation of Late Modernist Architecture and its Sustainable Use in Georgia

The project proposal for the Tbilisi Chess Palace and Alpine Club building to be submitted to the grant competition announced within the framework of the Getty Foundation’s *Keeping It Modern* initiative was prepared in early 2018. The authors of the project proposal aimed to identify a building that simultaneously had artistic and historical value, held an important role in public life and at the same time, required a Conservation Management Plan. As a result of research, a Late Soviet Modernism building dating back to the 1970s, the Tbilisi Chess Palace and the Alpine Club was selected. Designed by Lado Aleksi-Meskhishvili and Germane Ghudushauri and built for two sports, the building played an important role in the development of both sports and public life over the years.

The main goals of the project were identified as follows:

- To develop a first-ever conservation plan for a Late Soviet Modernist building in Tbilisi which will serve as a prototype for other similar period buildings,
- To facilitate future proper restoration, conservation and continued maintenance of a Late Soviet Modernism style building;
- To increase the awareness of the values of Late Soviet Modernism period architecture among city authorities and wider Georgian public through listing the site and carrying out public awareness activities with the help of international experts and use of various types of media;
- To train young architects and heritage professionals in documentation, conservation planning process, etc. of the buildings of the same period.

In May 2018, the project proposal *Conservation of Late Modernist Architecture and its Sustainable Use in Georgia* was announced as one of the winners of the grant competition by the Getty Foundation.

Since the start of the project multidisciplinary research for the study of the state of conservation of the building, archival and art historian studies, measured architectural survey, regular meetings with the building users and the owner were carried out simultaneously.

In addition to developing a Conservation and Management Plan (CMP), the project team worked in two main directions: Raising public awareness and capacity building of specialists and young professionals in the preservation of the modernist heritage. It should be noted that part of the activities carried out in those directions were included in the project proposal, the need for additional activities became apparent during the implementation phase and were added to the planned activities.

One year after the project was announced as the winner, based on the application of the project team and the prepared documentation the Tbilisi Chess Palace and Alpine Club was listed as an immovable cultural heritage monument.

TO RAISE THE AWARENESS OF THE GENERAL PUBLIC ABOUT THE CHALLENGES OF MODERNIST HERITAGE AND ITS PRESERVATION:

- Interviews were held with one of the architects of the building, Germane Ghudushauri, a member of a creative collective Sameuli, Alexander Slovinsky and the Chess Grandmaster, Nona Gaprindashvili. The material was included in two videos prepared within the scope of the project about the Chess Palace and the Alpine Club, its history and values. The videos provide the viewers with information about the past of the Chess Palace and the Alpine Club, the goals of the project, activities carried out, and the building's future prospects.
- Within the *European Night of Museums*, a photo exhibition dedicated to the modernist heritage in Georgia was prepared in the building of the Chess Palace and the Alpine Club. Within the scope of the event a tour of the Chess Palace and the Alpine Club was organized for the interested public.
- Cultural Heritage Preservation Specialist Riin Alatalu conducted a public lecture and introduced the principles of protection of modernist architecture to the general public.
- Thematic cards depicting 45 of the most distinctive architectural heritage examples in Tbilisi dating back to 1960–1989 were created. In addition to the graphic illustration of the buildings, the cards contain the architect’s name and year of creation. On the back of the card is a QR code, which directs us to an online map where exact locations and photos of the buildings can be found.

CAPACITY BUILDING OF FIELD SPECIALISTS AND YOUNG PROFESSIONALS IN THE PRESERVATION OF THE MODERNIST HERITAGE:

- ICOMOS CIPA Documentation Workshop was held for young architects;
- Local and international members of the project team conducted a seminar – *Creation of the Concept of Interpretation Center for Tbilisi Chess Palace and Alpine Club* for young professionals working in the field of architecture, media, and heritage protection. The concepts created as a result of the seminar were displayed on a photo exhibition organized within the *European Night of Museums* at Tbilisi Chess Palace and Alpine Club;
- A five-day practical workshop *Adaptive Reuse of Architectural Heritage*, was held by local and foreign project experts for young professionals working in the field of architecture and heritage protection;
- Cultural Heritage Specialist Riin Alatalu conducted a seminar aimed at capacity building of civil servants working on urban and architectural heritage management;

- The project team has prepared a manual *How and Why Should we Protect Modernist Architecture; the Principles and Cases*, which is intended for professionals in the field, as well as heritage activists and other stakeholders.

At the final stage of the project, by the decision of the project team, a sociological study and economic potential assessment of the building were conducted, which were integrated into the Conservation Management Plan.

Project activities and results can be accessed at www.chesspalaceandalpineclub.ge

The project was implemented by the Georgian National Committee of the Blue Shield¹ a local non-governmental organization accredited by the Blue Shield International². The main direction of the work of the organization is the protection of cultural heritage from disasters.

The project team that would carry out planned activities was identified during the preparation of the project proposal. The team consisted of the members of the organization and both local and international invited specialists.

THE CORE PROJECT TEAM CONSISTED OF:

Manana Tevzadze – The co-author and editor of the Conservation Management Plan. She supervised and participated in the activities planned within the project. Prepared the texts for the manual *How and Why should we Protect Modernist Architecture; the Principles and Cases*.

Nini Palavandishvili – The author of the art historian study of the building. She prepared a registration card for the building, on the basis of which an application was submitted for listing the Tbilisi Chess Palace and the Alpine Club as an immovable Cultural heritage site. Nini participated in the planning and implementation of educational and public events implemented within the scope of the project. She is also the co-author of the manual *How and Why should we Protect Modernist Architecture; the Principles and Cases*.

Lasha Shartava – Co-author of the Conservation Management Plan, who supervised the measured resurvey of the building and participated in the study of its physical condition. Under his leadership, engineering and structural studies of the building were designed. Lasha studied the archival drawings of the building, worked on most chapters of the Conservation Management Plan. He also prepared all the architectural drawings and under his guidance was developed the methodology of the conservation of the building.

Rand Eppich – The editor of the main chapters of the Conservation Management Plan, he advised the Georgian authors of the document on the structure of the plan and the content of its conservation and management chapters. Under his leadership, a workshop on *Adaptive Reuse of Architectural Heritage* was held. With the help of Rand it became possible to conduct the ICOMOS CIPA Heritage Winter School within the project, during which he led part of the sessions.

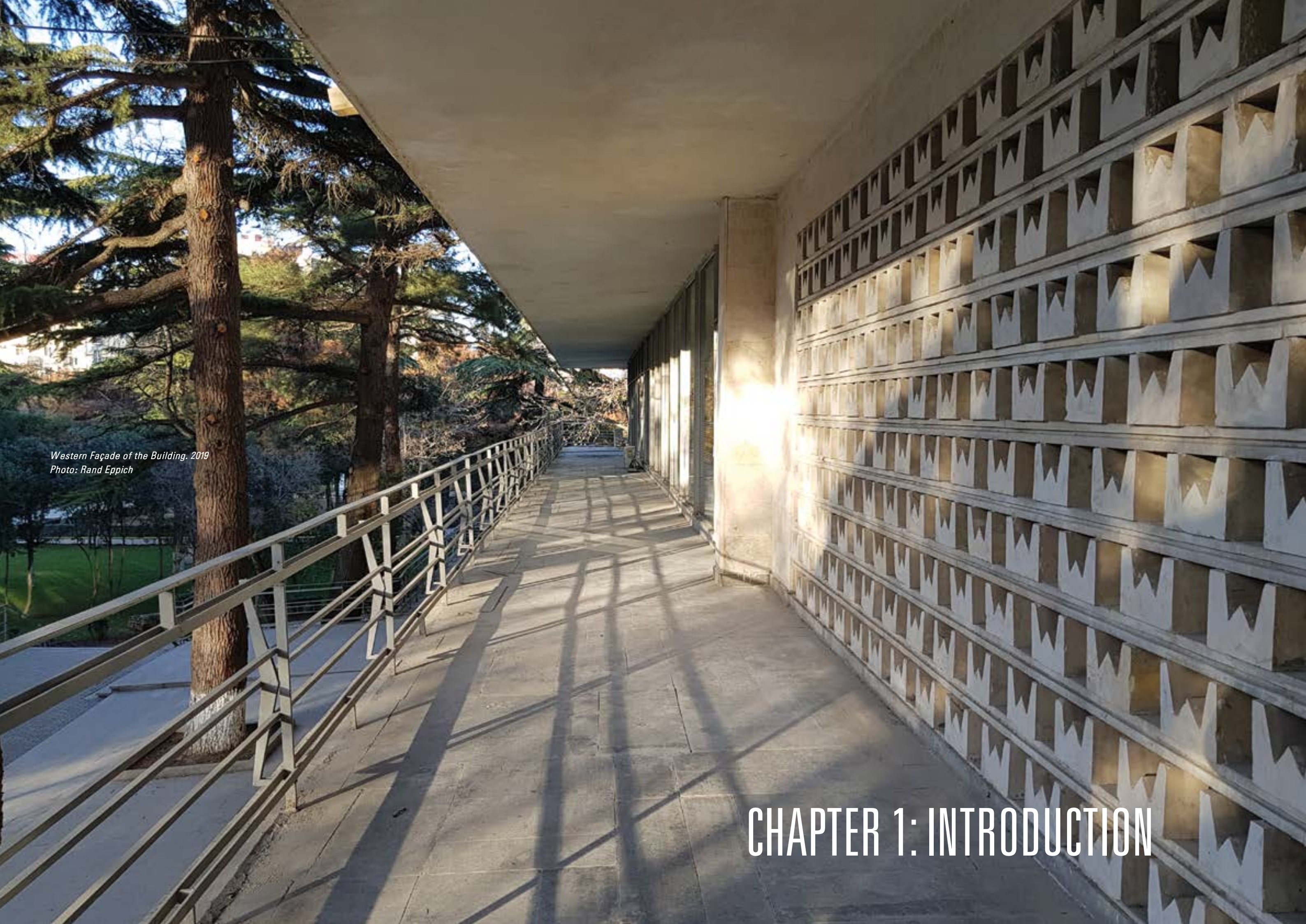
Lela Ninoshvili – Co-author of the Conservation Management Plan, has worked on the study of the physical condition of the building, drafting of conservation principles and the maintenance plan and has conducted research on construction materials. She was also involved in project administration and contributed to the successful planning and implementation of each project activity.

Maryam Kalkhitashvili – The administrative manager of the project, planned and participated in the implementation of educational and public events of the project. Maryam participated in the creation, translation and proofreading of Conservation and Management Plan texts. She also coordinated the creation of two video histories about the project and the project website.

Riin Alatalu – One of the authors of the textbook *How and Why should we Protect Modernist Architecture; the Principles and Cases*. She conducted a hands-on seminar for civil service specialists working on the protection of cultural heritage, on the importance of preserving the late Soviet modernist architectural heritage, and delivered a public lecture on the same subject.

¹ Georgian National Committee of the Blue Shield www.blueshield.ge

² Blue Shield International www.theblueshield.org



*Western Façade of the Building. 2019
Photo: Rand Eppich*

CHAPTER 1: INTRODUCTION

1.1. AIM OF THE CONSERVATION MANAGEMENT PLAN AND ITS STRUCTURE

The Conservation Management Plan of the Chess Palace and Alpine Club is the first document of its kind to be created in Georgia for a building so young. The plan aims to help ensure material and functional continuity of the building, restoration, and conservation of its value-defining elements, and to manage it sustainably.

The document is divided into five chapters, which in the logical sequence introduce the building, its conservation, and management needs and conservation proposals.

Chapter 1 is introductory and presents the document, its contents, methodology, limitations, and the authors’ team. **Chapter 2** provides the description and analysis of the building’s history, context, architecture, and significance on the backdrop of a detailed review of the historical background – the characterization of the Late Soviet Modernist architecture in Georgia and its contemporary state, including the challenges facing its preservation. The chapter explains the building’s

cultural significance, assesses its various values and authenticity, describes its setting and present state of ownership, use, and legal protection. **Chapter 3** presents a detailed assessment and analysis of the building’s state of conservation as of summer 2020, describes its layout, form, and fabric, and includes structural analysis of the building. It also includes the analysis of alterations, additions and losses incurred. The chapter together with the referenced appendices presents the complete analysis of the building’s infrastructure. **Chapter 4** provides guidance for the site’s conservation and care through detailing its conservation objectives, principles, and policies, deriving from the site’s physical condition and specific requirements to retain its significance. It includes a Building Maintenance Plan (BMP) and a checklist. Outlined intervention guidelines present the decisions on acceptable changes and concrete adaptive reuse proposals. **Chapter 5** articulates management recommendations in response to the present challenges and needs of the building, its owner, users, and other stakeholders.

1.2. METHODOLOGY

The methodology used for the development of the CMP is based on the international conservation planning practice, *the Burra Charter and its Process, The Nara Document on Authenticity* and is in the spirit of the ICOMOS *Approaches To The Conservation Of Twentieth-Century Cultural Heritage*, the so-called *Madrid – New Delhi Document*, 2017. A more detailed list is included in the bibliography. Before work on the building began there was a review of these seminal documents.

The second aspect of the methodology was a study of the values that are incorporated in the building, its historical, aesthetic, and cultural aspects. This was the guiding force in the analysis of the building and in determining priorities. Other elements of the methodology included the formulation of a vision with supporting goals and objectives.

From these goals and objectives, needs for studies emerged; they were undertaken by interdisciplinary professionals and their results constitute the core of this document. They are the basis on which analysis and judgments are made. The following surveys and research have been undertaken:

- Archival research;
- Art history study, particularly on the history of development and the decorative elements;
- Measured Building Survey;
- Study of the building materials involving sample laboratory tests;
- Structural engineering study;
- Evaluations and recommendations on improving occupational safety;
- Inspection of the mechanical systems;

- Evaluation of energy efficiency of the building;
- Sociological Survey;
- Study of the best terms of use of the building;
- Stakeholders’ survey (Representatives of the Chess Federation and United Federation of Georgian Mountaineers and A. Japaridze Georgian Alpine Club).

These studies were collated and numerous good-spirited debates took place between the disciplinary teams.

An important part of the methodology was a detailed inspection of the building numerous times. From the basement to the roof the building was looked at from various aspects. This also included interviews with current occupants, stakeholders, the municipal owner, users, and maintenance personnel of the building.

Workshops, which were held by invited international practitioners and attended by a selection of students and young professionals, and concentrated on the topics relevant to the CMP, brought in various fresh ideas, insights and inspired further research.

The final aspect of the methodology was the exercise of bringing it all together into this CMP. Several draft documents were created and circulated between the team and key stakeholders. Frequent revisions, alterations, and testing of assumptions took place between the first inspections of the building and the final presentations. The final round-table meeting with stakeholders, attended by all relevant parties determined the final path of the document as the main users and the owner of the building expressed their positions and eventually agreed upon the main concepts and solutions in the final draft document presented by the authors’ team.

1.3. LIMITATIONS

The Conservation and Management Plan is a comprehensive document. While it covers all the necessary topics, some are examined in more detail than others. It provides detailed policies and guidelines for the conservation and adaptation of the building and includes recommendations for interpretation, regular maintenance, and management of various aspects. It is a pragmatic document, not intended for a shelf but for active use in managing the building and conservation of its character-defining features and underlying values.

While the chapter on management policies discusses the need for better interpretation and the integration within its context of the park, a detailed interpretation plan and a plan for the immediate landscape are beyond the scope of this document. It is recommended that these plans are developed together with the concept design of the two museums, (one existing and one proposed) and management guidelines for the Main Hall. While the adaptation proposals for parts of the building include some financial considerations, a detailed financial feasibility study was also beyond the scope of the present document and needs to be considered. A rough cost-estimate to accompany the Action Plan for the implementation of the present document was also not feasible within this scope.

One other limitation which required a very careful approach on behalf of the authors of the document when it came to adaptive

reuse proposals, was the existing dispute on the distribution of the space between the building’s two traditional users. Authors note with urgency the need for the owner to resolve numerous issues.

This CMP was developed, not by the owners, occupants, or managers, but heritage conservation professionals who care for the building and what it represents. While the team worked with those responsible and advocated for improved management, they are not ultimately responsible.

Finally, another limitation is that presently there is neither a unit nor an individual that is responsible for the regular maintenance or the conservation and management of the building. For this reason, the document, in its separate sections, makes certain suggestions for the creation of such a unit or appointing an individual specialist, when devising the various obligations for its maintenance, conservation, and management.

Disclaimer: Authors would also like to make a disclaimer note that all conservation proposals and intervention guidelines are based on research findings, including surveys of all stakeholders and users, and express the best interests of the building conservation and in no way can be interpreted as biased view in favor of one or the other user, or the owner.

AUTHORS OF THE STUDIES UNDERTAKEN:

- Alexander Mikiashvili** – Inspection of Mechanical Systems – Water Supply and Wastewater Disposal Systems;
- Gogi Stepnadze** – Recommendations for increasing the energy efficiency of the building;
- Erekle Naroushvili and Guga Sutidze** – Measured Building Survey;
- Davit Gogokhia** – Inspection of Mechanical Systems-Heating, Ventilation and Air-conditioning Systems;
- Davit Andronikashvili** – Inspection of Mechanical Systems – Electric Power Network;
- Tamar Peikrishvili** – Sociological Survey – key findings;
- Irakli Chachia** – Recommendations on Improving Occupational Safety in the building;
- Lela Ninoshvili and Manana Kavsadze** – Study of Building Materials;
- Leri Zambakhidze** – Structural Survey of the Building;
- IDEA CITY** – Study of the Best Terms of Use of the Building.



*Aerial View.
Photo: National Archives of Georgia*

CHAPTER 2: TBILISI CHESS PALACE AND ALPINE CLUB - CONTEXT, HISTORY, AND SIGNIFICANCE

2.1. HISTORICAL AND ARCHITECTURAL CONTEXT

2.1.1. LATE MODERNIST ARCHITECTURE IN GEORGIA

The 20th century was the most dramatic period for architecture; new mass-produced materials such as steel, reinforced concrete, and large expanses of glass gave designers a new palette. No longer were architects content to stack stone and brick, but were challenged to seemingly defy gravity, creating dramatic cantilevers to open spaces and views. This was very apparent in the former Soviet Union. Architects were seen as crucial agents for promoting optimism for the future. The case of Georgia differed given the deep traditions and skills of local craftspeople and by melding of old and new.

The history of the development of late modernist architecture in Georgia is similar to the history of the development of the architecture of this period in other countries of the socialist bloc or the former Soviet Republics.

In the 1920s and early 1930s, many modern architects (Ernst May, Albert Kahn, Le Corbusier, Bruno Taut) traveled to the Soviet Union to assist in the construction of new Soviet institutions and industrial cities (and to escape the Nazi regime), until in the 1930s Joseph Stalin started to expel foreigners from Russia and laid the foundation for socialist realism. Stalin-era, luxurious, pompous, ornately decorated dwellings had to comply with the main principle – national in form and socialist in content.

However, after Nikita Khrushchev's coming to power as Stalin's successor in 1953, a completely new stage began in the construction of the country. Much attention was paid to the development of the construction industry. Introduction of typical projects in mass construction, growth of the economy, use of new building materials and constructions, especially the construction of large-block, panel, frame-panel houses. The scale and character of construction have also dramatically changed in Tbilisi. The goals set by the Soviet government to improve living conditions partly echoed the international ideas of modernism, but the Late Soviet Modernism brought back by Khrushchev, differed from the International Style of the 1920s and the Russian avant-garde related to it, the Soviet Constructivism, and the Bauhaus. For Khrushchev, only the practical side of modernism was essential, which expressed itself in the industrial methods of construction, in new building materials, and the possibilities of mass construction. In 1964, Leonid Brezhnev replaced Khrushchev as Secretary-General of the Central Committee of the Communist Party. Although the Brezhnev period (1964–1982) is referred to as *the Era of Stagnation*, the architecture of the Soviet Union, including Tbilisi, flourished during the time of Brezhnev and Mzhavanadze (the first secretary of the Georgian Communist Party during 1953–1972). Particularly in this period architects were allowed to design completely new neighborhoods, to work on

individual projects and not just typical buildings. The most famous and distinguished buildings attributed to Late Soviet Modernism were built exactly during this period.

For the first time in these years, after the Sovietization, the curtain to the capitalist countries was partially lifted, business and cultural contacts were established with some cities of the west, and establishing of city partnerships (the so-called sister cities) began. In the 60s and 70s, Tbilisi became a partner city with Ljubljana, Slovenia, Palermo, Italy, Saarbrücken, Germany, Innsbruck, Austria, and Nantes, France. Accordingly, international publications and information on current processes in the world became available to the architects of the USSR; Although under the supervision of the Security Service, the architects were allowed to travel abroad and participate in pre-arranged meetings with foreign colleagues. From a professional point of view, it was still a very important experience.

In the 70s, housing construction was still very intensive, both in the yet unoccupied areas (Bagebi, Gldani, Vazisubani, Temka), as well as in the already established ones. However, the provision of housing was not the only goal of the socialist society, no less important was the education of the population, raising their cultural level, and strengthening their health. It was also important to strengthen the ties of the population between republics and allied countries. Accordingly, entertainment and recreation centers were planned and built with individual projects (Hotels: Iveria, Adjara, Kolkheti, Abkhazia; Restaurants: Aragvi, Marabda, Tea House; Educational: Tbilisi State University complex, Medical Institute, Agricultural Institute; Culture: Tbilisi Philharmonic, Trade Union Cultural Centre, Musical Comedy Theater, Russian Drama Theater named after Griboedov, Tbilisi Archaeological Museum and Sports Institutions: The Sports' Palace, Laguna Vera Swimming Complex, renovated stadium of Dinamo).

2.1.2. CHALLENGES PRESERVING LATE MODERNIST ARCHITECTURE IN GEORGIA

Nowadays, late modernist architecture, including monuments of this period from Georgia and Tbilisi, occupy a worthy place on the world architectural map. It is no coincidence that the building of the former Ministry of Highway Construction of Georgia, and the former Palace of Rituals is an essential component of recent publications on the subject. However, one cannot boast that locally the buildings of this period are treated with the same appreciation as the professionals or amateurs do at the international level. The problem facing the preservation of the heritage of modernist architecture is complex.

Soviet Modernist Architecture to this date is still very much underappreciated and neglected in Georgia. The number of professionals who appreciate the structures of this period is also quite low. The wider community associates them with the Soviet System and its atrocities in general and thus, perceives them as unattractive, of low quality, and useless.

The greatest threat to the architecture of any epoch is the perception of their ideology and style in the period that follows. The perception of the previous period by the next period, especially if it refers to political and ideological changes, is often reactive and, to a certain extent, negative. As mentioned, modernist architecture was infused by socialist ideology. Most of the countries that formed the Socialist Bloc and the Soviet Union tried to forget the ideology of the past at a rapid pace after regaining independence. The easiest and quickest way was to erase them from visual memory; hence many buildings or

structures were sacrificed to the first emotional impulse, called independence and liberation from the pressure of the past.

Good examples of the above stated is the demolition³ of the so-called Andropov's Ears (Otar Kalandarishvili and Gizo Potkhishvili, 1983) in Tbilisi and the redevelopment of the entire square⁴ between 2004–2015, and the explosion of the Memorial of Glory (Otar Kalandarishvili, Merab Berdzenishvili, 1982) in Kutaisi in 2009⁵.

The buildings of this period, whether administrative or cultural, were designed for the masses and to foster communal relations. Consequently, the main problem, encountered by the present-day society in their maintenance and preservation, is their large volume. After the destruction of the socialist regime, in some countries, following local armed conflicts, and the transition to a market economy, for the states, having all public buildings on their balance, maintenance of buildings in this number and volume became impossible. One of the central and primary problems has become their provision with utility services. For the country, weakened by the war and armed conflicts it was impossible to supply such a volume of electricity, gas, and water at the expense of the state.

In many cases, the solution was found in selling them to private owners. This applied rather to buildings, having commercial functions, such as hotels, shopping centers, sports complexes. Cultural and educational complexes remained on the state balance,



Trade Union Cultural Centre
Photo: National Archives of Georgia. 1975



Ministry of Highway Construction of Georgia, 1975
Photo: Giorgi Chakhava family archive

³ Jimsher Rekhviashvili. *What's the Face of Republic Square and Hotel Iveria?* Radio Liberty, November 2004. www.radiotavisupleba.ge/a/1538111.html [accessed on 20.01.21]

⁴ *What will be built on Republic Square*, Radio Liberty, April 12, 2005. www.radiotavisupleba.ge/a/1540656.html [accessed on 20.01.21]

⁵ Giorgi Gvakharia. *Merab Berdzenishvili: 'To relieve stress...watching films on Leonard, Michelangelo'*, Radio Liberty, September, 2016. www.radiotavisupleba.ge/a/merab-berdzenishvili/27997430.html [accessed on 20.01.21]

although they were often divided into smaller units and the premises were partially leased or rented out. Both solutions turned out to be unfortunate for the buildings. In the case of privatization, the new owners saw a solution in their demolition and replacement with a new one or alteration to such extent that the authenticity and, consequently, the value of the building was lost.

Illustrative examples for this are the former department store *Tbilisi*, *The Hotel Iveria*, *The Tsekavshiri* building (The Central Union building), the shopping center *Children's World*, the garage of the Central Committee in Tbilisi, and a number of buildings throughout Georgia, among them the cinema *Tbilisi* in Batumi and Vazha-Pshavela Drama Theater in Telavi. The fate of Laguna Vera Swimming Complex, one of the most interesting

and architecturally or historically remarkable buildings in Tbilisi, is unclear.

The temporary lease of single spaces did not prove to be favorable either. Many of these buildings were built according to the principle *form follows function*, so it proved to be difficult to adapt them to more general function. Therefore, every tenant adapts and renovates the space according to his “idea”, demand, and taste, completely neglecting the architecture, construction materials, and design of the original building. As a result, we get buildings such as Tbilisi Chess Palace and Alpine Club, Central Library of Ivane Javakhishvili Tbilisi State University, G. Mikeladze Science and Technology Library, Sports Palace, former Tea House, Akaki Khorava Actors House.



G. Mikeladze Science and Technology Library
Photo: Levan Kalandarishvili

The basis of this problem lies in the legislation. More precisely, in its absence. Georgian legislation never mentions either obligations of a (temporary) owner not only in the case of privatizing, but even in the case of renting out or handing over in temporary usage based on usufruct agreement, when the owner is fully responsible for the maintenance of the building, or the criteria to be considered for maintenance of the building’s inherent exterior or interior design.

Georgian legislation does not even precisely specify, or comprehend that the status of the immovable monument of cultural heritage imposes the obligation of maintenance and preservation of not only the façade but also the interior, construction materials, décor, etc. It is also of importance to maintain the original function of the building as much as possible. The number of buildings built during this period bearing the status of the immovable monument of cultural heritage throughout

Georgia is very small. In 2009 Ilia Chavchavadze State Museum complex in Kvareli was included in the monuments’ list, part of this complex is a building designed by Victor Jorbenadze and Ketevan Kobakhidze (1979). In 2017 monument status was granted to a bus stop near Borjomi (Arch.: Giorgi Chakhava, the 1970s), in 2018 two more bus stops in villages Patara Kanda and Tezeri by the same architect were listed. There are only three buildings of this period in Tbilisi with the monument status, in 2008 the status was given to the former State Philharmonics Concert Hall and the building of the former Ministry of Highway Construction of Georgia, and in 2019 to the Tbilisi Chess Palace and Alpine Club building. The former Philharmonic, although its appearance is allegedly preserved, was not fortunate. At different times rude interventions were carried out on its façade. First, the huge screen was installed, then, from the side of the movie theater *Amirani*, the entrance space was altered and the spiral staircase was detached, afterward, a gym opened on the top floor, and lastly the sales office of a construction firm on the ground floor. All the above-mentioned infringes the entire original appearance of the building and is against conservation principles.

Tbilisi Chess Palace and Alpine Club is not an exception from the current trend. Its spaces are divided and altered to suit its numerous tenants and users. There are recent inappropriate interventions, most of which, fortunately, are reversible. Detailed discussion on this topic follows in the chapters below.

There are good examples as well. Not counting the fact that the original setting has changed much, and as a result of a new function, an additional building was constructed, the adaptation of the building of the former Ministry of Highway Construction of Georgia, currently the Headquarters of the Bank of Georgia, has mostly preserved its values.

Many valuable buildings do not have the status of the monument of cultural heritage, but their owners do their best to properly maintain the architecture: The current exhibition center *Expo Georgia* and the Palace of Rituals in Tbilisi.

In general, the difficulty of maintenance of 20th century buildings lies in their construction materials, their inherent experimental nature, and the short lifespan of these materials. As already mentioned, the architecture of this period is distinguished not only by a new architectural style, but also by the fact that this style was partly conditioned by completely new construction materials, different from past centuries – reinforced concrete structures, large glass expanses, and flat roofs. These materials already begin to erode, corrode, and leak. In Georgia’s case, often due to the lack of materials, mixed materials were often used – cast reinforced concrete blocks are mixed with brickwork. In some cases, one comes across low-quality materials, which consequently accelerate the process of their decay.

An additional factor is the need to improve energy efficiency, an issue which was not of concern until the 1970s. Therefore, often a choice has to be made between preservation of the authentic material and its replacement with a material adapted to modern standards.

Observance and application of safety norms, the adaptation of building for persons with disabilities, with the observance of the terms stipulated by the legislation shall also be considered. Thus, during the adaptation, it is often necessary to add spaces, which were not initially intended. In such cases, the necessary changes shall be planned very carefully and with the involvement of the relevant professionals.

2.2. HISTORY OF TBILISI CHESS PALACE AND ALPINE CLUB

2.2.1. PHENOMENON OF GEORGIAN WOMEN CHESS PLAYERS

Tbilisi Chess Palace was dedicated to a specific person – Nona Gaprindashvili, who won her first World Champion title in 1962 at the age of 21. She would later become a five-time world champion and the first woman to win the title of a Grandmaster. In 1978, a 17-year-old Maia Chiburdanidze (later, also a 5-time World Champion) defeated Nona Gaprindashvili in the Women’s World Chess Championship and became the youngest ever world chess champion among women. She held the title for 14 years, until 1991.

Along with them, the victories of Nana Alexandria, Nana Ioseliani, and Nino Gurieli made the chess world speak about the *Georgian Phenomenon*. They were not only among the leaders in the world but also kept the title of world champion for three decades.

The result of this achievement, a witness, and a monument dedicated to it is the Tbilisi Chess Palace and the Alpine Club

building, one of the most distinguished buildings in Georgia, belonging to the Late Soviet Modernism period.

It is remarkable that not only, the architectural monument was dedicated to a specific person in her lifetime, but that it was dedicated to a woman. This is unprecedented in Georgia since, except for only a few cases before and after, public space statues dedicated to women, or those representing them, were merely symbolic figures.

The association to chess in this building is more conceptual than formal. Decorative elements of the building affirm that it was dedicated to a woman and to a queen: A stone carving on the western façade of the building is a stylized form of a queen’s crown. Even more stylized versions of this form are in the details of railings. It is visible in an even more abstract form in the design



Closing Ceremony of World Championship. 1975

Photo by: E. Gigilashvili

Private Archive of Davit Gurgenidze



From left to right: Nona Gaprindashvili, Maia Chiburdanidze, Nana Ioseliani, Nana Alexandria. 1980 Nana Alexandria Private Archive
Digital library Iverieli of the National Parliamentary Library of Georgia

of chess tables that were used for tournaments and are currently kept as relics in the building. These details, on their part, are an indisputable sign that the building was dedicated to women.

The building was named after Nona Gaprindashvili in 2001.

It is logical that at that time in Georgia, a strong existing chess school also supported Nona Gaprindashvili to become a world champion. Moreover, in that period, the Soviet Union was very generous for the unionwide popularization of chess. However, one can also speculate that the fact that Nona Gaprindashvili became a world champion, as well as her following victories, supported the affirmation of the project and the acceleration of the process.

2.2.2. LOCAL CONTEXT

In 1962, Nona Gaprindashvili, at only 21 years old, won the title of world chess champion for the first time, which she held until 1978. She was the first woman to receive the title of Grandmaster among men (1978). In an interview with the Blue Shield Georgia team, Ms. Gaprindashvili recalls that after becoming a world champion, she was elected as a member of the Supreme Council of the Central Committee of the Communist Party and participated in one of its sessions particularly to gain approval for the construction of the Chess Palace.⁶

At that given time, the development of chess had great financial and infrastructural support from state organizations. According to the document kept in the National Archives of Georgia, the Executive Committee of the City Council of Tbilisi Labor Deputies issued an order already on March 5, 1960, which requested that the Department of City’s Construction and Architecture Affairs and the Political Committee of Orjonikidze District make an agreement and provide the # 3 basketball court in Kirov Garden for building Chess and Alpine Club. This fact contradicts the understanding that the start of the construction was dedicated to the World Champion, Nona Gaprindashvili, as at that time, she was not yet holding the title.

Tengiz Giorgadze mentions in his book *The History of Georgian Chess* that when Giorgi Jabua was the head of the Chess Federation and the Deputy Chairman of the Council of Ministers during 1956–60, architects were instructed to create the project for building Chess Palace in Tbilisi.⁷

In 1965, according to the commission of the Georgian Soviet Socialist Republics’ Union of Sport Societies and Organizations, the 3rd architectural studio of the state planning institute *Tbilkalakproekti* received a task to develop a project of Chess and Alpine Club in Cultural and Recreational Park named after S. M. Kirov (currently Vera Park).

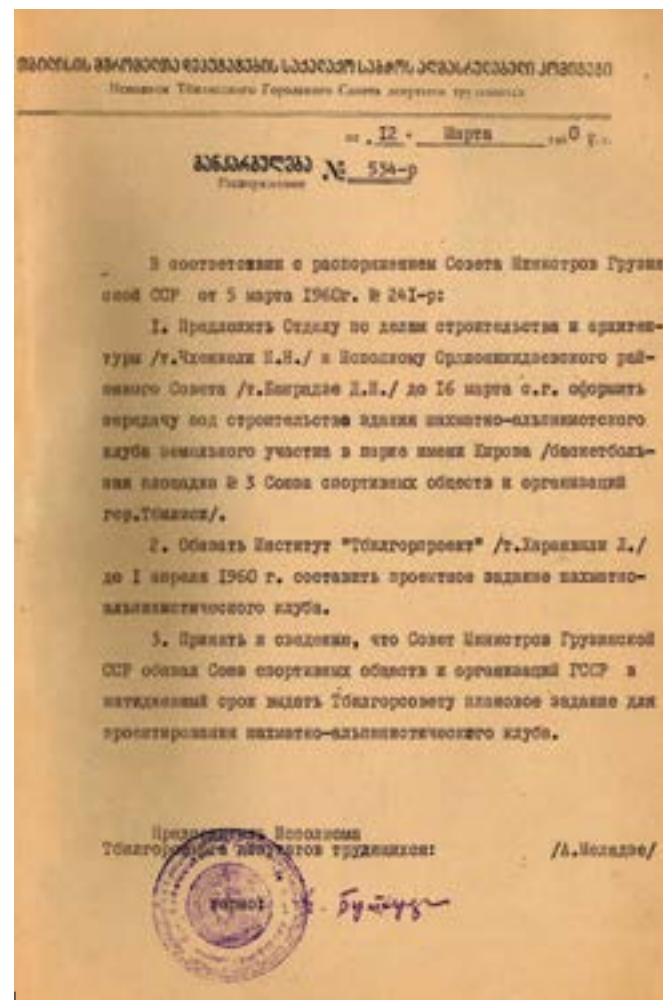
No records are available between 1960 and 1965, nor was any construction carried out during those years. Relatively more comprehensive documents date to the period after 1965, where the realization of the building is discussed based on the instructions, specific drawings, and plans. According to these orders, the territory in the garden, which used to be occupied by greenhouses, was to be provided for the building.

Construction of the building lasted 8 years. Its final outlook does not entirely match with the initial plans. In the Central Archive of Tbilisi and at the National Archives of Georgia no documents are explaining any changes to those plans. Review and comparison of the original plan to the building, upon its completion, is given below in subchapter 2.6. Review of original project design – what changed during the construction phase?

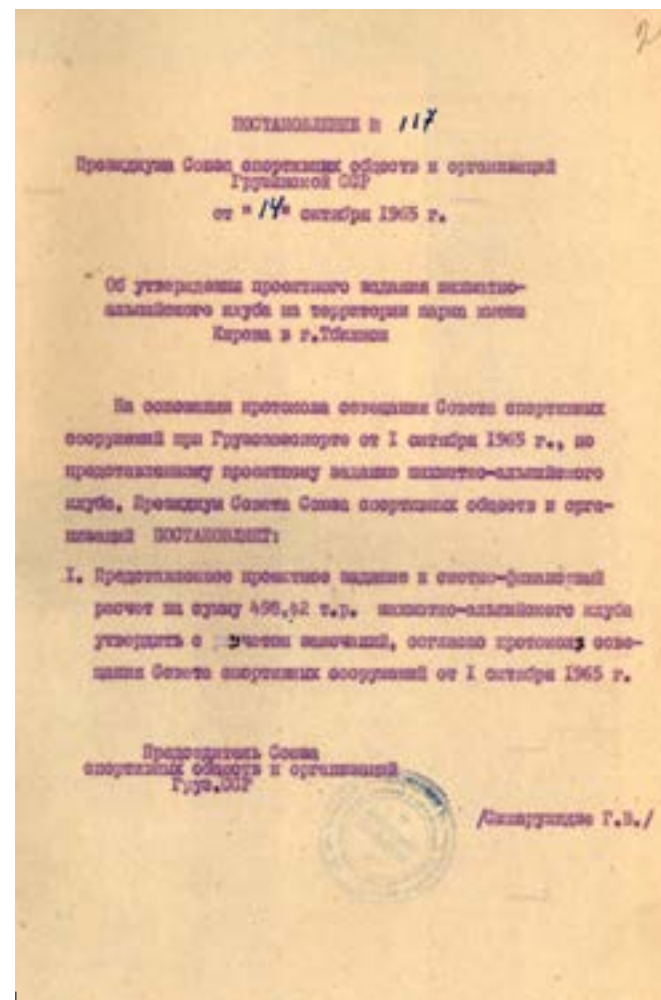
The head of the 3rd architectural studio at that time was Lado (Vladimer) Aleksi-Meskhishvili (1915–1978), who by the 60s was already the author of many projects and was appreciated as an architect. He has already been awarded the title of Honored Art Worker in 1960 for his outstanding contribution to the development

⁶ Nona Gaprindashvili, interview by Manana Tevzadze, January 21, 2020
www.youtube.com/watch?v=oEEeOQf0C_o&feature=youtu.be [accessed on 31.01.2021]

⁷ Tengiz Giorgadze, *The History of Georgian Chess*, Vol. 3, (Tbilisi: *Metsniereba*), 2000, p. 12.



The first Resolution on the assignation of the land for the construction of Chess and Alpine Club. (In Russian)
National Archives of Georgia



Resolution on Approval of the Design of Chess and Alpine Club (In Russian)
National Archives of Georgia

of Soviet architecture. From 1963 to 1968 he was the chief architect of Tbilisi. From 1955 until the end of his life, Lado Aleksī-Meskishvili worked as a chief architect at *Tbilkalakproekti*, and led the 3rd architectural studio at the same institute.

The chief architect Vladimir Aleksī-Meskishvili was one of the most prominent Georgian architects famous for his creations being harmonious with the surrounding environment. Organic architecture and the harmony between the interior and exterior of the building are characteristic of his entire work. One of his recognized works is the Tbilisi Sports Palace opened in 1961 (I. Kasradze - co-author) which combined new, industrial methods of construction with new and modernist architectural forms. He is the author of a number of sanatoria buildings in Georgia's resort towns as well as several prominent buildings in Tbilisi.

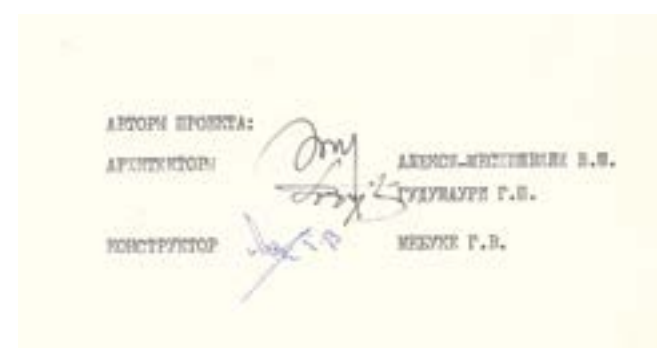
It was in this 3rd architectural studio that he invited Germane Ghudushauri (born in 1939) to work right after he graduated from the Academy of Arts (1963), where Aleksī-Meskishvili attended Ghudushauri's diploma work defense.

Many architectural projects were created in this studio, together with the architects, also structural engineer Guram Mebuke (1930-2015) took part in their development, he was a collaborator in almost all the projects by Lado Aleksī-Meskishvili. Guram Mebuke worked at *Tbilkalakproekti* between 1970-80 in many different positions - as a construction engineer, senior engineer, team leader, chief project engineer, chief structural engineer of the studio and head of a department. He served as a chief structural engineer for many prominent buildings such as sanatoria in Sokhumi, Lidzava and Bichvinta, Building of the Central Telegraph on Tbilisi's Rustaveli Avenue, just to name a few.

Lado Aleksī-Meskishvili developed and executed the project of the Tbilisi Chess Palace and Alpine Club building in close collaboration with Germane Ghudushauri and Guram Mebuke. The original project is also signed by Vladimir Zhitkovski, who at that time led the architects' group of the 3rd architectural studio.



Lado Aleksī-Meskishvili with colleagues, front row, second from right
Germane Ghudushauri, second row, first from left
Photo: Private Archive of Germane Ghudushauri



Germane Ghudushauri at work
Photo: Private Archive of Germane Ghudushauri

2.2.3. REGIONAL CONTEXT

The term 'chess palace' sounds quite unusual for those born outside the Soviet Union. Houses of culture or sports palaces are a common matter in much of the world, but the chess palace is and was a special phenomenon even throughout the Soviet Union.

Before the October Revolution, chess was one of the games associated with the intellectual and/or economic bourgeoisie. The mass popularization of chess in the Soviet Union began only after the October Revolution in 1917 and the Russian Civil War (1918–1921) when chess was introduced as an educational method for military officers and high-ranking party officials, and later to raise the cultural level of the proletariat. “With official encouragement, chess became a significant cultural component in the lives of many Soviet citizens”.⁸ After World War II, when Soviet chess players began to achieve international success, state support for chess improved significantly. The Soviet supremacy in chess became an important ideological argument for increasing the influence of the system and at the same time became a tool for asserting superiority at the international level.

In recognition of the outstanding achievements of local chess players in the 1970s, in addition to existing chess clubs, chess palaces were built in three republics of the Soviet Union – Armenia, Georgia, and Belarus.

Even in the case of the construction of chess palaces, the personal goodwill towards this game of the high-ranking party leaders led to each concrete decision.

In 1970, a chess house was opened in Yerevan, which is linked with Tigran Petrosyan’s 1963–69 World Championship. The building has been named after him since 1984. In 1973, the building of the Chess Palace and the Alpine Club was opened in Tbilisi, which is specifically connected with the achievements of female representatives in these sports. It is said that at the suggestion of Anatoly Karpov, a decision was made in Minsk in 1979, to build a *Chess and Checker Palace*.⁹ The architecture and interior



The Chess Player's House in Yerevan. 2019

design of the chess palaces and houses, their central location in the city, reflected the state’s interest in Soviet chess. Also, it indicated the proud perception of the world’s leading chess force. The buildings in Yerevan and Tbilisi are distinguished by their distinct architecture, the architecture of which is specifically inspired by sports or tailored to its function, and at the same time, they are prominent examples of the architectural style of that period. The Chess Player’s House in Yerevan (Architects: Zhanna Mescheryakova, Design: 1967, Construction: 1970) is visually reminiscent of a rook figure, with a triangular building in the plan resembling a rook with all the ridges open like a rook top. This opening is visible on the façade as well. The building is quite compact, the main space of the building and the main hall are erected behind a dead wall, which makes the interior of the building difficult to grasp. The Tbilisi Chess Palace and Alpine Club building is more voluminous, more spacious, and airier.

2.2.4. CHESS PALACE AND ALPINE CLUB - WHY TOGETHER?

It is believed that the building is dedicated to one type of sport – chess, and more often it is referred to only as a Chess Palace. However, in the above-mentioned order from 1960, the building was defined as Chess and Alpine Club from the very beginning. In every document that followed, the building is referred to with this

name. There are different versions of how these two types of the sport were combined in one building.

Some people connect this to the idea that a state trainer during the Soviet Union would lead two types of sports. In the 1970s, the

state trainer was Giorgi Gachechiladze. Since he led both chess and alpinism, the new building hosted these two types of sports.

It is a fact that at this time the Alpine Club, which opened in 1938 and was later destroyed by a fire (architect: A. Kurdiani, 1903–1988; the Alpine Club itself was established in 1936), already existed in Kirov Park. The stairs of this building remain in Vera Park. Hence, it is very likely that when it was decided to build Chess Club (Palace) in Kirov Park, where Alpine Club already existed, the solution was to combine the two in one building.

The popularity of mountaineering sport was no less in that period. The emergence of the sport of alpinism or mountaineering in Georgia dates back to the period of Georgia’s first republic during 1918–1921, coinciding with the foundation of the Tbilisi State University. In his book *From Mkinvartsveri to Everest*, Ivane Japaridze tells the history of the emergence of the first sports organization *Shevardeni* where all the Georgian intellectuals of the time came together.¹⁰ He further notes that with the annexation of Georgia the organization was abolished by the Bolsheviks in 1922 who referred to it as a "nationalistic petty-bourgeois organization". Despite this, the members of the organization stayed active, and in 1923 first alpinist expeditions on *Mkinvartsveri* (Mt. Kazbegi) took place by the students and famous scientists of Tbilisi State University. The two parallel ascents of Mt. Kazbegi in 1923, one having an athletic focus, led by Prof. Nikoladze and the other – scientific, led by the head of Geophysical Observatory, Prof. Didebulidze, laid the grounds of mountaineering sport in Georgia and the Soviet Union.¹¹ The

development of Alpinism in Georgia was supported by the Geographic society formed in 1924. In the 20s and 30s, the Society for Proletarian Tourism and Excursions was in strong opposition to Georgian Alpinists and their independent projects. After the society fell apart in 1936 Georgian Alpinists were able to create the Alpinist Club.¹² It became the first non-Russian Alpinist society in the Soviet Union.



*Peak Ushba, Svaneti. 4700 m.
Photo by: Guram Tikanadze*



Georgian Alpine Club building in Vera Park (Kirov Park at that time) and its members. 1958 or 1959

Photo: Irakli Vartagava

Digital library Iverieli of the National Parliamentary Library of Georgia



Alpinist Expedition between 1923–1945

Photo: Niko Nikoladze House Museum

Digital library Iverieli of the National Parliamentary Library of Georgia

⁸ Michael Hudson, *Storming Fortresses: A Political History Of Chess In The Soviet Union, 1917–1948*, University of California, Santa Cruz, 2013, p. 6. www.escholarship.org/content/qt0s71f0cw/qt0s71f0cw.pdf [Accessed: 30.07.2020]

⁹ *History of Creation and Development*, Open Chess www.openchess.by/rcop/ [Accessed: 30.07.2020].

¹⁰ Ivane Japaridze. *From Mkinvartsveri to Everest*, (Tbilisi, 2010) p. 7–11.

¹¹ Ibid, p. 8.

¹² Benjamin Bamberger, *Mountains of discontent: Georgian alpinism and the limits of Soviet equality, 1923–1955*. (PhD diss., University of Illinois at Urbana-Champaign, 2019) p. 180.

2.2.5. BUILDING CHRONOLOGY

Important Events	Details	Collateral Sports Events	Important Events	Details	Collateral Sports Events
The first resolution on assignation of the land for the construction of Chess and Alpine Club	The Executive Committee of the City Council of Workers' Deputies of Tbilisi issued Decree # 534, on the conclusion of an agreement between the Division of Construction and Architecture Issues and Political Committee of Orjonikidze District on the assignation of the land plot of basketball court # 3 in Kirov Park for construction of Chess and Alpine Club. <i>Tbilikalakproekti</i> was commissioned to develop design specification before April 1, 1960		12.03.1960		
			1962		Nona Gaprindashvili, 21, won the title of the World Chess Champion for the first time
			1963		Expedition to Mount Kazbegi dedicated to the 30 th anniversary of Georgian alpinism, under the leadership of Alexandra Japaridze. It was her 19 th and the last ascent of Mount Kazbegi. Alexandra was 68 years old then
Decision on assignation of land plot for construction	Decision # 225 on assignation of the territory, occupied by greenhouses in Kirov Park, for construction of Chess Club was made on the meeting of the Executive Committee of Tbilisi City Council		14.04.1965	Decree of the Council of Ministers of Georgian SSR	The Council of Ministers of Georgian SSR issued order # 332-p; due to the absence of the required typical designs, the Union of Sports Societies and Organizations, through the State Design Institute <i>Tbilikalakproekti</i> was allowed to develop an individual design for the construction of Chess and Alpine Club with a hall for 500 persons
Order on agreement of the project design specification	The Chief Architect of the city issues order # 200 on the agreement of the design specification of Chess and Alpine Club on the territory of Kirov Park. Client: the Union of Sports Societies and Organizations of Georgian SSR Design organization: <i>Tbilikalakproekti</i> Authors: Lado Aleksi-Meskhishvili, Germane Ghudushauri; Area of the land plot: 2200 m ² Building area: 21190 m ² Usable area: 2377 m ² Changes to be made: 1. The volume of the building to be reduced at the expense of reduction of the volume of vestibules and foyer; 2. Commercial café intended for 75 persons to be canceled and a canteen, intended only for the personnel of the club and visitors to be extended; 3. Following the reduction of the volume and dimensions of the building, access roads, and area for technical needs shall be considered		18.09.1965		
			1965	Resolution on approval of the design of Chess and Alpine Club	The Union of Sports Societies and Organizations of Georgian SSR issued Resolution # 117 on approval of the design of the Chess and Alpine Club Nona Gaprindashvili won the title of the World Champion for the second time
			02.08.1965 20.07.1966	Draft Project Design	The Third Architectural Workshop of the State Design Institute <i>Tbilikalakproekti</i> submitted draft design
			20.02.1967	Design Drawings of the wall cabinets were made	
			05.11.1967	The Project was approved	
			08.11.1969	The Design drawing of aluminum vitrage was developed	
			1969		Nona Gaprindashvili won the title of the World Champion for the third time
			21.05.1970	Details of ceramic lamps were developed	

Important Events	Details	Collateral Sports Events	Important Events	Details	Collateral Sports Events
Design drawings of details of the auditorium were developed		30.04.1971	1972		Nona Gaprindashvili won the title of the World Champion for the fourth time
The building of the Chess Palace and Alpine Club opened in May		1973	27.11.1974		Alexandra Japaridze passed away. She is buried in Vera Park together with brothers, Aliosha and Simon Japaridze
	One of the peaks of the Caucasus was named after Alexandra Japaridze. Nona Gaprindashvili won the title of the World Champion for the fifth time. Nona Gaprindashvili and Nana Aleksandria played against each other in World Championship finals	1975	1976		Gold medals were awarded to Tamaz Bakanidze, Giorgi Zumbadze, Taniel Lukashvili, Givi Kartvelishvili, Dimitri Sharashenidze, and Murad Chichinadze for an ascent of peak Jigit, Tien Shan. Gold medals were awarded to Giorgi Abashidze, Sergo Barliani, Shalva Gabisiani, Dimitri Dangadze, Shota Mirianashvili for passing the traverse of big horseshoe of Pamir mountains in Sagran Valley
	Nona Gaprindashvili became the first female grandmaster among men. Maia Chiburdanidze became World Champion in Chess	1978			
	The Women's 9 th Chess Olympic Games were held in Malta. A Georgian team became the Olympic Champion. Maia Chiburdanidze maintained the title of the World Champion till 1991 (1978, 1981, 1984, 1986, 1988)	1980	1982	Lighting was added to the interior and exterior of the building	
			1984		The title of Grandmaster was awarded to Maia Chiburdanidze
	Roman Giutashvili completed the ascent of peak Everest in pair with an American Daniel Mazur and was the first to unfold the maroon-colored flag of independent Georgia, sewn by a Georgian lady - Taliko Kubusidze, living in Nepal	10.10.1991	1992	Wooden decorative screen, existing in the museum, was lost	Women's XV Chess Olympics, Manila, Georgians became Olympic champions on behalf of independent Georgia for the first time
	Women's XVII Chess Olympic Games, Erevan. Unified team of Georgia became Olympic Champion for the third time	1996	1994	Till the 2000s, in different periods, the building accommodated canine club, casino, burger café, pharmacy, bank, gym	Women's XVI Chess Olympics, Moscow. Unified team of Georgia became Olympic champion for the second time
The building was named after Nona Gaprindashvili	Nona Gaprindashvili became the President of the Georgian Chess Federation (2001-2002)	2001	12.05.1999		Bidzina Gujabadze, Api Gigani, Beno Kashakashvili, and Lev Sarkisov ascended the peak of Everest
The Ministry of Economy handed over the building to the City Hall	Sopo Tvaradze climbed Ama Dablam and became the first Georgian female alpinist in the Himalayas	2003	2002	The building of Tbilisi Chess Palace and Alpine Club was handed over to the Chess Federation and Alpine Club under the usufruct agreement	Nino Gurieli was the President of the Georgian Chess Federation (2002-2004)

Important Events	Details	Collateral Sports Events	Important Events	Details	Collateral Sports Events
		2004	11.10.2007	Vera Park was listed as a monument of cultural heritage Registration card # 010105800	
			2008	Museum was restored in the Alpine Club Museum in Alpine Club was renewed with the support of the United Federation of Georgian Mountaineers and Company <i>Magti</i>	Women's XXIII Chess Olympic Games, Dresden. Georgian unified team became Olympic Champion Gia Giorgadze became the President of Georgian Chess Federation
The office of the President of European Chess Union was arranged on the first floor of the building		2000s			
		2012	2015	The building was handed over to the Georgian Chess Federation and Alpine Club under the usufruct agreement. Tbilisi International Chess Academy was founded	
A Pool Hall was opened on the second floor			2016		
Exhibition <i>8x8 Unrealized Future</i> was held in the building of Tbilisi Chess Palace and Alpine Club. Rehabilitation works were performed on the south and west façades of the building. Nona Gaprindashvili's star was opened on the west terrace, in front of the entrance to the Chess Federation.			2017	The usufruct agreement was prolonged for the Georgian Chess Federation According to Order # b61.01172936 dated 21.10.2017 of the LEPL Property Management Agency of Tbilisi City Municipality, 3424.93 sq. m of the building was handed over to NLP Georgian Chess Federation based on free usufruct agreement for 10 years (till October 23, 2027)	
		2018			
06.09.2018 - the period of validity of usufruct agreement with Alpine Club Ltd expired			2018		43 rd Chess Olympic Games were held In the city Batumi, Georgia
		2018-19	27.05.2019	The building of Tbilisi Chess Palace and Alpine Club was listed as immovable monument of cultural heritage Based on Resolution # 1238 of the Government of Georgia, the building of Tbilisi Chess Palace and Alpine Club was granted the status of an immovable monument of cultural heritage	
The building of Tbilisi Chess Palace and Alpine Club was selected as one of the winners of the Getty Foundation's <i>KEEPING IT MODERN</i> initiative grant competition 2018. Part of the façade, roof, and interior of the building was refurbished. The pool club <i>Metropool</i> opened in the place of the restaurant	Georgian National Committee of Blue Shield received the grant of Getty Foundation's <i>KEEPING IT MODERN</i> initiative. The grant was issued for the development of a conservation management plan and elaboration of maintenance recommendations for Tbilisi Chess Palace and Alpine Club. Based on the decision of the Council of Cultural Heritage Preservation of Architecture Service of the City Hall of Tbilisi Municipality (document №2500089), large-scale rehabilitation works were performed in the interior and exterior of the building		2019	Chess TV studio was arranged on the stage of the Main Hall	
			December 2019	Presentation and discussion of the conservation management plan concept was held at the Tbilisi City Municipality The team of the Georgian National Committee of the Blue Shield presented the concept of the Conservation Management Plan to the Architecture, Culture, and Youth Services of the Municipality, the Property Management Agency, and the users of the building. The draft concept was agreed upon by all parties.	
		April 2021			
The Georgian National Committee of the Blue Shield submitted the building Conservation Management Plan to the Municipality					

2.3. THE BUILDING

2.3.1. ARCHITECTURAL CHARACTERISTICS



Chess Palace and Alpine Club
Photo: Elguja Berishvili

In 1973, “in May, sports lovers of the city received a wonderful present – the Chess Palace, which was opened by the queen of chess, four-time world champion Nona Gaprindashvili herself.”¹³ According to most newspapers from that time, the official date of opening is April 15, 1973.

The authors of the building had to solve an interesting task and numerous challenges while planning the building. The downhill park defined the location of the building. According to Ina Gomelauri: "The originality of the architectural theme of the House of Chess prompted by the life itself, having no analogy, as far as we know, in modern architectural practice, set a difficult task before the authors' group – to create an original public

building, new by its purpose"¹⁴. Its purpose should have fitted two types of sport; idea and task should have been in harmony with each other and decoration of the building – adequate to its function. The building is remarkable not only by architectural mastery but is also distinguished by urban planning. Searching for new architectural forms was the main trait of this project. The Tbilisi Chess Palace and Alpine Club is organically situated in the Vera Garden. It is not eminent through big scale (plot area 2200 m², building volume 21290 m²) and does not dominate the rest of the public space. The spread of floors follows the landscape. On the eastern side the building has three floors, from the west – two floors. Glass windows and doors in aluminum frames divide the façade of the building covered in local *Eklari* stone of beige color.

¹³ Original text from the film-magazine *Soviet Georgia*, # 4, 1973, Audio-Visual and Film Documents, National Archives of Georgia.

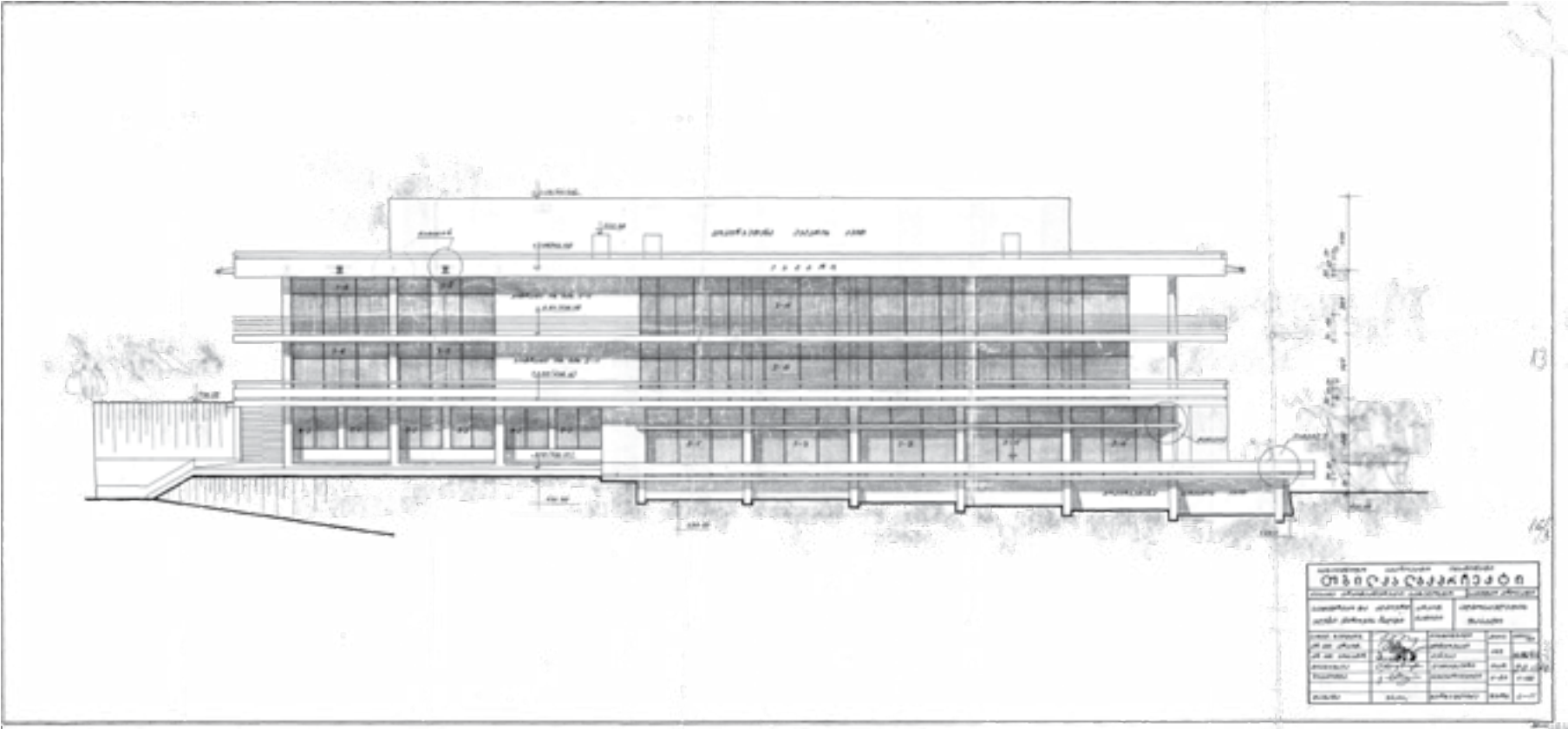
¹⁴ Ina Gomelauri *Architecture of Tbilisi Chess Palace* (Tbilisi:Metsniereba, 1983) p. 4.



This provides lightness to the building looking from outside. Besides, this is a very smart way of using streams of natural light as well as air movement through the building.

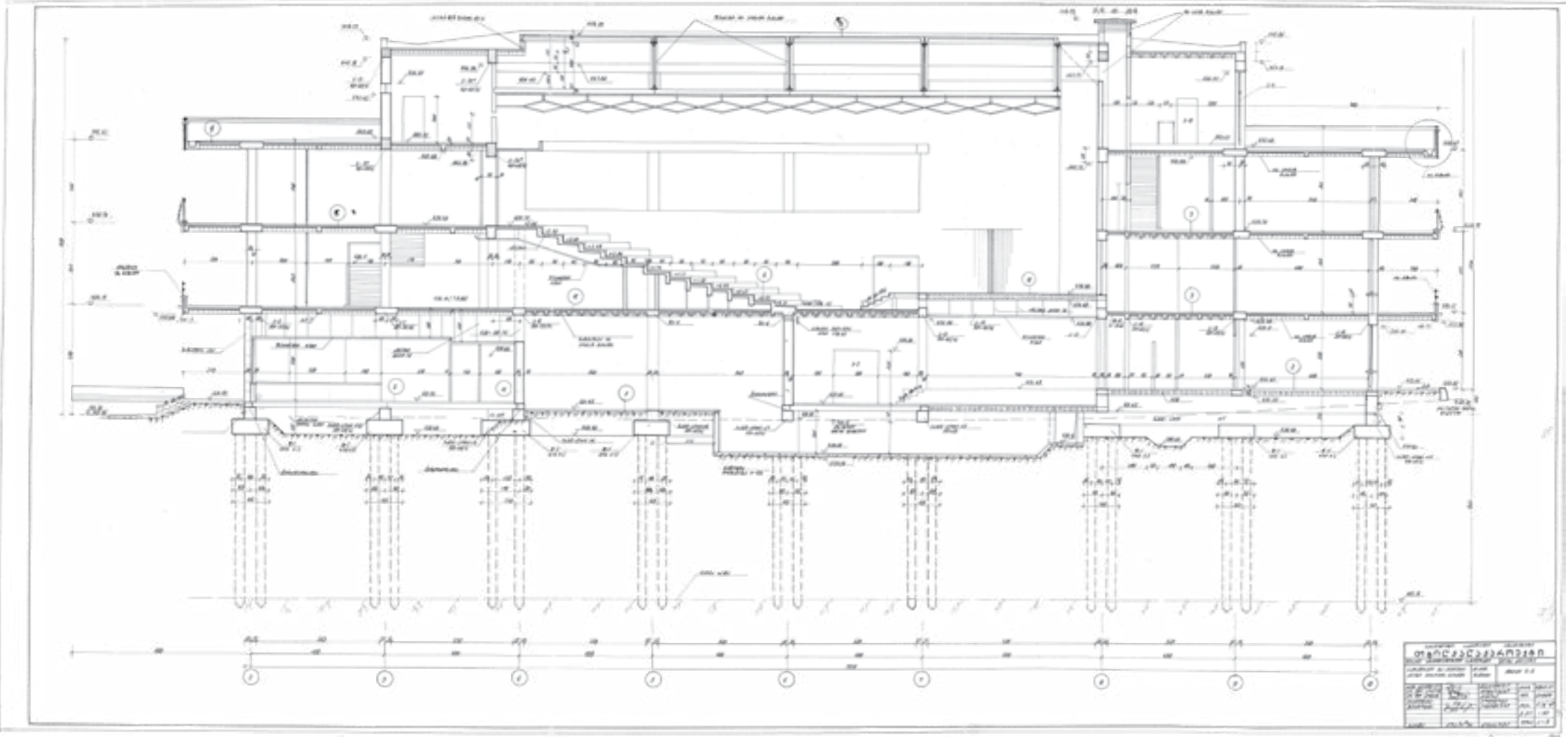
As already mentioned, the shape of a building is determined by its functions, which is one of the main principles of modernist architecture - "form follows function". The use of reinforced concrete and metal materials, visual "stripping" of the structure also adhere to these principles. With many other formal features, the building responds directly to the features already established for this period of modernist architecture. Ribbon window stripes along the entire length of the building and the height of the floors give it lightness and the façade is also free. Of course, the structure of the windows and balconies also creates a play of horizontal and vertical lines. The artistic decoration is minimized and the gamma of colors is as neutral as possible. One of the important features is the roof terrace, in fact, the fifth façade, which can be used in many ways - as a garden, public space, for sports purposes, etc. Free planning is also maximized inside the building, the number of walls is minimized and their mobility is maximized. The building is a worthy continuation of the tradition founded by Le Corbusier, Walter Gropius, Mies van der Rohe, Frank Lloyd Wright, Richard Neutra, and many other architects from the beginning of the century.

Master Plan
Original Project. 1965
National Archives of Georgia

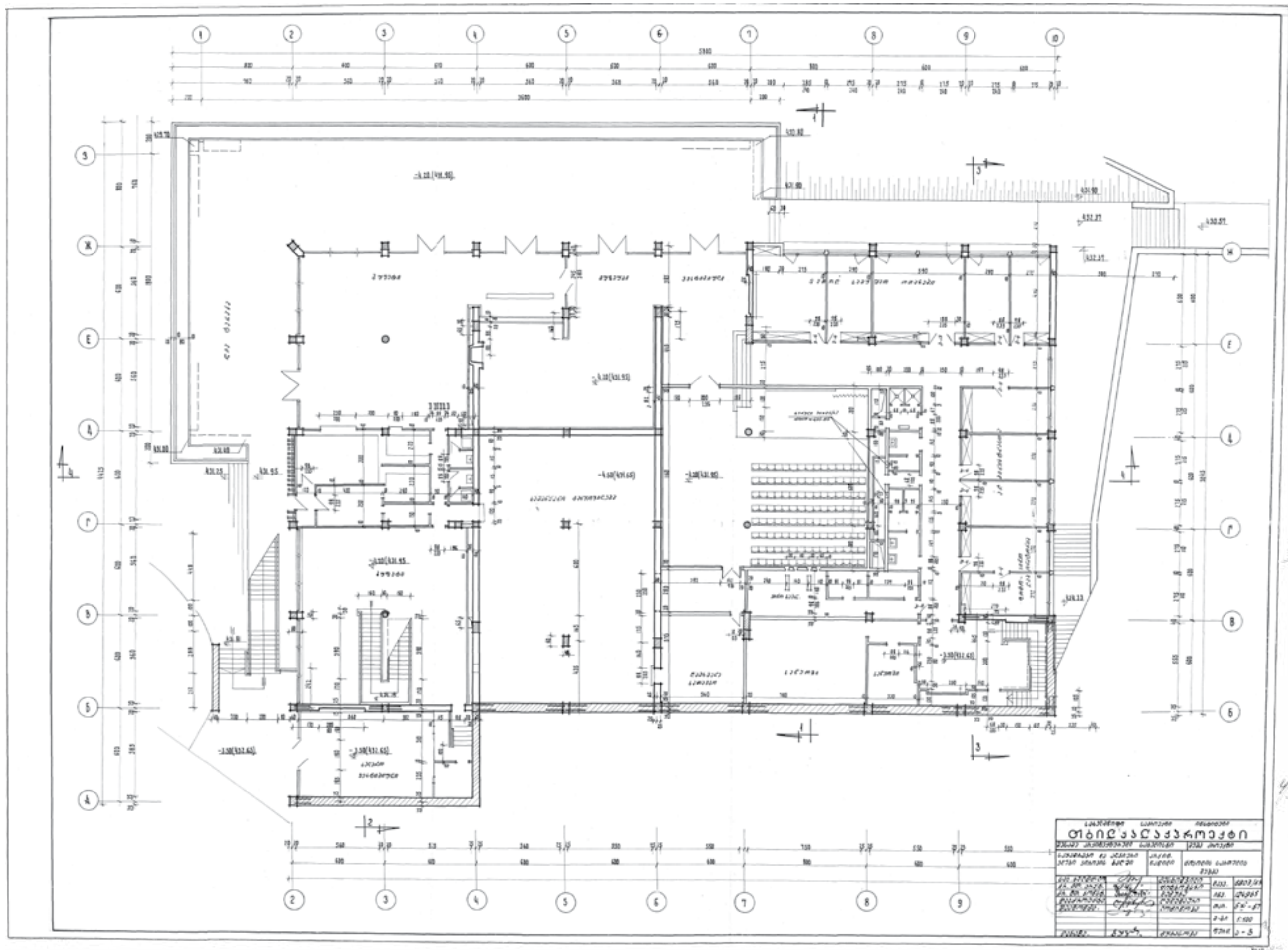


East Façade
Original Project. 1966
National Archives of Georgia

Division of the function between two owners is solved logically and is marked clearly. The Alpine Club is situated on the Basement Floor of the building on the eastern side and has an individual entrance. Besides administrative premises, sanitary units, and storage rooms in this part, there was also a photo laboratory, a small hall serving as an auditorium, museum, and a canteen with an open terrace at their disposal. There was also a boiler and technical room, which served the whole building; besides, a public café with an individual entrance through stairs from the vestibule on the first floor. There was another staircase in the southwestern corner of the building connecting the two floors.

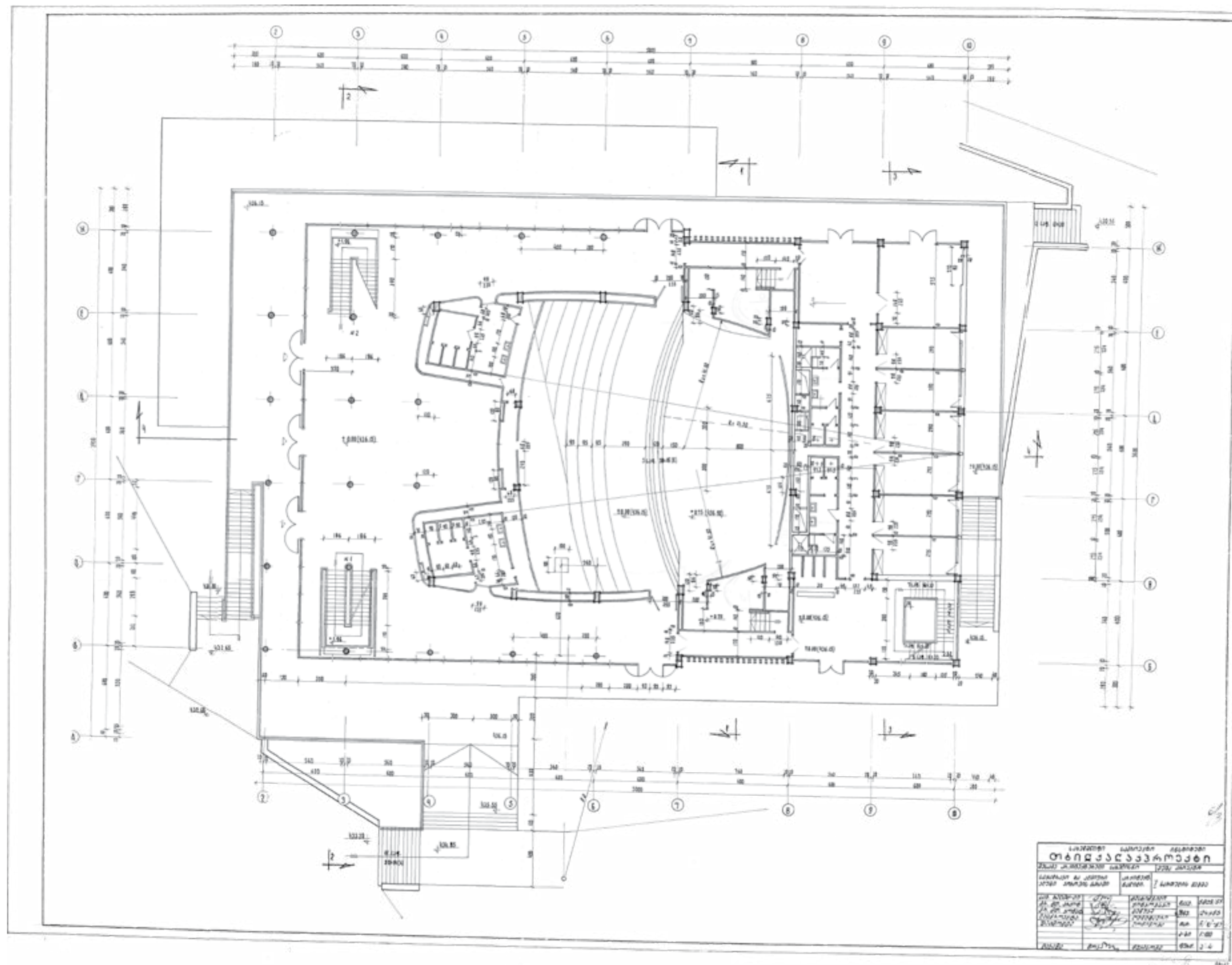


Section Elevation 4-4
Original Project. 1967
National Archives of Georgia

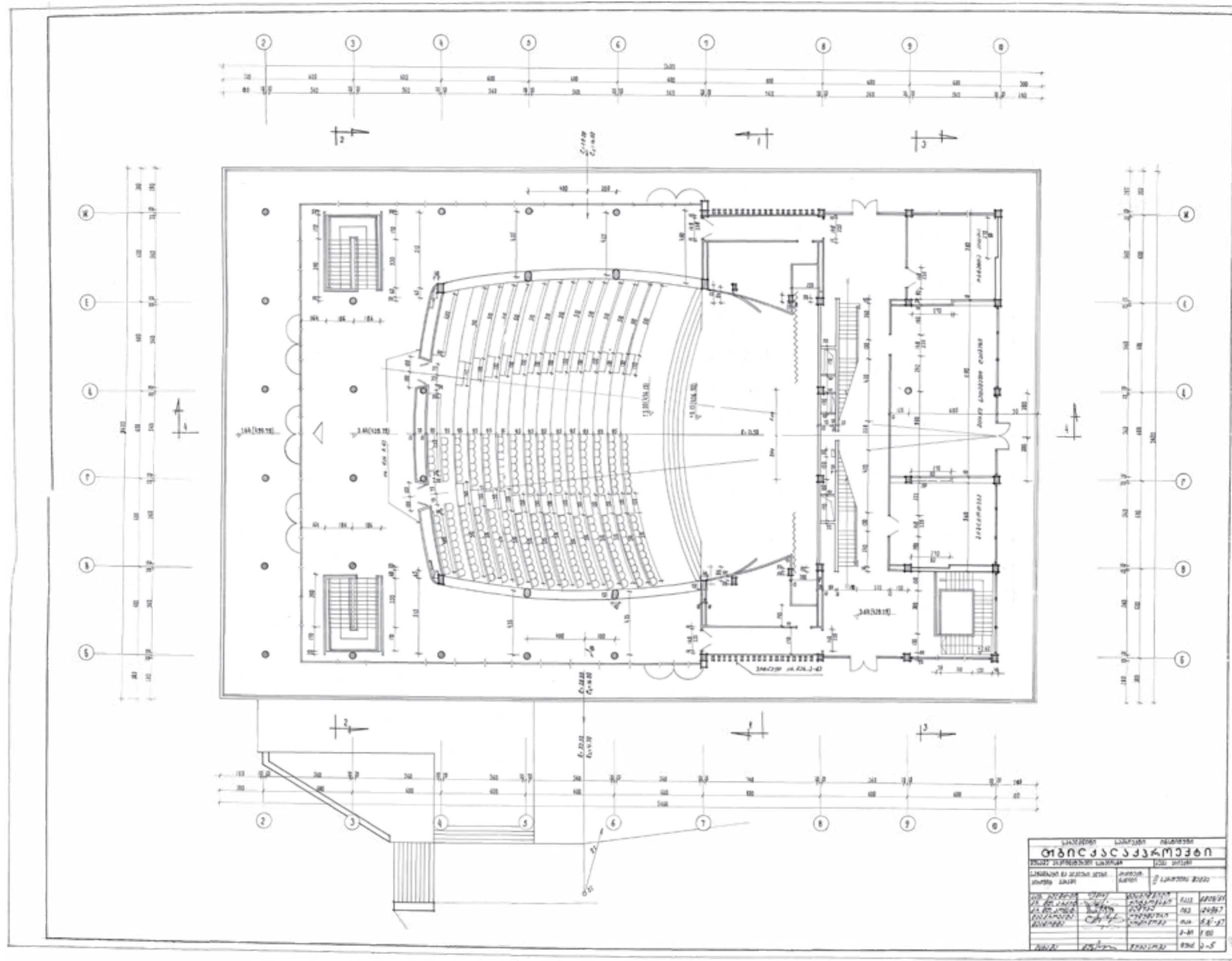


On the first and second floors the building is encircled with balconies of 2.5 m width, which provided the freedom of movement around the building. There are also two staircases on the northern and southern side exterior. The one on the south connects the ground and first floors, the one on the north - first and second floors. Also, here architects considered it important to provide visitors with the freedom to choose from which side to enter or leave the building. Furthermore, doors on all four sides made it possible to move freely from inside to outside and vice-versa.

Plan of the Basement Floor
Original Project. 1967
National Archives of Georgia



Plan of the First Floor
Original Project. 1967
National Archives of Georgia



The core of the building is its Main Hall for 520 visitors. "The basis of the lay-out of the House proceeding from the functional considerations is the emphasized singling out of the point centre of the building its main volumetric-spacious unit - an auditorium"¹⁵. This is an amphitheater type oval hall, the stage is elevated with five steps and there are 15 rows of chairs for visitors distributed inclined. The hall has four entrances for visitors - two on the first floor from the side galleries and two on the second floor from the main vestibule. Additional two exits for chess players in the corners of the stage connecting with the administrative part of the building. In the same exits on both sides of the stage, there are sanitary facilities for players.

¹⁵ Ina Gomelaury Architecture
of Tbilisi Chess Palace
(Tbilisi:Metsniereba, 1983) p. 5.

Plan of the second floor
Original Project. 1967
National Archives of Georgia



The Main Hall
Photo: Davit Gurgenidze Private Archive



Second Floor, Side Gallery on the west and marquetry sliding panel of the Main Hall (Opened)
Photo: Private Archive of Germane Ghudushauri



First Floor, Side Gallery on the East
Photo: Private Archive of Germane Ghudushauri

On the eastern and western side on both floors, there are side galleries connected with vestibules on the north, additionally a cash-office on the first floor. Administrative rooms as well as premises for coaches, resting and medical needs are distributed on the first floor and library, training rooms on the second floor in the southern part. There are two sanitary facilities on each floor.

The roof terrace can be entered from the second floor and was also planned for public use. It is distributed around the clearly shaped roof of the main hall. This space was intended for the open-air matches, though due to insufficient shade or some other reason, it was rarely used for this purpose. Additionally, there were rooms for projection equipment and some other facilities on this floor.

A ceiling on each floor except the Main Hall is flat without visible crossbars. Noteworthy are ceiling ceramic light fittings designed specifically for the building providing spotlight in vestibules and side galleries.

Interior floors were paved with local *Sadakhlo* black marble, pillars, and walls – covered with yellow tuff stone.

Under mobile panels in the side galleries, heaters were installed and hidden behind plywood boards. Stairs were also paved with black marble, only those leading to the roof terrace were covered with parquet, railings were metallic with wood.

In the administrative rooms, there were also parquet floors, specially designed cupboards and in part, the walls were also covered with plywood panels.

Balcony and terrace floors were paved with basalt stone. Railings are metallic. The whole building is covered with *Eklari* stone obtained from the Kutaisi quarry except the ground floor on the eastern side. Here architects used basalt, probably conceptually matching rocky environments for alpinism and mountaineering.

The façade is simple and restrained; it's a play of horizontal (floors, railings) and vertical (windows, doors, pillars) lines. There are stone scuppers protruding from the balconies.



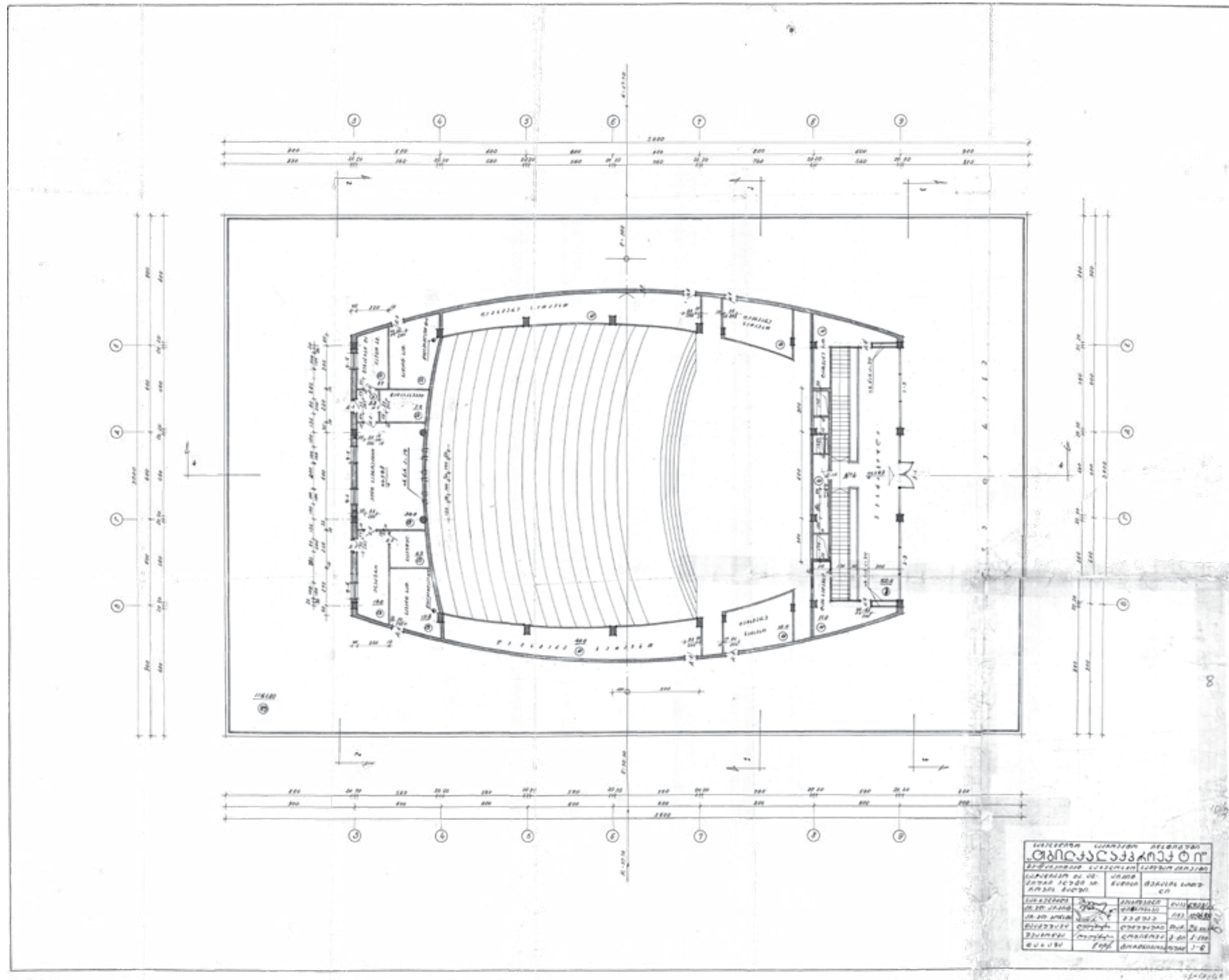
Tbilisi Chess Palace and Alpine Club
Photo: Davit Gurgenidze Private Archive

The roof itself was crowned with lights distributed circularly on top of the vault.

In comparison to side galleries and vestibules, the Main Hall is very modest. The walls are plastered and painted in white. The floor is carpeted, which supports sound isolation. Lighting is also conceptual – the ceiling is covered with a 3D-type grid structure with integrated lights. Above the amphitheater, part of the bulbs are hidden and provide weak light, whereas above the stage there are additionally stronger bulbs installed spreading floodlight. Besides the decorative ceiling, the main adornment of the space is six marquetry panels having functional use.¹⁶ Those are mobile and if needed could be lifted opening into eastern and western side galleries on the second floor. Accordingly, more people could follow the match simultaneously providing more natural light and air-ventilation.

Special attention must be paid to the selection of the material for the panels and the technique of execution – marquetry – a type of combining wood pieces, which has never been very popular in Georgia. This is also a well-thought parallel to a chessboard, the surface of which is also assembled with wood pieces.

¹⁶ A decorative pattern on a piece of furniture that consists of thin sheets of very shiny wood of different colors attached to the surface of the furniture. Marquetry, Cambridge Dictionary, www.dictionary.cambridge.org/dictionary/english/marquetry [accessed on 28.05.2020]



Roof Terrace Plan
Original Project. 1966
National Archives of Georgia

2.3.2. INTERIOR DESIGN



Monumental Woodcut Panel at the Central Entrance of the Main Hall
 Photo: Private Archive of Germane Ghudushauri

It is already remarkable that the *Sameuli* collective – Alexander Slovinsky, born in 1935, Oleg Kochakidze – 1935–2017, Yuri Chikvaide – 1934–2004 were invited to decorate the building. Even though the members of the collective had graduated from the Faculty of Architecture of Tbilisi State Academy of Arts and worked on monumental decorations of buildings, they are mostly known for working in theatres (from 1976 until the

90s, they were main set designers of Kote Marjanishvili State Drama Theatre). These artists made very conscious choices of materials – assembling wood pieces on mobile panels, wood carving in the vestibule of the second floor, stone carving in the side galleries on the first and second floors – all of which resonate with the chessboard as similarly chess figures are usually carved in wood, more exquisite ones in stone or some



Vertically Sliding Marquetry Panels of the Main Hall
 Photo: Private Archive of Germane Ghudushauri

other material. Artistic performance is also noteworthy – on one hand, stylized and geometric forms of chess figures on wooden panels create an association of the geometric character of a chessboard and a rectilinear and diagonal movement of the figures. On the other hand, more allegorical and narrative motives of wood and stone carving hint at the character of chess.

The interior decoration of the Alpine Club is not made by *Sameuli*. While here the material and the technique of stone carving are the same as those used on the second floor, stylistically it is more decorative and ornamental compared to those decorations created on the motives of chess by *Sameuli*. More importantly, here we see carved “[V.O.] 72” – initials of the author and the year of making it. There is a possibility that it is Vakhtang

Oniani, however, he does not recall if he was working on this commission. Also, the management of the Alpine Club does not have any information about it.

The interior of the café was also decorated – upper parts of walls were covered with wooden bas-relief panels and in the middle

of the ceiling, there was a light fixture, all covered with stylized chess figures. *Sameuli* was also responsible for this decoration.

All above-mentioned demonstrates the value of this building. Nowadays, it is hard to find such a complex approach in urbanism, architecture, and art as well.



Interior of the Basement Floor, wooden decorative partition screen assembled out of wooden discos
Photo: Private Archive of Germane Ghudushauri

2.4. VALUES OF THE BUILDING

The Cultural Significance of the building is established through the following values:

2.4.1. HISTORIC AND ASSOCIATIVE VALUE

It is the true testimony of the era of historic victories of Georgian women chess players and particularly the world’s first female Grandmaster — the highest title awarded to chess players and five-time world champion, Nona Gaprindashvili, whose victories became an inspiration for the building. The Main Hall of the building hosted historic games, such as two matches for the World Champion’s title, (in 1975 and 1981) in which two legendary Georgian women chess players competed against each other. The building is also a true reflection of its time, namely the late Soviet period in which public health, sports, and cultural education gained significance. Culture and society: New forms of living, working, and relaxing is identified as one of the phenomena or themes for understanding the significance of the twentieth-century heritage all over the globe.¹⁷

Perceived originally and to this day functioning as both like the Chess Palace and the Alpine Club, the building’s historic and associate values relate also to the history of Georgian Alpinism, and here also, to its female representatives. Alexandra Japaridze (1895–1974), was the first Georgian female mountaineer and one of the founders of Georgian and Soviet mountaineering, who performed up to a hundred sport ascents to the Caucasus peaks. Alexandra Japaridze was the first woman to set foot on peaks Tetnuldi and Ushba, winning almost all the titles and awards awarded to the climbers. In 1936 she participated in the foundation of the Georgian Alpine Club. Alexandra Japaridze, who died in 1974, a year after the building was completed, is buried in Vera Park along with her brothers, Aliosha and Simon Japaridze.¹⁸



Alexandra Japaridze and students of the alpinism class of the Palace of Pioneers and Schoolchildren. 1937
Owner: Georgian Sports Museum
Digital library Iverieli of the National Parliamentary Library of Georgia



Chess Players on the Stage of the Main Hall
Davit Gurgendize Private Archive

2.4.2. ARCHITECTURAL AND AESTHETIC VALUE

This relates to the overall architectural design in which the open and light-filled spaces of the galleries well-lit through the floor-to-ceiling windows and doors, enable the interior and exterior spaces to flow together. A continuous expansive single balcony

on the second and third floors framing the building reinforces the openness. The undivided spaces of the vestibules allowed for freedom of movement and abundant natural light creating a harmony between the interior and exterior of the building.

¹⁷ Developing an Historic Thematic Framework to Assess the Significance of Twentieth-Century Cultural Heritage: An Initiative of the ICOMOS International Scientific Committee on Twentieth-Century Heritage An Expert Meeting Hosted by the Getty Conservation Institute (Los Angeles, CA) May 10–11, 2011. www.getty.edu/conservation/publications_resources/pdf_publications/developing_historic.html [Accessed: 30.07.2020].

¹⁸ Eka Agdgomelashvili, Alexandra Japaridze - Feminism Boell, June 13, 2014 www.feminism-boell.org/ka/2014/06/13/aleksandra-japarize [Accessed: 30.07.2020].



Interior
Photo: Private Archive of Germane Ghudushauri

With careful attention paid to craftsmanship and detail, all of its architectural elements and attributes, such as the structure, form, interior design, also furniture and fixtures reflect and point to the building's use. Many elements of interior design are particularly well-thought-out and create an association with the uses of the respective spaces. For example, the ceiling of the Main Hall, assembled of wooden decorative panels with a visual effect of a three-dimensional checkered surface resembling a chessboard in the air. A decorative stone wall on its façade adorned with a grid of crowns and a large interior wooden panel depicting chess characters, pick up the chess theme while the use of many small decorative elements in fixtures and furniture with the queen's crown hint at the building being dedicated to a woman. Vertically sliding panels serving as partitions, dividing the Hall and the side galleries in the technique of marquetry – wood inlay, not common in Georgia, are again resonating with the surface of the chessboard.

Mastery of the architects and designers is also manifested in the skillful solutions in the design of the building accommodating two very different types of sports while in harmony with each other.

Its compactness is again the mastery of its planners. Encompassing the large 520-seat Main Hall and vast galleries, the building is not perceived as a large structure and does not dominate the rest of the public space, but is rather organic to it, following the natural terrain of the park.

The use of natural materials such as stone and wood helps merge with the surrounding natural scenery and the park.

Structural innovation in the Soviet space for the period of construction – connecting the reinforced concrete columns of the structure above the ground by beams (horizontal structural members providing lateral support), allowed for a monolithic reinforced concrete structure of the same thickness as the inter-floor slab (33 cm). This innovative solution, reducing the thickness of horizontal beams, enabled the existence of the uninterrupted flat ceiling, and achieving the optimal height of the floor, while also allowing the arrangement of floor-to-ceiling windows on the entire façade.

2.4.3. SOCIAL VALUE

Is manifested through social activities from its creation till the present day. It maintains a great social value to two generations of chess and alpinists' communities: Children who attended chess classes or took part in tournaments there, professional chess players, chess lovers, and professional and amateur mountaineers. It served and still serves as a place of encounter and shared experience for professional and amateur sportsmen and plays a role in establishing their social identity. Among

them as well as many Tbilisians, the building has gained popular recognition as a symbolic building, often referred to only as a 'Palace'. It has significant recognition also among the chess players from outside Georgia – mainly from the former Soviet Union, who often competed in its walls. The link between the building and its use is very strong, manifested in a powerful relation between the building and the institution – on one hand, the Chess Federation and the Alpine Club.

2.4.4. FUNCTIONAL VALUE

The site has significant functional value since it continuously serves the type of function for which it had been originally built. Built as a home to two popular sports of the period – Chess and Alpinism, it continues to shelter the two sports agencies. Although the Main Hall has ceased to serve its original purpose (even after its restoration, it is less likely that it will ever be used solely for Chess tournaments), it still possesses great potential for being adapted and used as a multifunctional venue.

Continuity of its traditional function reinforces its meaning and makes it a rare example of a Late Soviet Modernism style building that still operates with the original function. Being one of only three buildings worldwide built as a chess palace (a Chess House in Yerevan, Armenia was built before this one and later a Palace for Chess and Checker was commissioned in Minsk, Belarus) it also has a rarity value.

2.4.5. EDUCATIONAL VALUE

Its social value is further amplified by the building's educational value as a hub for sports education as well as a space for the interpretation of the history and significance of two sports housed there. If interpreted, the building's architectural, historical and functional values could unlock its cultural tourism potential and host local and international cultural and sports tourists, preservationists, and professionals in the field of architecture and design. Although presently not all of them are functioning, the building included a significant number of educational facilities such as – the library, museum, chess training facilities, and two auditoria (one of them presently turned into a Climbing Gym). Its educational value will be further strengthened after its conservation, enabling better interpretation for education and full usage of its educational facilities.



Training at Climbing Gym located in the Alpine Club area. 2018
Photo: Pro Climbers



Children's Chess Championship in Western Side Gallery. 2020

2.4.6. ECONOMIC VALUE

Although presently inappropriately exploited, the building has an economic value. Thanks to its adaptable interior, park location, and the high demand for rental real estate in the city center, the building can generate financial income. For the heritage resource to generate economic profit and do so without jeopardizing any

of its values, a careful approach needs to be chosen. Discussion on how to best utilize the economic potential of the Tbilisi Chess Palace and Alpine Club while conserving its other values is given in Chapters 4 and 5, where the adaptive reuse proposals and their economic justification are given.

2.4.7. AUTHENTICITY AND INTEGRITY

Tbilisi Chess Palace and Alpine Club has considerably retained its authenticity till the present. Continuity of its original function greatly contributes to its functional authenticity.

Despite some rude interventions, new intrusive elements and losses (described at length in the chapter on condition assessment, namely 3.3. History of Changes and Interventions and illustrated in its Condition Assessment Table), that took place over the years, the structure can be characterized as being mostly authentic.

To this date, it has retained much of its original architectural design, materials, and fabric in the original landscape setting.

Some spaces have preserved authenticity more than others. Most of the loss occurred in the past three decades, namely starting from the 1990s, and is associated with the change of ownership and use (For details on this subject refer to chapter 2.7. Ownership and Use)

The loss of authenticity is more evident in the interior as it has suffered the most. The original layout and planning have been altered, leading to the loss of the original architectural concept of openness to the outside and free movement inside. Besides, a few interior design elements are missing, altered, and damaged. Some spaces, like the small auditorium, have changed altogether. Missing are two original staircases, the original technical equipment of the Main Hall, and a fireplace, along with other decorative elements described in more detail in section 3.2.1. Losses. The authenticity of design is diminished through the changes in the interior.

On the intangible side, the continuity of its original function and use also adds significantly to its authenticity value.

As a result of the compromised authenticity of some of the building’s elements, its integrity is difficult to perceive, but it has been preserved.

According to the respective entry in the Georgian Encyclopedia¹⁹, in 1933 began the reconstruction of the Vera area (6.5 ha) – including the Vera plateau (cemetery) and the nearby slopes (Mtkvari river bank) including the Blue Monastery. In 1934 began planting of the area according to the design of an agronomist-decorator A. Machavariani. The garden was named after Sergei Kirov (a Bolshevik revolutionary – 1886–1934) and in 1936 his sculpture was erected.

The garden entrance and the central square were adorned with French-style landscape architecture, while the ground patterns were adorned with seasonal flowers and tall shrubs. Between 1961–72, these places were decorated with flowers following Georgian fretwork ornaments.

The greenery for the landscaping of these administrative districts (formerly Orjonikidze–Kalinin) was provided by the greenhouses planted on the slopes and the terraces right on the territory. Until 1940, Kirov Garden and the total area of the backyard was 5.3 ha. Housing construction which was proceeding between the bank of the Mtkvari River and the slopes (1936–39) reduced the total area of the garden to 2.8 ha and reduced the range of greenery to 78 species.

In 1938, a light construction serving as a reading room (arch. A. Kurdiani) was installed in the garden, in which the Alexander Japaridze Alpine Club took its seat.

Between the 1950s and 1970s, the number of sports bases in the Kirov Garden reached a maximum. Basketball, volleyball, boxing,

gymnastics halls were erected, and in 1973 Tbilisi Chess Palace and Alpine Club building was opened on the territory of a plant nursery.

In 1989 Kirov monument was removed. The garden regained the name of Vera Park, its ornamental flower bedding was taken over by the Philharmonic air-conditioning pool and the planting area of the garden became 1.2 ha²⁰.

On October 11, 2007, Vera Garden (Park) received the status of Immovable Cultural Monument (registration card # 010105800), based on the decree # 3/181 from October of the same year and on decree # 3/133 of March 30, 2006.²¹

Vera Park is very intensively utilized by the inhabitants of Tbilisi – people take children for a walk here, or take their dogs, or gather to have fun, and dates; children from the neighboring school # 51 also come here – and the social life is very intense in this garden. However, almost none of these people use the Chess Palace and other establishments in it, and there is no connection with the building. Yet one can also generally say the same about those who utilize the building. Those who go to the billiard club, the Chess Academy, almost completely ignore the public spaces of the garden. The only real connection of these two spaces is a small group of men, who in case of good weather play different board games, including chess, in the pavilion of the garden.

Tbilisi Chess Palace and Alpine Club, together with their “neighbors,” sadly have little dialogue with each other, as well as with Vera Park.

2.5. SETTING - THE VERA PARK

Vera Park is located along M. Kostava and N. Nikoladze streets. By the middle of the 18th century, the Vera Park area, like other plots of Vera land, was owned by the Danibegashvili family. In the past, this place was bordered by Vera Cemetery between Vardi (Rose) and Vashlovani (Apple) districts.

In 1898, when urban development expanded to the greater part of the Vera district, the Georgian exarch – Flavian Gorodetsky – allowed the city council to lay out a garden on the site, but the council missed that opportunity. Only in 1930 did the city government abolish the Vera Cemetery and begin arranging a garden.



Vera Park. 2018

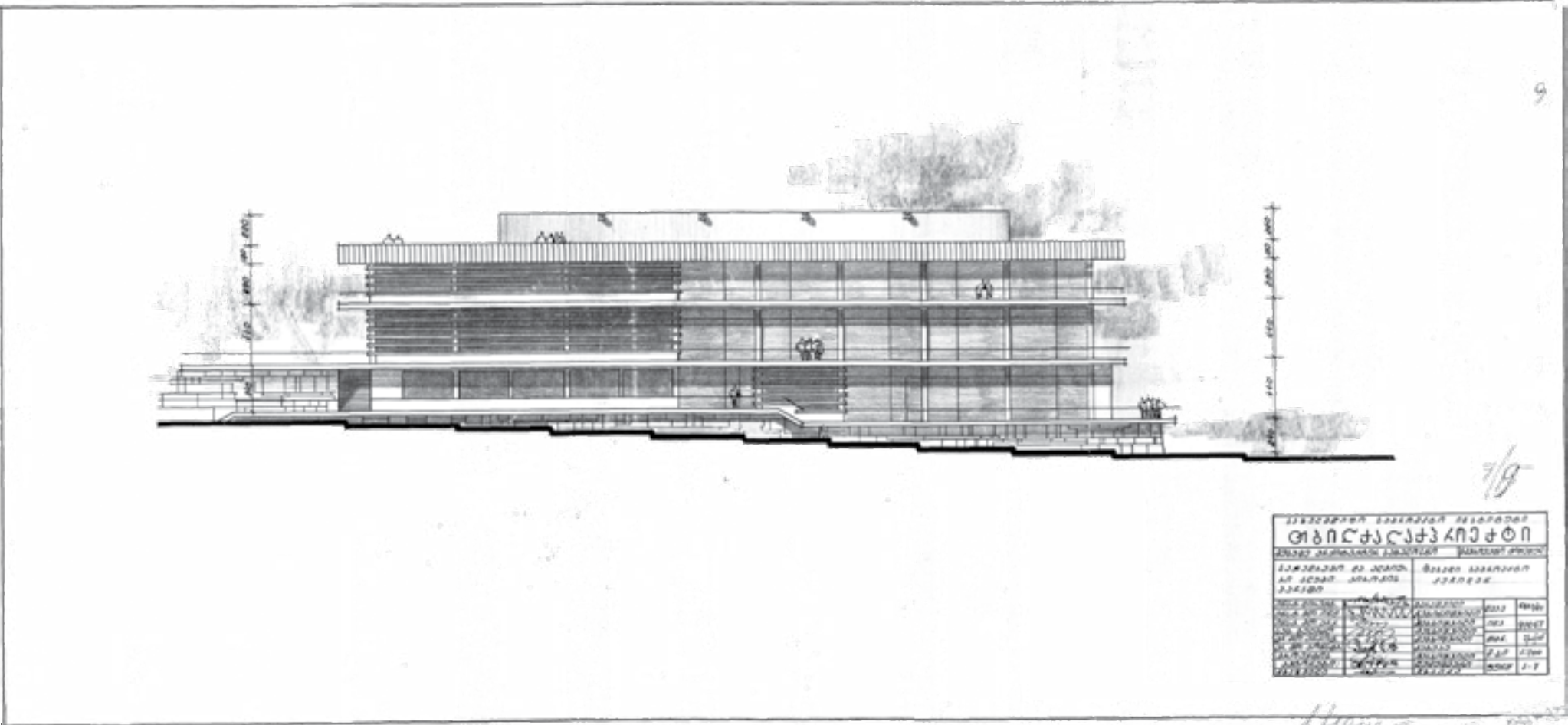
2.6. REVIEW OF ORIGINAL PROJECT DESIGN - WHAT CHANGED DURING THE CONSTRUCTION PHASE?

Since its inception, the Chess Palace and Alpine Club building design has undergone several corrections and alterations. According to the project, the building was to be located in the same park, yet slightly further from its present site. The initial design was revised several times. The final version, which was formally approved later, features a vestibule located symmetrically to the axis of the Main Hall.

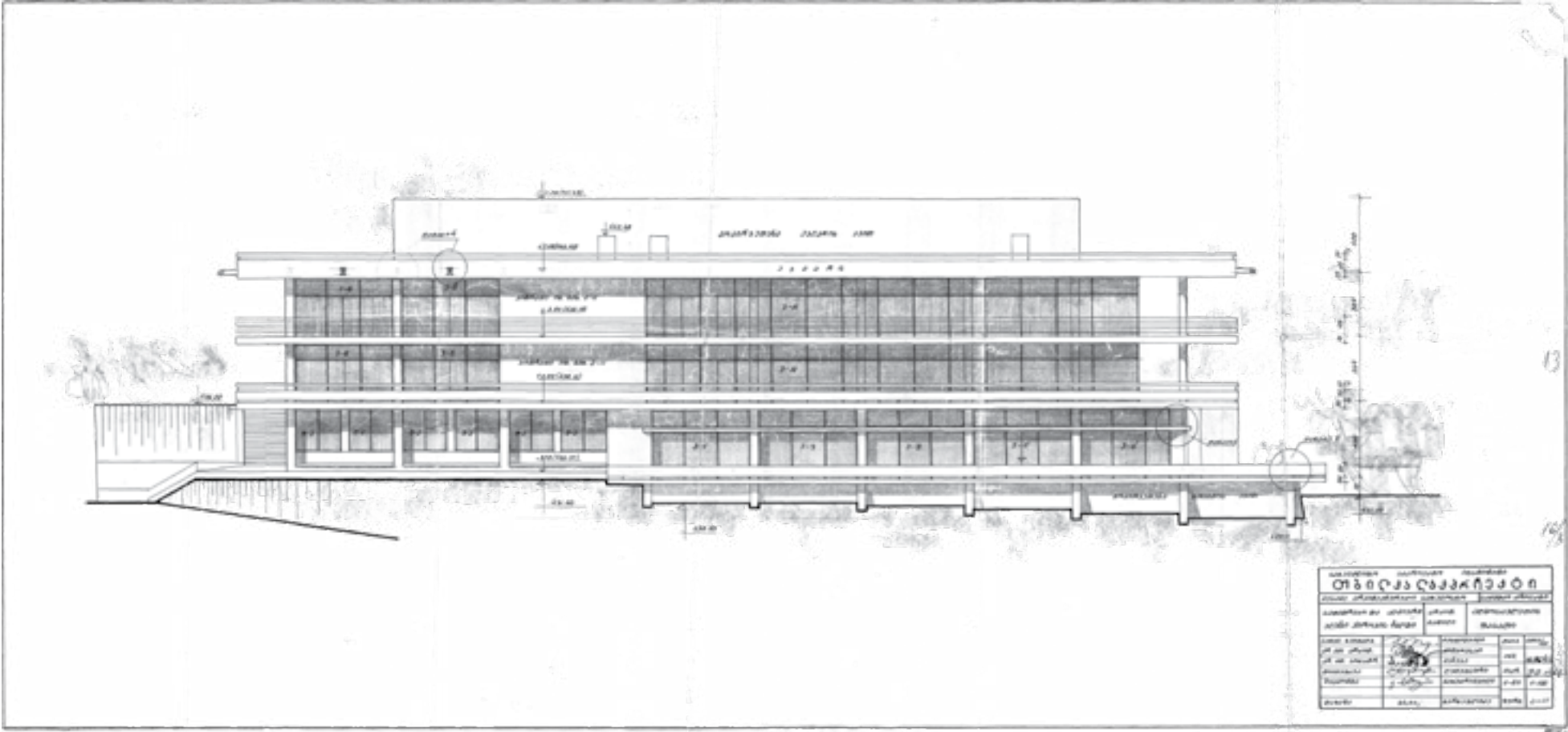
¹⁹ *Vera Park*, Georgian Encyclopedia, December 12 2015. www.georgianencyclopedia.ge [Accessed: 30.07.2020]

²⁰ Ibid.

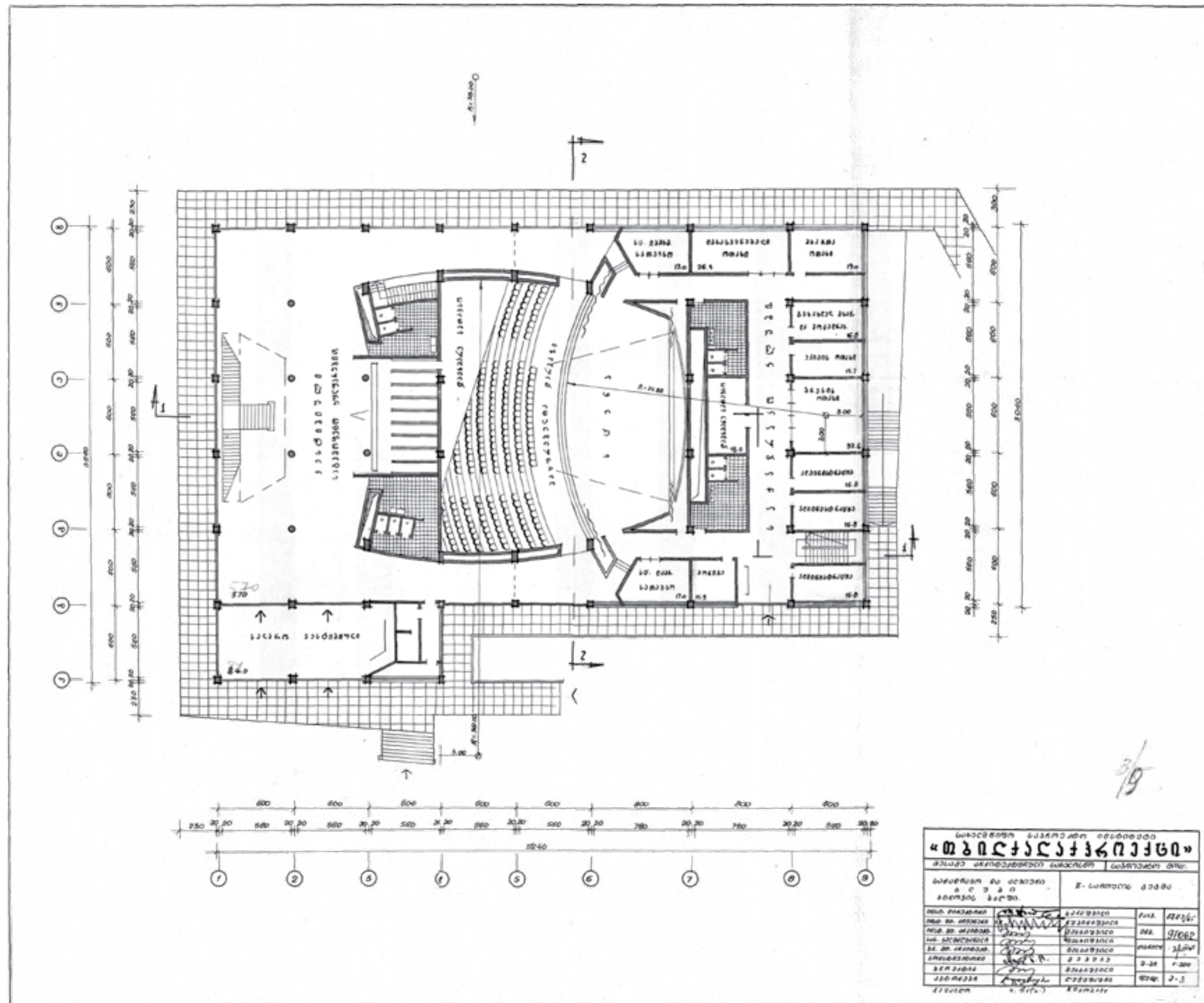
²¹ *List of Immovable Cultural Heritage Sites*, National Agency for Preservation of Cultural Heritage of Georgia www.heritagesites.ge/uploads/files/5aec2d9cdbafa.pdf [Accessed: 01.08.2020]



East Façade
Original Draft Design
National Archives of Georgia



East Façade
Original Project. 1966
National Archives of Georgia

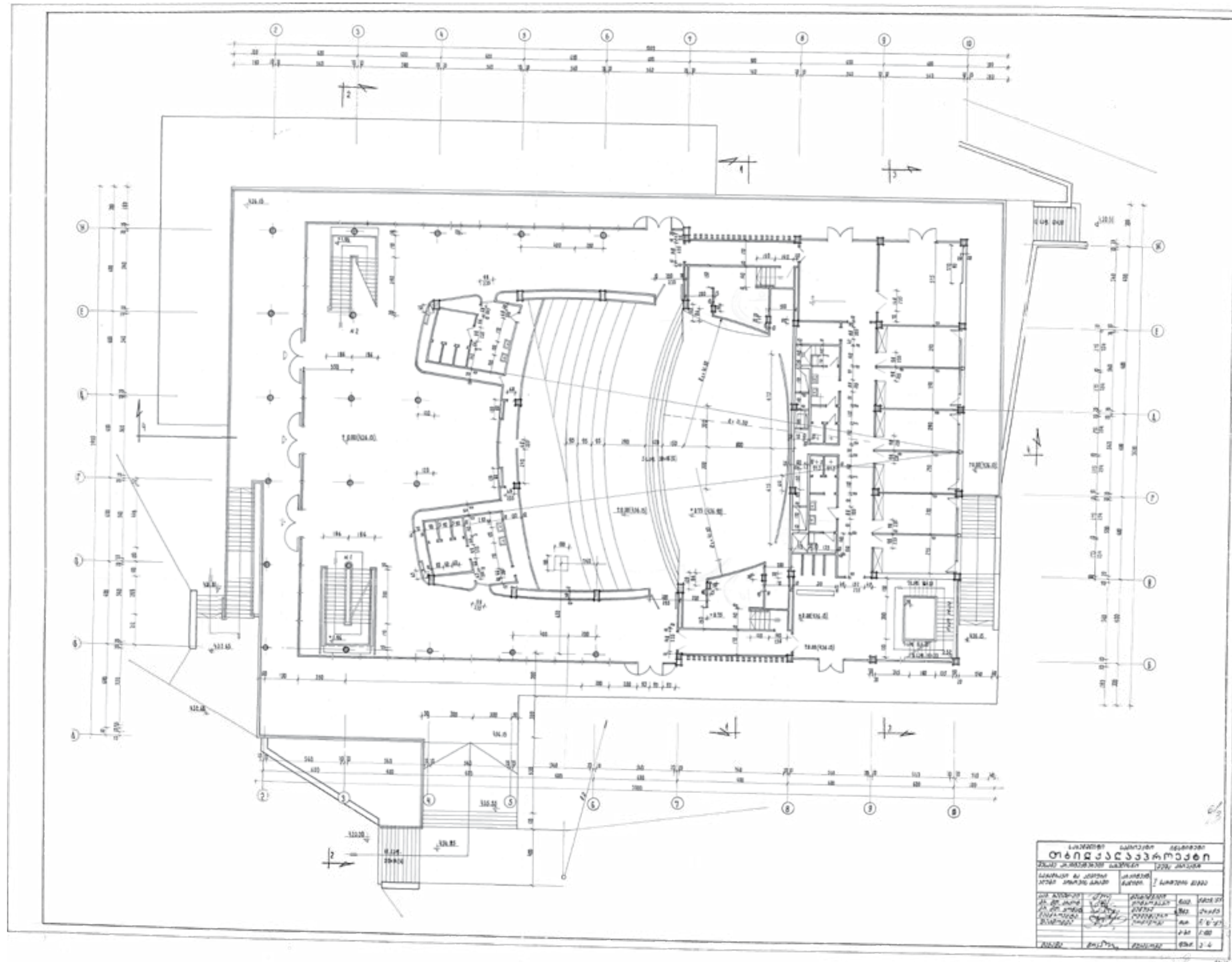


The draft design preserved at the National archives dates back to 1965; its final working drawings were made between 1966 and 1971, which slightly differ from the draft version.

The comparison of the final, i.e. formally approved drawings with the actual building shows that further changes were made in the process of construction and are not documented. These included alterations of the internal and external architectural elements and planning, as well as structural details. There are certain architectural solutions in the design that remained unrealized.

Major structural changes made during construction included the enlargement of the supports of both staircases located in the visitor zone. The round section of the support pillars was replaced by pylons of rectangular sections. Similar changes were made to the load-bearing balcony columns at the basement level of the northern façade (in axes C2 and F2); in addition to that, the load-bearing elements of the eastern and western façades were reinforced with pylons (in axes 9-G, 7-G, and 7-B). These changes were reflected in the 1970 detailed drawings, which explained the technology of joining the existing columns. The difference between the building and its design is further evidenced by other architectural details.

The initial design lacked sanitary facilities for players in the Main Hall. Therefore, two facilities had to be added in the process of construction. They were installed in the “pockets” of the stage. A section of the northern wall of the hall was also redesigned at the time of construction: two doorway openings were added leading onto the cantilever structure and the openings of the projection room were slightly redesigned.



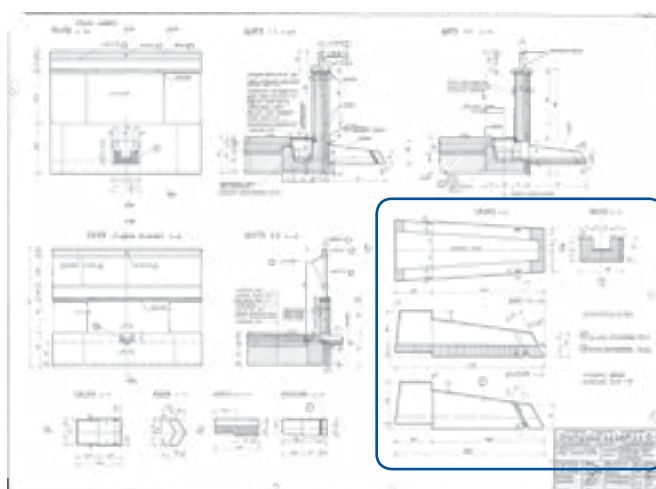
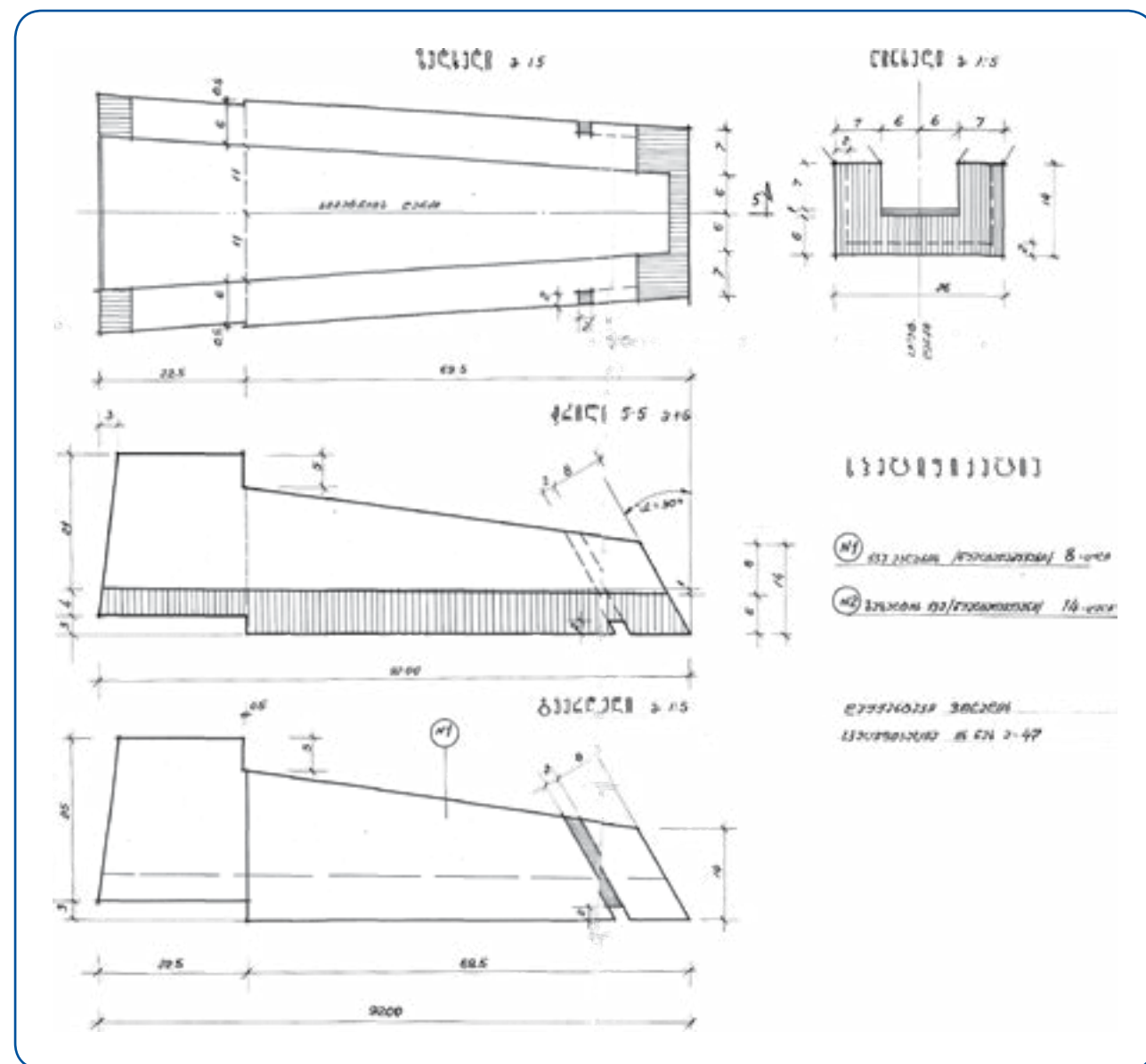
In the administrative zone, on the second floor, the round and rectangular columns present on the axes 9-E and 9-D were interchanged, which was a result of the remodelling of the small playroom.

Instead of the regular arrangement of floor marble and *terrazzo tiles*²² envisaged by the project, most of the interior floors were laid with rectangular stone tiles of irregular design and different sizes; only the Basement Floor has regular pavement. On both the first and the second-floor balcony, basalt tiles were laid, although this was not envisaged by the design. According to detailed drawings, the floors were to be laid with a mix of *terrazzo* tiles and *Sadakhlo* marble tiles. The roof terrace was to be paved with *terrazzo* tiles as well, but instead, it was topped with Ruberoid layers.

The size of stone gutters that serve to remove water from the roof terrace differs from the dimensions indicated in the detailed drawings approved along with the initial design. Assumedly, it was reduced by half due to the properties of the stone.

²² Terrazzo, A mosaic flooring consisting of small pieces of marble or granite set in mortar and given a high polish Terrazzo. Merriam-Webster Dictionary, www.merriam-webster.com/dictionary/terrazzo. [Accessed on 12.03.21.]

Plan of the first floor
Original Project. 1967
National Archives of Georgia



Roof Scuppers
Original Project
National Archives of Georgia



Roof Scuppers. 2018

The design of the first and second floor balcony railings also differs from the design provided by the 1968 drawings. They were made according to the drawings produced in 1970. Instead of arranging stone tiles in two rows on the first-floor balcony, it was decided to arrange them in three rows, so that one narrow row of the same stone could be made between the two equal rows, which coincided with the level of drainage pipe of the balcony.

The parquet wooden finish of the two staircases leading to the roof from opposite directions is another feature that is not

provided in the detailed drawings; instead of massive stairs finished with hardwood and inclined risers, the stairs were finished with parquets, while risers were not given an inclined shape. Handrails were also redesigned slightly, ignoring decorative wooden sections envisaged by the design and adding one linear metal bar.

The division of wooden panes on the southern side of the first floor was also changed slightly; instead of dividing the window into two parts, as provided in the design, the windows that were installed were partly fixed (i.e. 2/3 of the windows cannot be opened); on the Basement Floor, in the eastern part, only one of the two windows, given in the axes 9-10, was installed (it is indicated in the 1970 drawings). Aluminum profiles of vitrages in the interior were not finished with wood, while this was provided for in the detailed drawings kept in the archives. Vertical pillars of basalt which were to be installed on the Basement Floor in the north (axes E-D) also were not realized.

The existence of two cafeterias in the building proved impractical, which supposedly led to the removal of the staircase connecting the first and Basement Floors soon after its construction. A small hall with a projection facility located on the Basement Floor has not functioned for long, which was probably the reason why it later changed its use and was turned into the Climbing Hall to meet the requirements of its users.

2.7. OWNERSHIP & USE

2.7.1. OWNERSHIP

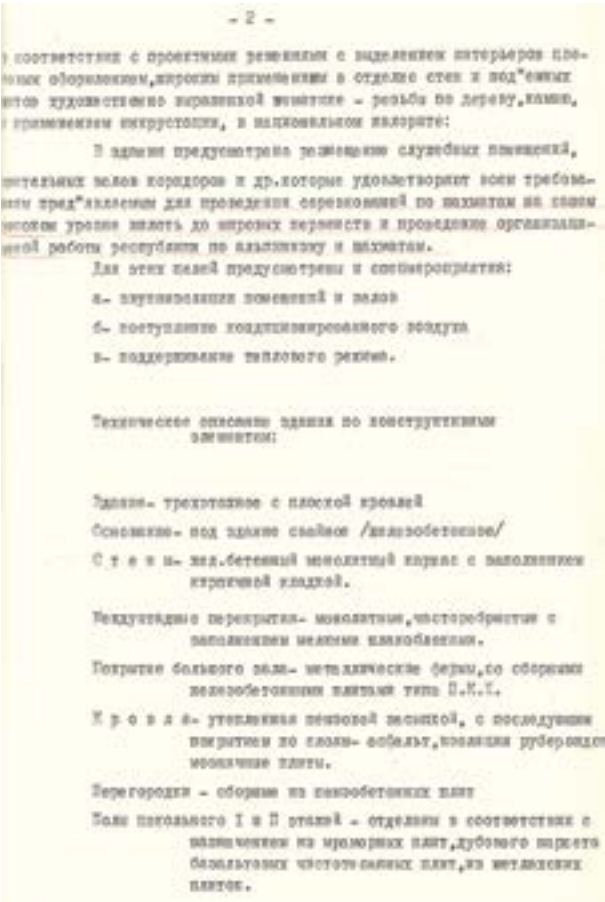
Presently the Tbilisi Municipality City Hall (TMCH) is the owner of the building. Since its opening in 1973, the building has been a state-owned property, interchangeably, at times under the central government (Ministry of Economic Development) and the local government (TMCH). According to news reports in 2002, despite speculations on the privatization of the building, the building was given to the Chess Federation. Later, the building was returned to state governmental ownership within the Ministry of Economy who then transferred the building to TMCH. As described in the previous subchapters, the building has shared the fate of Georgia during turbulent times. Beginning in the 1990s, the building suffered greatly as a result of inappropriate use, neglect, and temporary appropriation of parts of it by a criminal group.

According to publicly available information on the online portal of the National Agency of Public Registry of Ministry of Justice of Georgia (NAPR)²³ from 2012 till present, the building has been

under the ownership of the Tbilisi State Municipality. TMCH in itself (through its Agency for Property Management), has been regularly concluding agreements of gratuitous usufruct (that means the right to use freely), with the Chess Federation of Georgia and Alpine Club of Georgia for the different portions of the building.

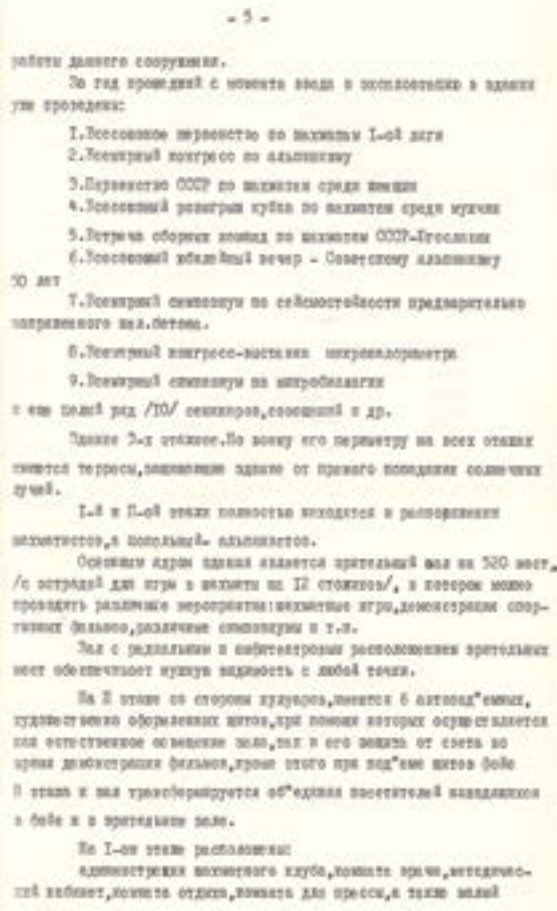
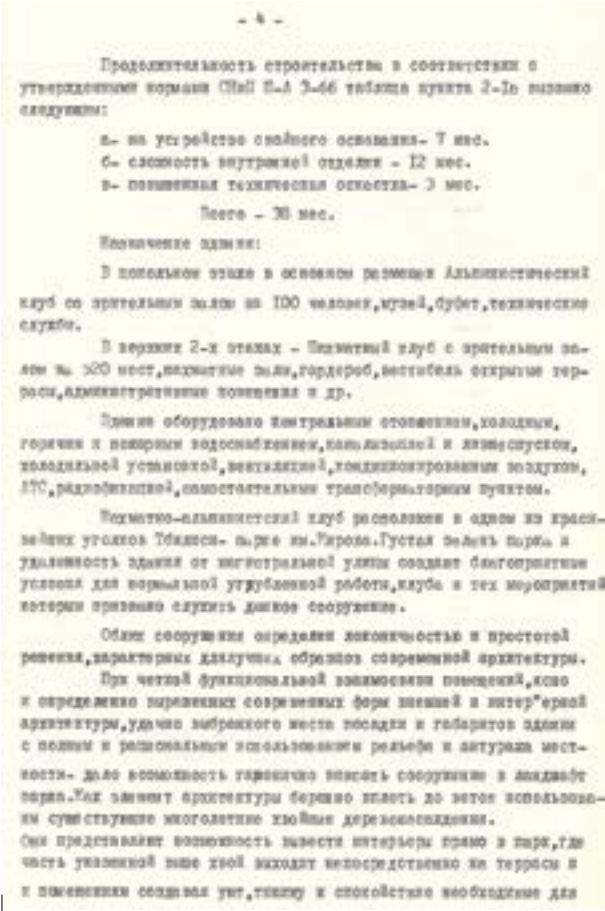
The latest agreement between the TMCH and the Georgian Chess Federation for the space of around 85 % of the building has been recently renewed in 2017 with a duration of 10 years. The Alpine Club also had an agreement of gratuitous usufruct (for the space of roughly around 13 % of the building) with the TMCH from 2013 till 2018, but it has not been renewed since then due to disagreement on the division of the space. There are also some spaces, like that of the museum which is not included in either agreement, including a former canteen space, which presently is a disputed space and is not in use.

²³ National Agency of Public Registry www.public.reestri.gov.ge



While it was impossible to find in detail out how the space of the building had initially been divided between the two sports organizations (the original documents only mention that the Basement Floor was occupied by the Alpine Club, an auditorium for 100 persons, museum, cafeteria, and technical rooms, while the upper two floors were used by Chess players), the latest agreements show that the Chess federation uses about 85% and the Alpine Club 13 % of the space.

According to the ordinance that regulates the conditions of usufruct the property is given to both users under direct disposition and usage. The ‘usufructuaries’ or the subjects of the usufruct agreement have their obligations: For example, they are “obliged to maintain, care for and protect the property and cover all the associated fees as well as the regular running costs and provide for steady operation of the transferred



Excerpt from Act of Approval. 1973 (In Russian) indicating the distribution of spaces between chess and alpine clubs

property. Usufructuaries may not transfer the property (rent out, sublease or lend) to a third party without the prior consent of the agency for property management of the TMCH.”²⁴

Beyond this, the agreement between the Chess Federation and the TMCH also defines that the building should be used only for chess-related activities. For example, they should utilize the property transferred by usufruct for implementing around 50 chess events throughout the year and the agreement further lists a few of such events, such as the European Women’s Rapid and Blitz

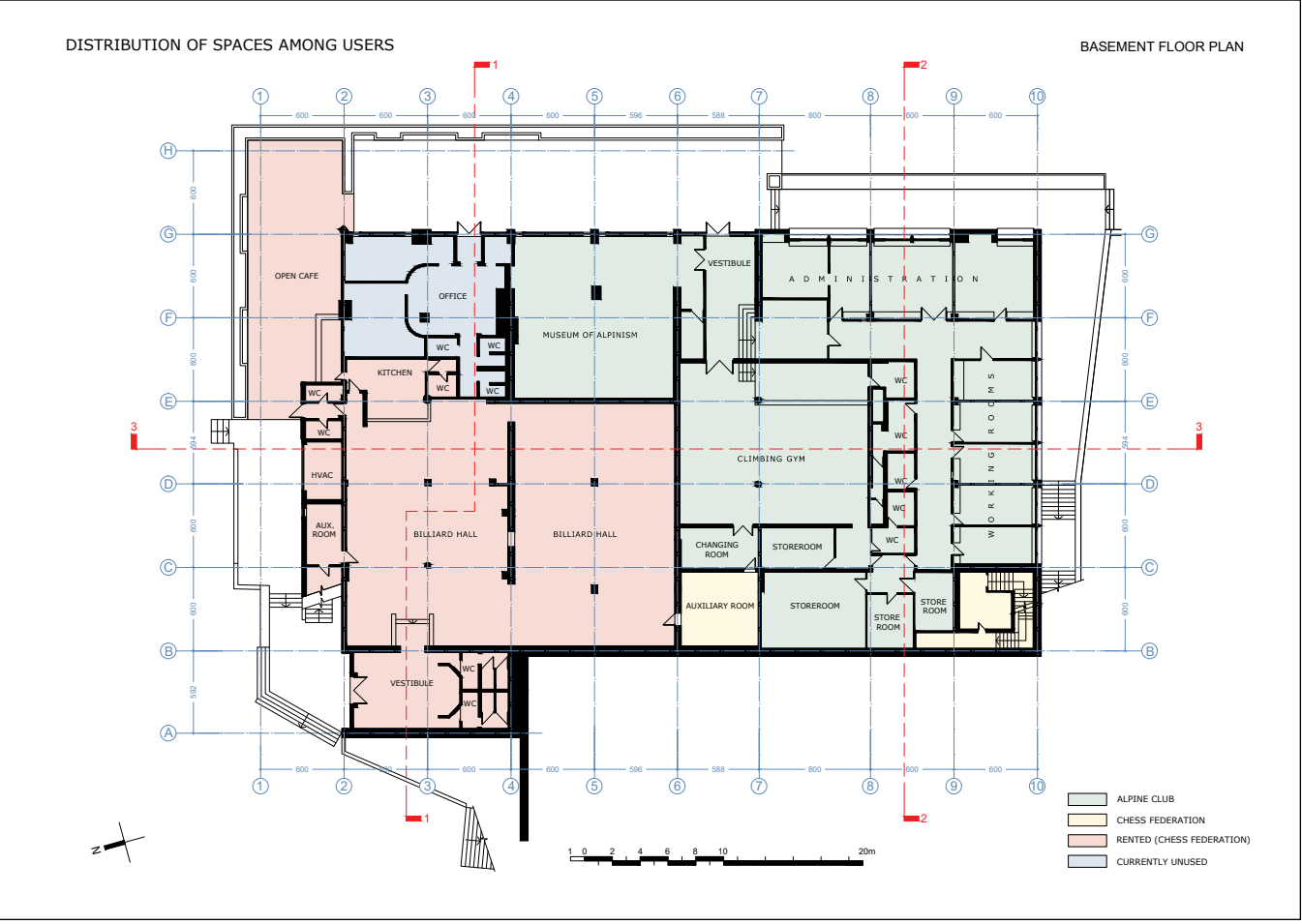
Championship, European Men’s Championship, Georgian Men’s and Women’s Championship, etc. The Chess Federation is also obliged to enroll no less than 100 students annually. According to the agreement, the federation is obliged to collaborate with TMCH and let it use the Main Hall five times a year upon demand.

Factually, at present, both sections of the building are mostly used for the activities related to the respective sports, while the Chess Federation is currently renting out portions of the property to gain additional income to cover its operational costs.

2.7.2. USE

While the following chapter on condition assessment also talks about the functional divisions of the space, as it describes its current physical state, here it is only briefly explained by whom and for what purposes the respective spaces are used. In the

section under the agreement between the municipality and the Chess Federation, a portion of the space is rented, while others are used by the Chess Federation itself.



²⁴ According to the usufruct agreement obtained from the TMCH Agency for Property Management

CHESS FEDERATION:

CHESS TV

The stage of the Main Hall, which was originally used for Chess tournaments, recently has been turned into a studio for *Chess TV*. The TV airs live tournaments and events taking place in the Chess palace and hosts programs in its studio.

While initially it was only broadcast on its YouTube Channel, currently it is also available on local cable TV. It employs 12

persons, mainly youth. Apart from the stage, the TV also occupies two more rooms on the third floor, which are also used for live broadcasts.

The Chess Federation uses the rest of the space for chess classes, tournaments, a waiting hall for parents where tournaments are aired live, offices, as well as the Chess Library.

RENTED SPACES:

TBILISI INTERNATIONAL CHESS ACADEMY (ACADEMY);

The Academy which has been established by a chess player and formerly a Continental President for Europe of FIDE Council, Zurab Azmaiparashvili in 2005, aims to train youth already advanced in chess and help them become chess professionals. Currently, it has 120 students and 20 coaches. The students of the academy come from various regions of Georgia and participate in European school championships, as well as World and European championships.

LTD. METROPOOL - BILLIARD CLUB AND CAFE;

A section is rented out to house a billiard game facility and its open café.

BILLIARD CLUB;

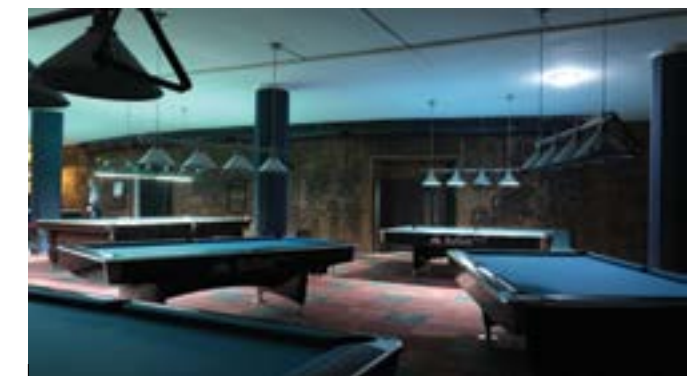
The billiard club has been the tenant on the second floor (in the space formerly a vestibule) for quite some time and already somewhat belongs there by default.

BRANCH OFFICE OF AN ELECTION ADMINISTRATION OF GEORGIA, FORMERLY A BEAUTY SALON;

EUROPEAN CHESS UNION'S PRESIDENT'S OFFICE.



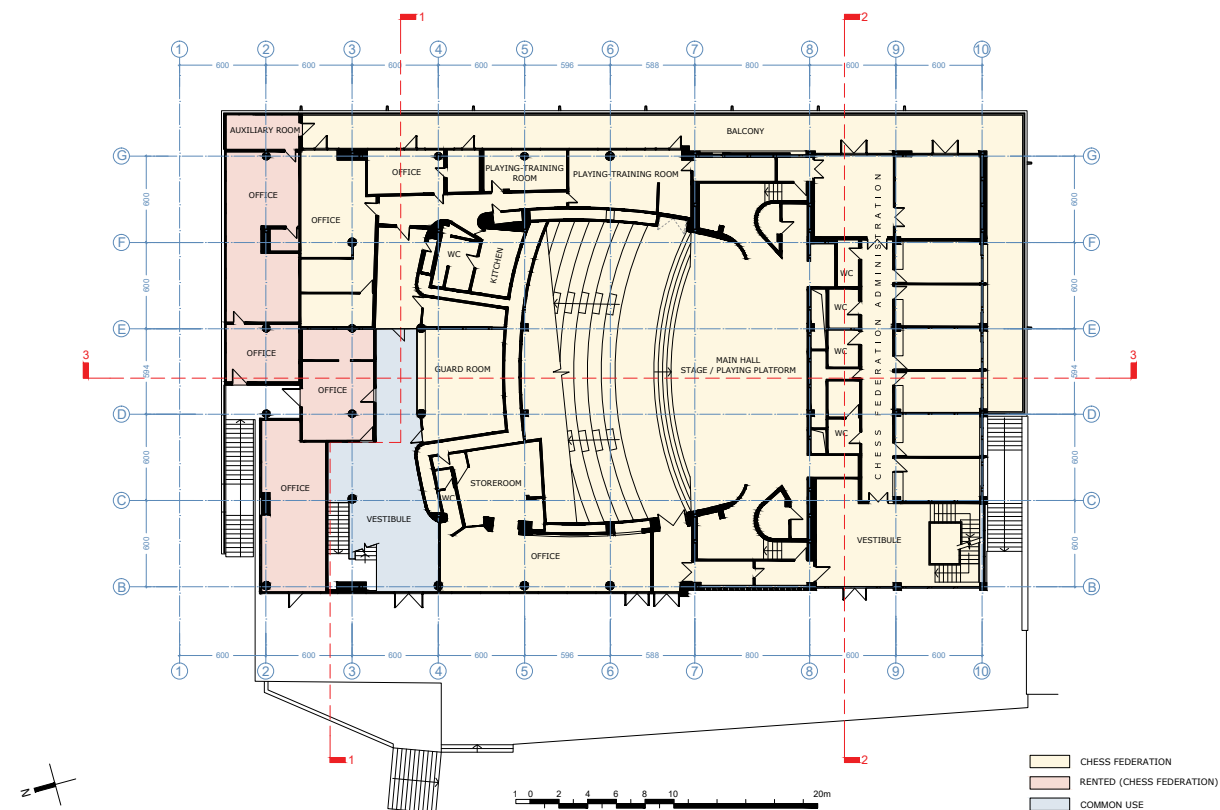
Chess TV Studio on the Stage of the Main Hall. 2020



Billiard Club Arranged in the Vestibule of the Second Floor. 2019

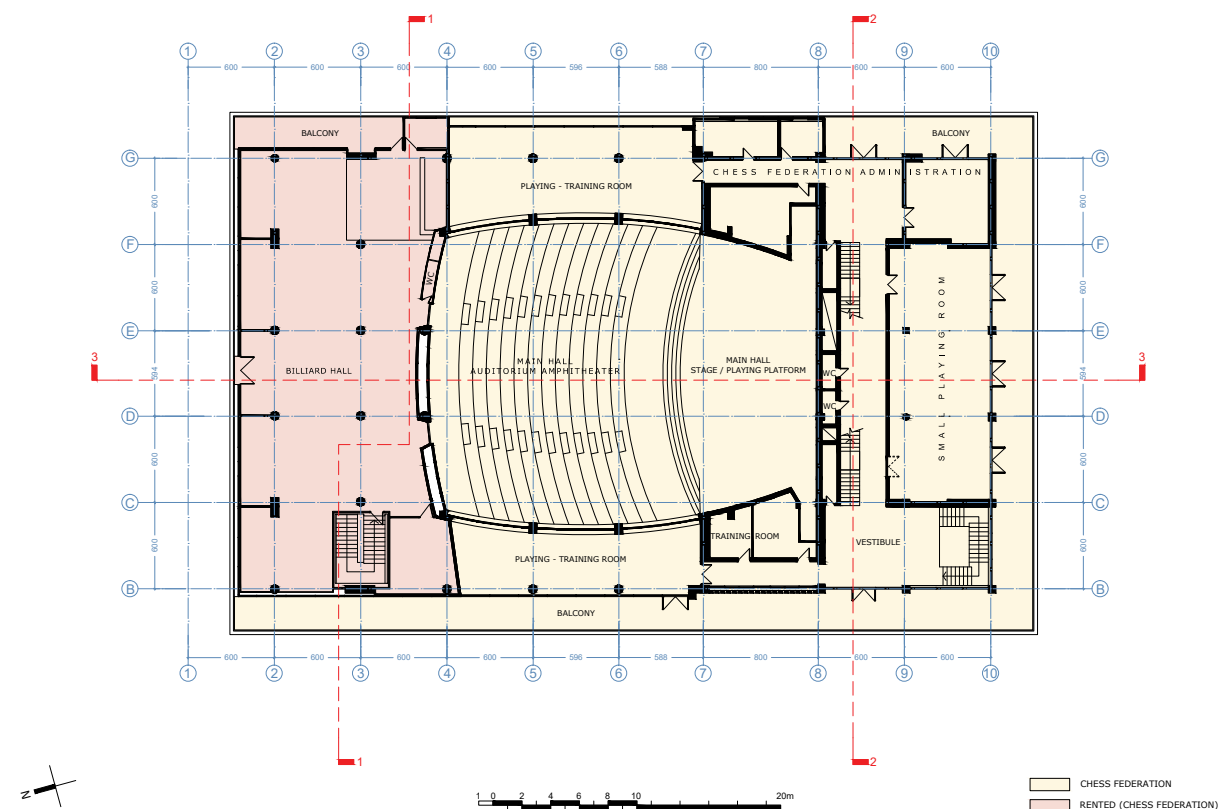
DISTRIBUTION OF SPACES AMONG USERS

FIRST FLOOR PLAN



DISTRIBUTION OF SPACES AMONG USERS

SECOND FLOOR PLAN



ALPINE CLUB:

The section of the building used by the Alpine Club has the following functional divisions:

OFFICES

There are a number of office spaces, but some are rarely used.

STORAGE

One room is used for storing mountaineering and climbing equipment owned by the club.

CLIMBING GYM

A small Climbing Gym - Pro Climbers is run by young mountaineers to train children and youth.

MUSEUM OF ALPINISM

The museum has a display of photos and artifacts telling the history of Alpinism in Georgia. While called a museum, it is not a registered entity and is only open upon request.

Besides the Alpine Club, which is a limited liability company (Ltd), created by the TMCH, an Alpine Club with a non-governmental status (NNLE) founded in 2014 is also housed in the same space. It is partially funded by the Ministry of Culture and Sports and employs five staff members. It supports the national team, both adults and children. This club is also using the building space on the Basement Floor for offices and storage of equipment.

UNUSED SPACES

Apart from the described uses, there is a certain section in the building, which due to the unresolved dispute between the two users, to this date, remains unused.

This disputed space amounts to about 100 sq. meters located on the Basement Floor between the Alpine Club and the open cafe, formerly a canteen, which now is not used by anyone.



Climbing Gym at the Alpine Club. 2020
Photo: Pro Climbers



Museum of Alpinism. 2019

2.8. LISTING STATUS - THE PROCESS TOWARDS THE STATUS OF AN IMMOVABLE CULTURAL HERITAGE MONUMENT

PROCESS AND POLICIES

Tbilisi Chess Palace and Alpine Club is now a listed building, and in fact, this is one of the primary outcomes of the project *Conservation of Late Modernist Architecture and its Sustainable Use in Georgia* funded through the Getty Foundation's *Keeping It Modern* initiative. It is worth noting that only two other buildings

in Tbilisi representing the Late Soviet Modernism period have the monument status granted to them in 2007.

On May 27th, 2019, with an Executive Order²⁵ of the Georgian Government, the Tbilisi Chess Palace and the Alpine Club building

was granted the status of the immovable cultural heritage. Before it came this far, there was a long and deliberate process of trying to gain the building statutory recognition, which lasted for several years.

In 2015, the Tbilisi Development Fund funded the drafting of the concept for the urban development of Tbilisi's historic district. The research area also included the Vera Garden where the Chess Palace and Alpine Club is located. According to the final document, the Chess Palace was included in the list of sites proposed for granting a monument status. At that time, the Chess Palace and Alpine Club did not get the individual listing.

Starting in 2015, through several exhibitions and research projects, the building came to the attention of a Georgian curator and researcher, Ms. Nini Palavandishvili, who set out to research its history and showcase its importance to the broader public. As a result of her work, several exhibitions took place in the building, while it was often a subject of her public talks in Georgia and abroad²⁶. As part of her work²⁷ around the structure, Nini Palavandishvili prepared an inventory card on the building and applied it to the National Agency for the Preservation of Cultural Heritage of Georgia (NACHPG) to consider its listing. (According to legislation, an inventory card of a cultural heritage object or monument is a document containing essential information for its identification and serves as an appendix to the legislative act granting it a status.)²⁸ The proposal was neither rejected nor approved, and several repeated actions spanning over the years between 2016-18 resulted into nothing. Although nowhere officially stated in writing, the unofficial response had been that the building was in a way already protected by being located within the boundaries of a listed park. (Vera Garden dated from the beginning of the 20th century has been listed since 2007) Indeed, the building was treated as a listed building and the regulations which pertained to the park were also valid for the building. As an example, when the Chess Federation, residing in the larger part of the building, decided to renovate the façade of the building a permit was required. The Tbilisi Municipality City Hall (TMCH) asked for the same documentation that would have been asked for a listed building.

Nonetheless, the project team working considered that individual listing as an immovable heritage monument would mean more robust statutory protection; therefore it was decided to try once more to apply to the respective agency for considering granting it the monument status. At the end of 2018, a nomination for listing

was submitted to NACHPG. The process took its usual route²⁹ as the NACHPG went on to inform the TMCH - owner of the building to seek its consent. TMCH, which had throughout expressed support for the project, approved of the initiative. As the process lasted for several months, and at times with limited feedback, it was feared that the nomination process could be blocked. To reinforce the application, the GNCBS team, including Nini Palavandishvili, reached out to the supporters of the building both locally and internationally. Four letters of support endorsing the nomination application and stressing the importance of the building were sent directly to the Minister of Education, Science, Culture, and Sport of Georgia (MESCS), the Tbilisi City Mayor, and the Head of the Architectural Division of the TMCH. The letters were signed by individual professionals and organizations, all of whom knew the building well and had some previous connection to it, such as Peter Zumthor, a Swiss Architect, David Berge, a Brussels-based artist, and Peter Stiller, a curator of an architectural exhibition in Vienna, Austria, and Nano Zazanashvili, Secretary-General of Docomomo Georgia.

As a next step, the NACHPG, after receiving positive feedback from the municipality architectural division allowing the agency to proceed with the listing procedure, presented the application together with the support letters to the Agency's Cultural Heritage Protection Council and namely its Section of Strategic Issues. The council is a consultative (advisory) body to the General Director of NACHPG with various sections. Its section on strategic issues, among others, advises on the granting of monuments' status. The council approved the listing proposal and further the process was handed over to MESCS, which prepared the draft of an executive order of the Government of Georgia and placed it on its agenda. According to Georgian legislation listing a building in Tbilisi requires an executive order issued by the Government. As a result, after about a five-month-long process, the building received monument status.

The immovable heritage status implies statutory protection under the Law of Georgia on Cultural Heritage, which sets out the basic principle for its protection, namely the preservation of the characteristics and the setting that define its historic, artistic, or any other value. The law also regulates its appropriate and permissible use. A use that must neither damage nor pose a risk to the building nor diminish its cultural or historical value. This includes any changes to its authentic elements which could deteriorate its perception. Most importantly, this new status prohibits any type of work on the building without a permit.³⁰

²⁵ The Executive Order # 1238 by the Government of Georgia on the granting of immovable cultural heritage status to an object located in the city of Tbilisi having cultural heritage value, May 27, 2019, www.mes.gov.ge/old/upload/editor/file/Brdzanebebi/2019/ivnisi/1238.pdf [accessed on 25.05.2020]

²⁶ How and Why Should we Protect Modernist Architecture; the Principles and Cases (Georgian National Committee of the Blue Shield, 2020) www.blueshield.ge [Accessed on 12.03.21.]

²⁷ In 2018 Nini Palavandishvili published a single copy artist book on the building called *War of Perception*

²⁸ Order of the Minister of Culture, Monument Protection, and Sports of Georgia №3/175 to adopt the regulations on the documentation forms for the inventory of monuments, October 1, 2007, Tbilisi. Art. 3.1. The Legislative Herald of Georgia www.matsne.gov.ge/ka/document/view/73090?publication=0 [accessed on 20.05.2020]

²⁹ Law of Georgia on Cultural Heritage, May 22, 2007. Chapter 5, Article 15, point 3. The Legislative Herald of Georgia www.matsne.gov.ge/en/document/view/21076?publication=13 [accessed on 28.05.2020]

³⁰ Ibid. Chapter 6, Articles 22-24.

Tbilisi Chess Palace and Alpine Club
Photo: Rand Eppich. 2019

CHAPTER 3: DESCRIPTION OF THE BUILDING AND CONDITION ASSESSMENT



INTRODUCTION

The present chapter gives a comprehensive description of the building and an analysis of its current physical condition, damages, and the negative factors causing them. It combines the results of a multidisciplinary research, including a detailed condition assessment study of the building, measured drawings and photo documentation.

In this chapter, the building's almost 50-year existence and the architectural and functional changes implemented during these years are analyzed in the context of the integrity of the fabric of the building. Due to the complexity of the needs of the building, multidisciplinary research was conducted. In the first stage, archival materials were retrieved and studied, including the original and a later, slightly modified project of the building, photo-archive, and other historical data related to the building. A complete architectural survey of the building was carried out, which revealed later architectural and structural changes. Based on visual observations, the sustainability of the structural

elements of the building was assessed, the risks and needs in this regard were identified, and a laboratory study of the construction materials was carried out. The sustainability and safety of internal mechanical systems were assessed. The analysis of the results of these studies provided a complete picture of the development history of the building and revealed the specific needs of both the building and its users.

The chapter is divided into further three subchapters, where specific aspects related to the state of conservation of the building are discussed thematically.

In the first subchapter, all the spaces and details of the building are described. The 2nd and 3rd subchapters are dedicated to the history of physical alterations, a detailed description of the existing damages, and a brief synopsis of the sustainability assessment study of mechanical systems performed during the research phase.



South-western Façade. 2018

3.1. GENERAL DESCRIPTION OF THE BUILDING

Located on an inclined slope in Vera Park, The Tbilisi Chess Palace and Alpine Club represents one of the best examples of openness and integration with the environment.

Rectangular by design, the structure has three floors, including the Basement Floor.

Due to the location's relief, the slope, the number of floors varies according to the façades: the building has two floors on the northern or uphill side and three floors on the downhill eastern side. The building has flat roofing with an open terrace on the roof.

The building's architectural appearance is conditioned by the balconies along the entire perimeter of the building, large floor-to-ceiling windows, and stone-clad façade walls. Unlike other façades, the western façade of the building is accentuated by a decorative stone wall that, in addition to the architectural function, has a symbolic significance. The decorative walls are checkered with the queen's crown-shaped stone blocks. The emphasis on the shape of the Queen's crown and the use of

checkered pattern on the façade is linked to the victories of the female chess player.

The architectural composition of the building includes reinforced concrete stairs on the north and south, finished with basalt tiles, which perfectly fit into the relief of the environment and create a link between lower and upper terraces.

The whole perimeter of the building, on both floors, is surrounded by balconies, most of which presently are walled up.

The exterior is clad with locally available material: basalt tiles for the ground floor and Kutaisi *Eklari* (limestone) stone for two upper floors are used. Rectangular basalt tiles are laid on the balcony and terrace floors.

The interior of the two main floors of the building is designed around the Main Hall, accommodating an audience of 520 persons, and is divided into two main functional zones – administrative and visitors' (public) zones.



Southern Façade. 2019



Cantilever balcony and aluminum vitrage. 2019



Western Gallery. 2019



The Main Hall. 2020



Decorative Stone Wall on the West Façade



The Main Hall. 2020



Eastern Gallery. 2019



Library. 2019



Interior, small playing hall in the southern part of the building. 2019

The galleries and the vestibule around the Main Hall, on two floors, which previously represented one large bright area, are now divided into spaces of various sizes. This part of the first floor is occupied by study rooms and offices of various purposes, while the second floor is arranged a Billiard Hall. On the south of the Main Hall, on the first floor, there are spaces for the administration of the Chess Federation, with independent sanitary facilities; in the same part of the second floor, there is a Small Playing Hall and a Library. In the administrative zone as well as on the terrace floor, sanitary facilities are aligned on the same line, on top of each other, adjacent to the ventilation shaft behind the stage. The interior of both floors of the northern part of the building, once representing large and well-lighted vestibules, are presently partitioned.



A Staircase in the Administrative Zone. 2019



Random Pattern of Granite Floor Tiles. Administrative zone. 2018



Staircase Leading to the Terrace. 2019



Sadakhlo Marble Tiles of regular Shape and Size Used as Flooring. Vestibule. 2018

The first and the second floors are connected with two monolithic reinforced concrete staircases, clad with marble slabs, located in the south-west and north-western parts.

From the second floor, two staircases, located on the same axis and facing each other lead to the terrace on the roof of

the building, which was implied to be used during summertime (cafeteria, open playing terrace).

The distribution of exterior and interior staircases, vestibules, and balconies provided free circulation of large and small groups of visitors horizontally and vertically around the Main Hall. The

scheme of circulation was altered and disturbed due to the later interventions.

Offices of the Alpine Club, museum space, and a Climbing Gym, which initially had the function of an event hall – auditorium and a projection booth are located in the southeastern part of the Basement Floor.

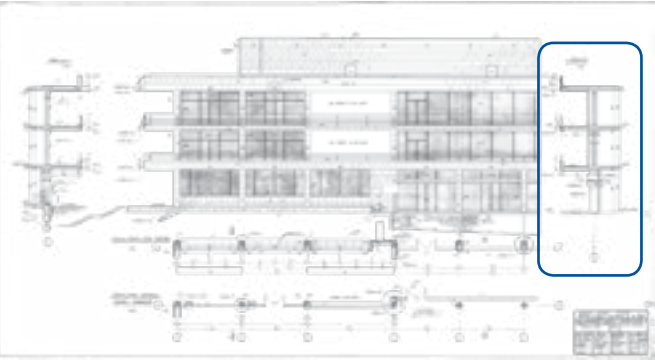
The spaces next to the Climbing Gym, in the northern part of the Basement Floor, are occupied by the billiard hall, its technical spaces, and an open café; The open café extends over a terrace. The former canteen space, located on the western side of the building is presently without function.

On the west end of the Basement Floor are utility rooms of the Climbing Gym and technical spaces of the building (The current functional division of the building is discussed in detail in Chapter 2.7. Ownership and Use).

STRUCTURAL CHARACTERISTICS

The building represents a monolithic reinforced concrete frame structure, built out of prefabricated ready-cut components. The main load-bearing structure of the building is connected to the ground (a solid rock stratum) by reinforced concrete piles connected with insert-type reinforced concrete grillage and randbalk.

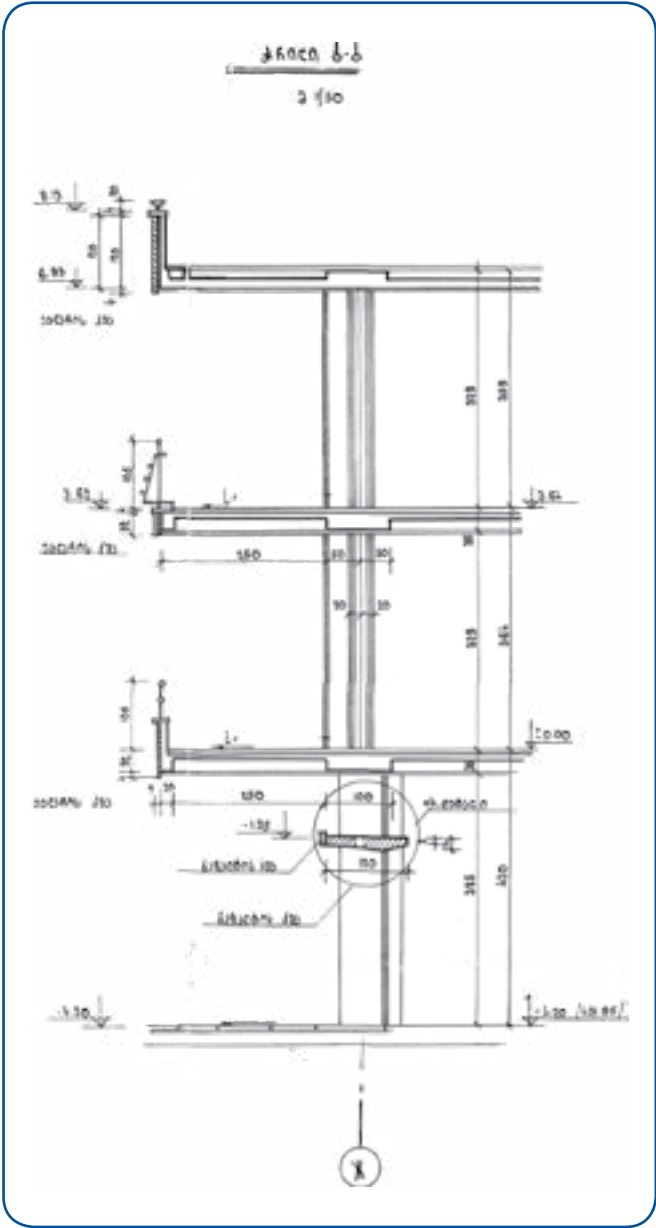
Reinforced concrete columns of the structure above the ground are connected by girt rails (horizontal structural members providing lateral support), which represent a monolithic reinforced concrete structure of the same thickness as an inter-floor slab (33 cm). This was a kind of innovative solution for the period of construction in the Soviet space. Due to the uninterrupted flat ceiling and reduced thickness of the horizontal beams, the optimal height of the floor was achieved, at the same time this allowed floor-to-ceiling windows to be arranged on the façade.



Fragment of Façade
Original Project. 1965
National Archives of Georgia

The main walls and the ceilings in the interior of the building are plastered with gypsum – earth plaster (Georgian Gaji) and covered with oil paint. On the floors of the vestibules and galleries, local black marble slabs are laid; interior stairs are clad with similar slabs. Light-colored tuff slabs are used to decorate the columns and decorative partition walls existing in the vestibule and the galleries. Marble slabs are used as plinths of the floor, stairs, and columns. Wooden parquet is laid on floors of the administrative zones on both floors, except the quarter landing of the stairs.

A slightly different picture from the main space of the building is seen in the Main Hall. The cladding materials here are dominated by wood, which is used to decorate the ceiling and vertically sliding partition walls. The main walls, like other spaces, are plastered with natural gypsum – earth plaster – Gaji and painted with oil paint. Soft carpet flooring covers the floor and the stairs.



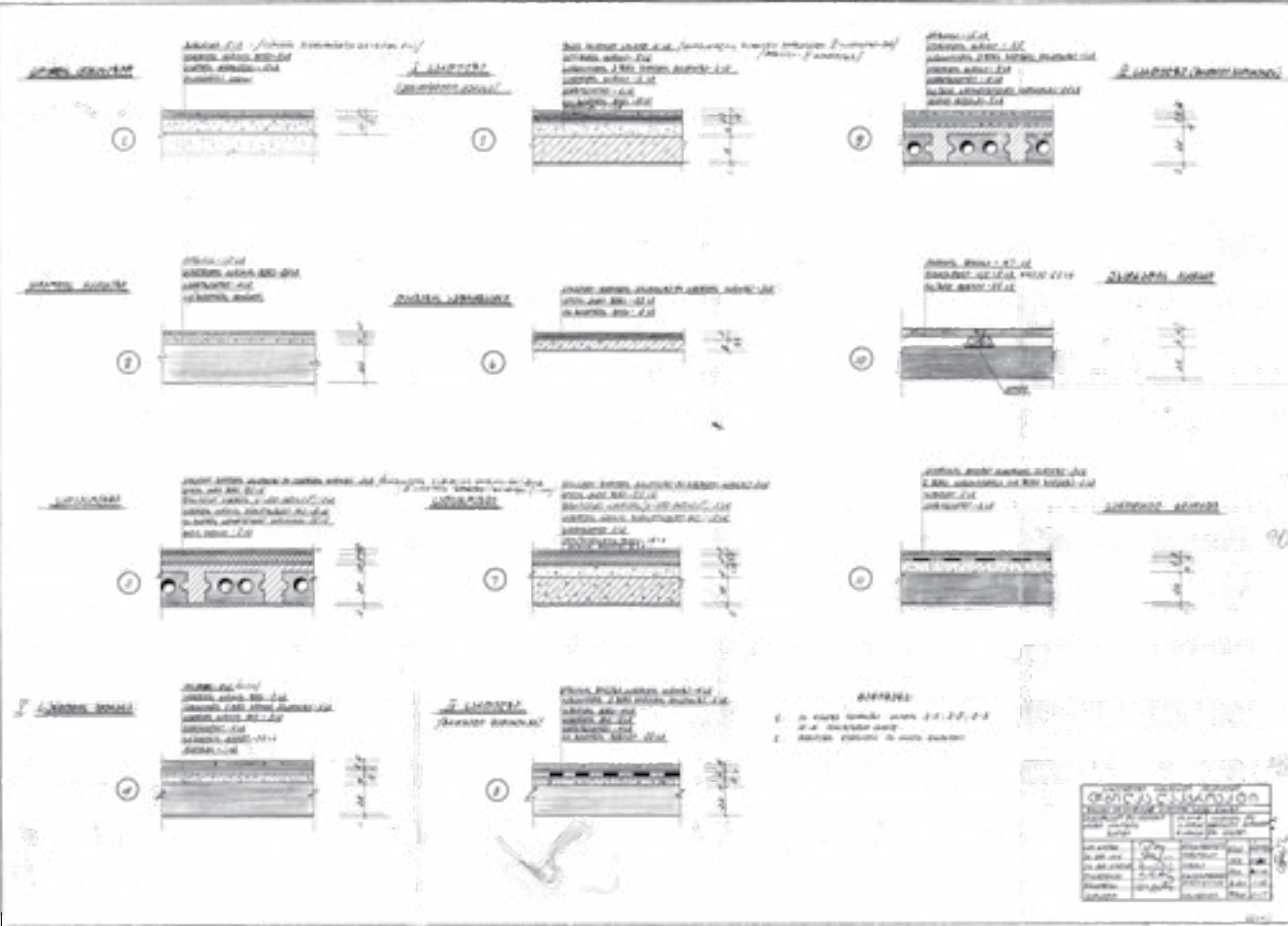
Various materials are used for filling in the monolithic wireframe and for partitioning the spaces, namely: Calcium-silicate brickwork and precast pumice-concrete slabs.

To achieve a high level of structural load capacity and sustainability, there were three types of inter-floor slabs used in the building. In one case, dense-span monolithic fine-grain breeze blocks, and in another case, inter-floor overlapping made of reinforced hollow-core concrete slabs. The roof structure span over the Main Hall differs from these two systems; it represents a precast concrete structure supported by 21-meter metal trusses.

In the inter-floor slabs, in all cases, insulation layers were used, namely layers of pumice, asphalt, and waterproofing insulation. Those were finished with various types of flooring materials.

Building materials used for structural purposes were characteristic for the period of construction and consist of mainly prefabricated elements and precast structural details, with a cement and steel reinforcement acting as a binder; and granular gravel aggregates and sand of various sizes as a filler.

The structural survey of the building (See Appendix # 1: Structural Survey of the Building) revealed that the structure of the building is sufficiently durable, it doesn't require reinforcement of structural and load-bearing elements or other significant structural interventions. According to the engineering study, later additions, such as built-in walls and unstable condition of the non-load-bearing, silicate brick walls were identified as negative factors affecting the structure of the building.



Inter-floor structure types
Original Project. 1965
National Archives of Georgia

DECORATIVE ELEMENTS, FURNITURE AND SMALL ARCHITECTURAL FORMS

While the Chess Palace and Alpine Club with its clean logical structure, large paned openings, and polished surfaces, represents a modernist building, it creates a warm and welcoming environment. This is due to the interior decorative elements that were designed particularly for the building. The interior of the building, which was designed according to the main concept of an artistic-architectural idea – that is the union with the environment, is decorated with simple but deeply symbolic decorative elements.

The idea of unity with the environment was skillfully implemented by the architects by incorporating wide openings on the entire perimeter of the interior, facing towards the park. This enhances the feeling of proximity to the environment and provides an opportunity for visual communication with the park. It also allows natural lighting into the interior and ventilation of spaces.

The interior is divided into simple, spacious, and wide spaces, as it is characteristic for the period of construction, the interior is not over-decorated. Its uniform artistic appearance is formed by the details, created with the combination of two types of facing materials and decorative elements, adorned with thematic chess compositions, inspired by the main idea of the construction of the building. The major part of the named elements is concentrated



Chess Table. 2016
Photo: Gogita Bukhaidze

in the Main Hall and the vestibules. These details, in addition to artistic values, have specific functional significance and represent an inseparable, highly valuable part of the building. Techniques and methods of artistic processing of stone carving and wood cutting are used.

STONE DECORATIVE ELEMENTS



A partition faced with artistically processed stone slabs in the vestibule of the ground floor. 2016

Artistic stonework can be found both in the interior and exterior of the building, such as the decorative stone wall on the western façade, which is assembled with crown-shaped limestone blocks, arranged in a checkered order. Limestone slabs are laid horizontally between the crown-shaped stones, which are connected with a cement mortar. The massive stone crowns were cut out with an electric cutter, their surfaces are processed, however, the traces of the multifunctional electric tool are still noticeable. The decorative stone wall was placed on the façade to highlight the subject and main idea of the construction of the building, which is related to the success of the female chess players.

In the interior, decorative stonework can be found in three places: One of the partition walls clad with carved stone slabs can be found in the central entrance of the Basement Floor, two others in the western and eastern parts of the vestibules of the second floor. Those two partitions divide the administrative and public spaces of the building from each other. The partition is finished with tuff slabs of various sizes, with graphic and symbolic compositions of the chess figures on their surfaces.

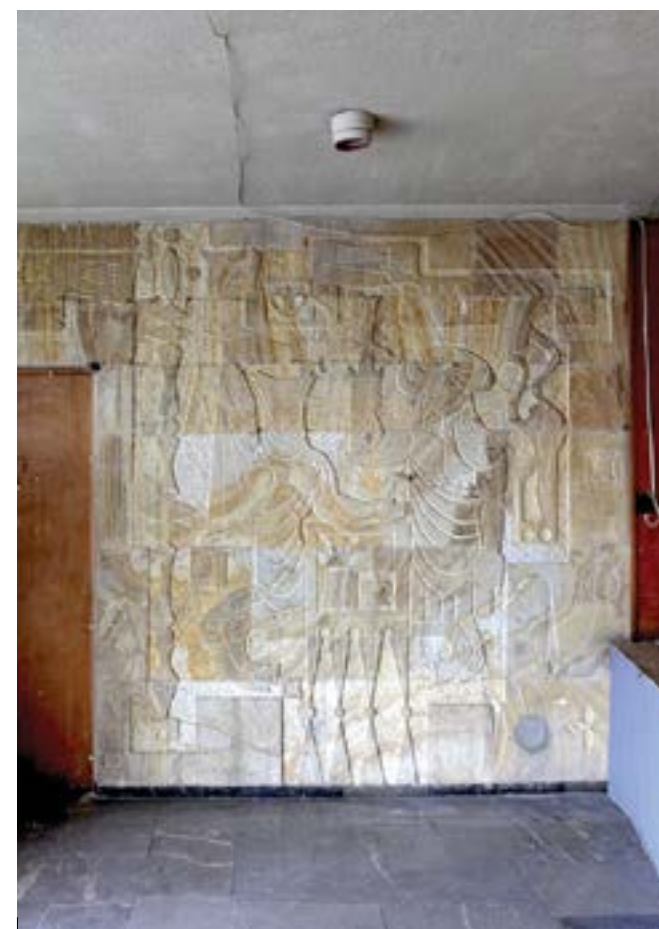
The graphic reliefs on the stone cladding are created by linear, rigid cuts. The depth of the reliefs does not exceed one centimeter and is of equal depth almost everywhere. The artistic texture of the surfaces of the slabs is achieved by employing two types of processing, in one case the stone is finished neatly, in another case the way of processing leaves a rough and textured surface, which due to the contrast of the lights and shadows gives more artistic appearance to the stone-cut compositions. The artistic effect of the stone is intensified by the specific structure of the stone and the presence of a layer of iron-rich patina on the surface.

Two types of stone cutting tools are used for stone processing, double-toothed, and single-toothed wide edge chisels. The surface of the stone has also traces of an electric cutter.

It should be noted that this type of surface processing is more typical for wood carving.



Detail of the wall faced with artistically processed stone slabs. 2020



Interior, a wall of the eastern gallery artistically processed stone slabs. 2016
Photo: Gogita Bukhaidze



Interior, a wall of the western gallery faced with artistically processed stone slabs. 2016
Photo: Gogita Bukhaidze



Vertically Sliding Panels. 2018

WOODEN DECORATIVE ELEMENTS

A small number of monumental decorative elements are used in the interior, which makes the space appear more spacious.

These details represent monumental works of art and their scale is adapted to specific spaces. Like the stone decorative elements, the surfaces of the woodwork are artistically processed and decorated with chess motifs.

Decorative elements are mainly concentrated in the Main Hall and vestibule; some elements are also found on the Basement Floor. The woodwork is made with different techniques of artistic processing. Both massive, OSB (Oriented strand Board) and plywood, the surfaces of which are processed with wood carving and marquetry technique are used.

The Main Hall, which was the main functional space of the building from the very beginning and was intended for chess events and championships, showcased the concept of the interior design the best. Here a ceiling is assembled of wooden decorative panels that give a visual effect of checkered surface (through the installation of the panels, creating shadowy and light areas) imitating a chessboard.

Significant elements of the décor of the Main Hall are the double-sided, monumental, vertically sliding panels serving as partitions, dividing the hall and the side vestibules. These panels open up the Main Hall space to the side galleries. The double-sided panels are assembled from rectangular plywood of various sizes and are attached with metal nails to a solid wooden base. On the surfaces of both sides (Main Hall and the vestibule) of



The interior of the Main Hall and Vertically Sliding Marquetry Panels. 2016
Photo: Gogita Bukhaidze



Vertically Sliding Marquetry Panels. 2019



A Monumental Woodcut Panel. 2019

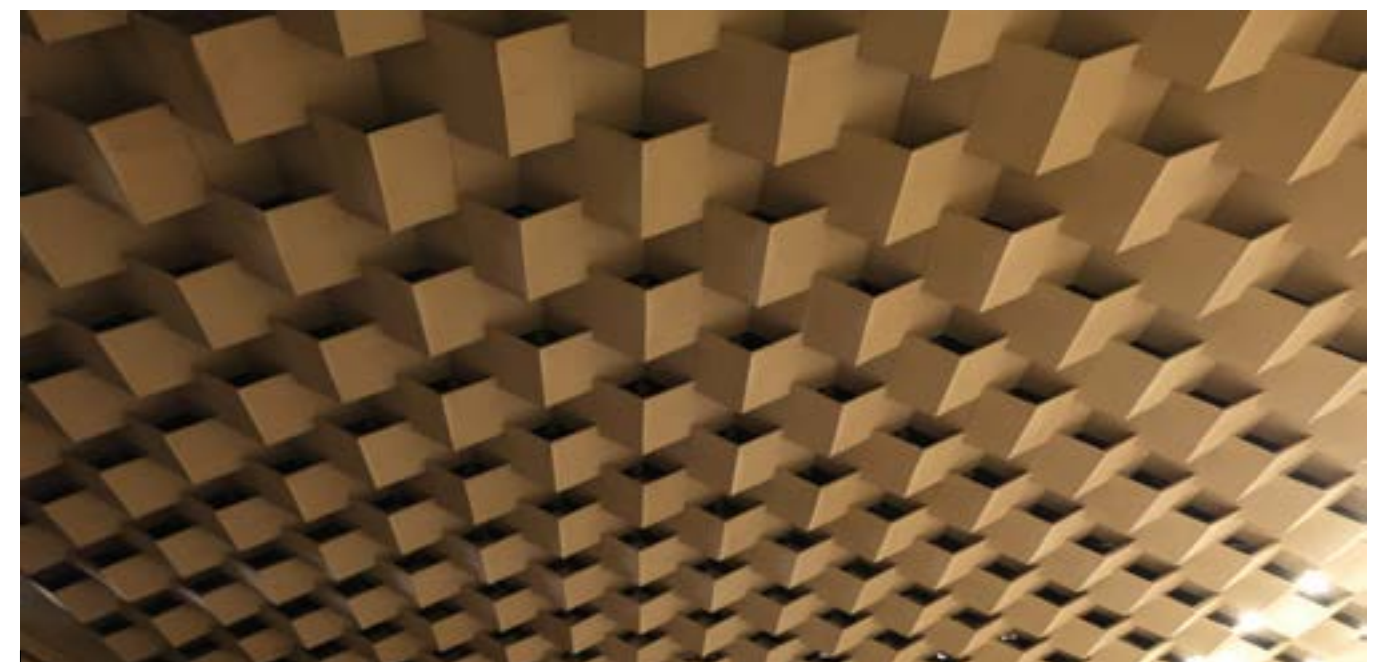
the plywood, there are graphic compositions carried out in the technique of marquetry. The unique construction responsible for moving the panels which presently is amortized is made of metal; both cables and lifting mechanisms are also metallic.

On the rounded wall of the Main Hall (near the entrance), a wood-carved monumental panel is installed. On the panel, like in other decorative elements, the subject matter of the compositions, is chess. The monumental wooden panel is assembled from thick planks of various sizes and is attached to the wall with metal nails. The compositions are deeply carved on the surface of the panel.

The marquetry technique was used for relatively smaller compositions, hanging on the side galleries' walls, of which only one (the initial number of the compositions is unknown), has survived until today, located on the first floor, in the entrance of the Main Hall.



A Monumental Woodcut Panel. 2016



The Ceiling of the Main Hall. 2019

OTHER FUNCTIONAL ELEMENTS (FIXTURES AND FITTINGS)

Other decorative elements of the interior also play an essential role in creating the building's artistic interior and reflect both the architect's vision and the specific features of the architectural style.

These details are metal railing of the balcony and internal staircases, ceramic lamps in the vestibule and aluminum lamps in the Main Hall; stamped metal plates, used for numbering seats in the Main Hall and the furniture dating back to the construction period of the building, designed specifically for it.



Ceramic Lamps. 2018



Aluminum lamps of the Main Hall stage. 2019



Chairs of the Main Hall. 2019

3.2. HISTORY OF CHANGES AND INTERVENTIONS

This subchapter recaps the inappropriate interventions that have changed and damaged the building's physical fabric over the decades. While most losses and intrusive additions took place in the last decades of the 20th c., ad hoc and insensitive rehabilitation works of more recent years also partly disrespected the building's material authenticity and the physical fabric. Both periods of interventions are grouped and described in the respective sections.



East Facade. 2016
Photo: Gogita Bukhaidze

3.2.1. CHANGES AND INTERVENTIONS IN THE 20TH CENTURY

As a result of harsh physical history, the building's appearance has been altered. The changes are especially dramatic in the interior, where the initial design idea – openness to the surrounding area, as well as the architectural union of the exterior and interior – is disturbed. Changes in the original planning and overall architectural concept are mainly related to later interventions and functional redesigning of spaces. This was conditioned by the needs of users, namely additional revenue, functional adaptation, and the emergence of other needs.

The partial change in the function of the building from the end of the 90s and the appearance of new administrative units created the need for independent spaces in the interior. The structure of the building, manifested in wide openings, cantilevered, open, surrounding balconies, large size public space (Main Hall), and an opportunity of free movement in the interior, allowed the users to inadequately intervene in the internal planning, significantly damaging its authenticity.

Due to the emergence of new functional units in the building, various inappropriate interventions were gradually implemented

in the interior space: On both floors, partition walls were installed and the large gallery around the Main Hall was subdivided into several individual spaces. On the second floor, large windows were closed up with light-framed structures. In some places, parts of the balcony were enclosed with glass and/or walled up, at the expense of which the interior spaces were expanded.

These interventions led to the partial re-planning of the internal engineering network and the emergence of new electrical, sewerage, and ventilation networks, which also had a negative impact on the established architectural appearance of the interior.

In addition to the above, important elements of décor were physically damaged, and in some places were lost. The perception of the open space of the interior and the initial trajectory of the movement, that provided uninterrupted access of the visitors, players, and administration representatives to all the spaces of the interior was also disturbed.



Eastern façade, before interventions
Germane Ghudushauri Private Archive



Eastern Façade of the Building. 2020

BASEMENT FLOOR

On the Basement Floor, a significant change of the internal plan, the partition of the spaces, and the removal of load-bearing walls did not occur. Here the original planning of the space is more or less preserved. However, the functional distribution of the spaces is altered.

BASEMENT FLOOR PLAN



- The central part of the Basement Floor, where an Auditorium was planned, was turned into a Climbing Gym for mountaineers and rock climbers, while the technical rooms of the hall are used as equipment storage and restrooms.
- Space originally designated for and currently still used as a Museum of Alpinism, which used to be connected to the canteen and was separated from the open corridor by a decorative folding partition screen, presently is closed up from all sides and has only one entrance. Big windows of this space on the northern façade are closed up with light, metal construction.
- In the northwestern part of the building, in place of the canteen and engine room, there is a billiard hall, which has existed in the building since 2000.
- The space planned as a canteen in the northeast is unused for the time being.

FIRST FLOOR

The dramatic change of planning and inadequate use of space is evident on the first floor of the building. This change is related to the division of the central vestibule and gallery space into individual rooms with various new functions.

The former open and wide corridor in the eastern part of the first floor is presently partitioned and divided into six office spaces

of various sizes; for this purpose, the location and distribution of initial sanitary facilities are altered. The second sanitary facility in the visitor zone has been removed and space is used as an auxiliary storage room.

Both light constructions and brick partition walls are used for the division of the space.



Staircase in the northwest of the interior before alterations
Photo: Germane Ghudushauri Private Archive



Staircase in the northwest of the interior. 2020



Gallery on the eastern side of the first floor, before alterations
Photo: Germane Ghudushauri Private Archive



Vestibule on the eastern side of the first floor. 2020

SECOND FLOOR

Similar to the first floor, intrusive alterations were also made on the second floor.

The open and well-lit central vestibule was partitioned to accommodate new functions. In the eastern and western galleries, the chess-playing room and classrooms were set up.

The number of sanitary facilities and their spaces were enlarged at the expense of the ventilation shafts, existing in the southern part of the Main Hall stage; for this reason, the shafts were closed and functionally abolished.

Due to the installation of offices onto the balconies surrounding the building, many of the original aluminum windows and doors were altered or removed.

Inappropriate and incompatible actions were also performed with regards to the architectural details, existing in the interior. Inadequate interventions caused substantial physical and mechanical damage to the architectural and artistic details, such as the cladding of the columns in the present billiard hall, which were painted numerous times (with different types of paints of various colors).

On the monumental woodcut panel in the billiard hall brackets for holding billiard cues, large pipes for heating, ventilation and air-conditioning, and various types of hooks were installed.



Eastern Gallery on the second floor before alterations
Photo: Germane Ghudushauri Private Archive



Eastern Gallery on the second floor. 2020



Staircase on the north-east of the building before demolition
Photo: Germane Ghudushauri Private Archive



North-east part of the building where the staircase was located. 2020



Northern Gallery of the first floor before alterations
Photo: Private Archive of Germane Ghudushauri



Northern Gallery of the first floor. 2020



Northern Gallery of the second floor before alterations
Photo: Germane Ghudushauri Private Archive



Northern Gallery of the second floor. 2020

ADDITIONS

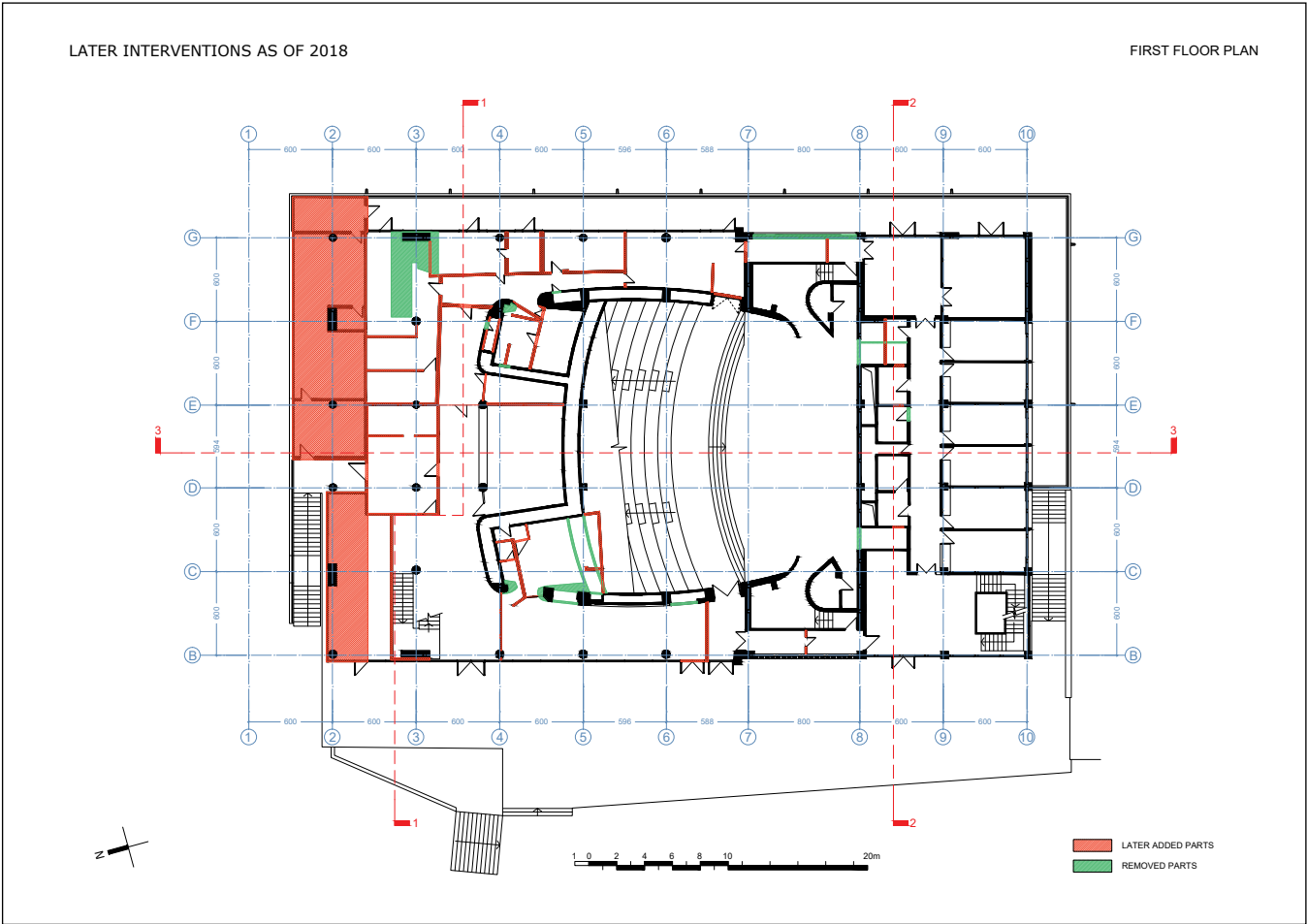
As a result of the changes discussed above, newly added volumes and architectural elements have emerged in both the interior and exterior. These additions change its external silhouette and obstruct the perception of the overall integrity of the building, as well as the openness of the interior space.

BASEMENT FLOOR

To arrange a café, the space under the stairs of the first floor, to the north of the building, was enclosed and later extended onto the terrace. This formerly open space was enclosed with light metal construction. This café completely occupied the north-eastern corner of the terrace, surrounding the building and disrupting the view into the park below.

FIRST FLOOR

To extend the internal space, the northern balcony of the first floor where the offices of the Chess Academy and European Chess Federation are accommodated was completely walled up.



SECOND FLOOR

To extend the billiard hall, the entire perimeter of the balcony on the second floor was added to the internal space. For this reason the balcony, surrounding the building, was walled up. The northern corner of the eastern balcony was also walled up and is used as an additional space for the billiard hall.

In addition to the above-mentioned, an individual playroom

appeared at the expense of a partitioned gallery to the north of the building.

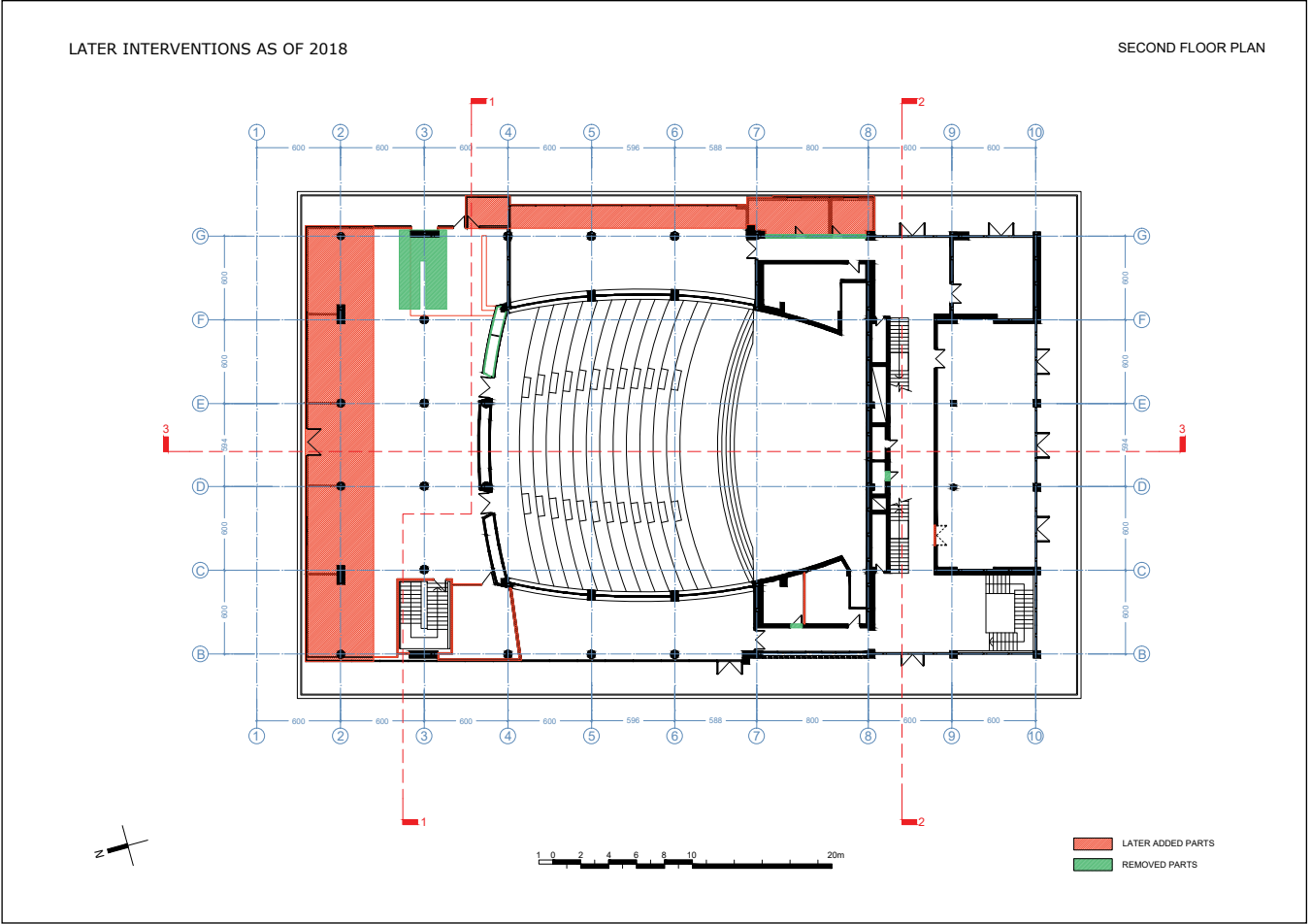
The doorways to the Main Hall, originally located on the southern wall of the former vestibule and now billiard hall interior, have been abolished and sanitary facilities have been arranged in these spaces.



Photo from a Russian Country Guide on Georgia. (Georgia - Грузия, Publishing house: ПЛАНЕТА, 1983)



East Façade. 2016
Photo: Gogita Bukhaidze



LOSSES

Over the years, many architectural and artistic details were lost due to multiple alterations and functional changes in the spaces. In some cases, incompatible use of specific spaces caused loss and damages of architectural details, in other cases, the artistic value of such details was not understood and appreciated.

Identification of losses of artistic elements of the building was mainly possible as a result of research of historical photos and original architectural drawings.

Changes in planning and function of the interior space resulted in the loss of parts of two original staircases, located in the northeast of the building and designated for visitors. Only two staircases, located in the northwest (between first and second floors) survive nowadays, while the staircase to the northeast has been completely demolished. In the place of the lost staircases inter-floor overlapping and partitions, dividing the spaces were set up.

Original planning made it possible to get from the ground to the second floor through two staircases – to the northwest of

the building (visitor zone), which was demolished, and to the southwest (administrative zone), which was blocked. For this reason, the internal connection between the basement and two upper floors has been practically abolished.

The wooden decorative partition screen of the Basement Floor, located in the space presently occupied by the museum, symbolically dividing canteen and museum spaces, was lost under unclear circumstances. The fireplace, which does not exist anymore, was also located in this space. Like wooden partition screens of central heating radiators on the Basement Floor, the artistically processed decorative wooden panel of the canteen, existing on the same floor has not survived to the present day.

Decorative monumental panels of the galleries of the first floor, made in marquetry technique, which were the only decorative elements of the gallery of the first floor, are also missing.

Original technical equipment neither for stage lighting nor for cinema projection exist anymore.

3.2.2. CHANGES AND INTERVENTIONS IN THE 21ST CENTURY

REHABILITATION WORKS DURING 2016 - 2018

In 2016, at the request of the Georgian Chess Federation, the project for (application # AR1389240 permit # 2544751) *Small Scale Rehabilitation Works*³¹ of Tbilisi Chess Palace and Alpine Club was submitted to the Cultural Heritage Preservation Council of Architectural Service of TMCH for approval. According to the project, complete rehabilitation of the façade of the building, removal of later additions, improper architectural elements and banners and renewal of stone cladding of the façade were envisaged. The works, planned within the project, besides the sections used by the Chess Federation, also included part of the façade of the Alpine Club. Besides, the project also implied the removal of late built-in parts.

In 2016, the above-mentioned project was only partially implemented. Stone cladding of the western façade of the building and stone water scuppers (drainage pipes) were removed and replaced with new ones; disrespectful grillwork

and advertisement banners were also removed. Throughout the works, none of the later created spaces were removed.

In 2018 Georgian Chess Federation requested from TMCH to extend the validity of the term of the project permit and implemented the second phase (application # AR1640078, order # 2500089) of rehabilitation works. Despite the nature of the permit (Small Scale Rehabilitation Works), the implemented project was quite large-scale and implied renovation works in the interior and exterior of the building. Rehabilitation works concerned three façades of the building (east, south, and north), the whole terrace floor, and the southern part of the interior.

Aside from small refurbishment and internal re-designing works, this intervention was the largest one during the almost 50 years of the building's existence.

FAÇADE

In the framework of the rehabilitation works, the major part of the original *Eklari* stone cladding was removed and replaced with thinner material of the same type.

In the process of rehabilitation, the original technique of cladding and pattern of laying the tiles on the façade was neglected. The tiles were attached to the support using cement mortar and small screws. The joints between the tiles

were filled with inappropriate filler and processed with a multifunctional electric cutter, causing mechanical damage to the stone surface.

In the course of rehabilitation and refurbishment works a new water diversion system was installed on the roof, the earlier water scuppers (drainage pipes) were removed and replaced with new ones.



Process of replacing stone cladding on east façade. 2018



Replaced stone cladding of the façade in 2018.

TERRACE

A layer of bitumen insulation was laid on the terrace floor and the water diversion system was renewed. For this reason, along the entire perimeter of the terrace, water scuppers (drainage pipes) were replaced with new ones. Due to their inefficiency, revealed during the process, it became necessary to renovate them repeatedly and increase the diameter of the water drainage pipe on the façade wall.

Instead of the tin roofing sheets on the roof of the Main Hall, a layer of bitumen insulation was laid. Besides, rainwater

pipes running vertically into the building were removed and inappropriately large water scuppers emerged on the façades.

The original door with an aluminum frame, leading to the terrace, was replaced with a new one assembled on modern double glazed aluminum construction. The entrance doors to the auxiliary spaces of the terrace were also replaced with metal-plastic ones.

³¹ Law of Georgia on Cultural Heritage, on small-scale rehabilitation works which envisage: “only repairing, replacing and/or installing of roofs (sheets), covers (shingles, tiles, stone coated tiles, etc.) and window openings without changing the parts of the bearing structure.” May 22, 2007, Art. 49, 4¹, The Legislative Herald of Georgia www.matsne.gov.ge/en/document/view/21076?publication=13 (accessed 02.09.2020)

INTERIOR

The project *Small Scale Rehabilitation Works of the Chess Palace and Alpine Club* agreed upon with the Cultural Heritage Protection Council of the Architecture Service of Tbilisi Municipality did not envisage interior renovation works. Nonetheless, large-scale renovation works were carried out in the interior, particularly in the southern part, on the first and second floors.

In the vestibules of the first and second floors, the walls were covered with plasterboards which then were painted with modern acrylic paint. Dropped ceiling tiles were used as the finishing of the ceiling, as a result, the original ceramic lamps were concealed.

In the side galleries of the second floor, in the halls (initially representing a wide vestibule), the black marble floor was covered with modern laminate flooring. To enlarge the hall, located on the eastern side, part of the balcony was added to the interior; for this reason on original basalt tiles cement screed was arranged and laminate flooring was laid. In the same spaces (both galleries on the second floor) the original plinths of the same period as the columns, finished with marble tiles, were replaced with modern, profiled plastic plinths.



Process of Arrangement of Dropped Ceiling. 2018

The staircase leading from the second floor to the terrace, which was covered with parquet, was modified. The parquet was replaced with semi-smooth, low-quality ceramic floor tiles.

One restroom was completely renovated, and three new ones were added, two – on the second floor, and one – on the terrace floor.

All internal original doors were replaced with the modern, so-called medium-density fibreboard (MDF) doors.

Wood veneer panels on the walls of the administration zone of the Chess Federation on the first floor were also removed but were not substituted.

The more recent interventions can be characterized as ad hoc measures not taking into account the cultural significance of the building, and which were undertaken with the aim of quasi-improving the outlook and the working conditions in the building.

Altogether, the interventions stemming from both periods can be assessed as damaging the original and authentic physical fabric and disturbing the perception of the overall integrity of the building.



The Process of Expanding the Eastern Gallery

3.3. IDENTIFICATION OF DAMAGES AND DAMAGING FACTORS

This subchapter describes in greater detail the damages and damaging factors identified in each space and system of the building.

EXTERIOR



Northern Façade. 2019

DESCRIPTION

As mentioned before, the artistic appearance of the building’s façade, which was formed by rhythmically distributed large aluminum vitrage and wide balconies, is presently defaced by improper and visually disturbing additions.

The façade mainly consisted of cantilevered balconies and aluminum vitrages placed deep in the walls. Except for the roof and the terrace of the second floor, all balconies and terraces had the upper balcony as a roof. Decorative thematic metalwork was used as balcony railings, the facing of cantilevered balconies were clad with *Eklari* (limestone) stone, and basalt tiles were used for cladding of parapet capping. In the glassed façade, stone-clad walls (administrative zone, Basement Floor) and round load-bearing columns, finished with white artificial marble tiles (visitor zone) were included here and there. On the basement level, the façade walls are finished with basalt slabs, while for the walls of all the other floors – *Eklari* stone is used.

MATERIAL

- Structure – reinforced concrete;
- Cladding – limestone (*Eklari*), basalt slabs and artificial marble;
- Aluminum vitrage – aluminum, glass;

DAMAGE

Cladding

Basalt Stonework – The damage of the basalt stonework, existing on the Basement Floor, is expressed in small lacunas of the stone, chipping, and superficial disintegration. The damaged areas are spread all over the perimeter of the cladding, however, they are more concentrated on the façade of the Alpine Club;

Eklari Stone – surviving finishing of *Eklari* stone displays deterioration patterns: the surfaces of stone slabs are weathered, delaminated, and scaled. In certain sections, there are separations of superficial layers and salt crystallization. Besides, the surface of the decorative stone wall is covered with exogenous deposits.

Aluminum Vitrage

Some of the aluminum vitrages (light translucent curtain screen) were painted with oil paints, some were displaced, while others had their parts altered. Also, the sizes of door profiles were increased.

CAUSES OF DAMAGE

Damages of the façade cladding and other architectural elements are mainly caused by the lack of maintenance, improper use, and mechanical impact. Besides, due to incorrect installation of the water diversion system on the upper terrace, atmospheric precipitation caused damage to cladding stone. Improper functioning of the water diversions system contributed to continuous infiltration of water from the terrace into the walls, finally leading to severe damage of the slabs.

TERRACE AND THE STAIRCASE OF THE BASEMENT AND FIRST FLOORS

DESCRIPTION

The terrace of the Basement Floor surrounds the entire façade on the east and runs only halfway on the northern and the eastern façades. The main part of the terrace, although damaged, is preserved in its original form. The cladding of the terrace that surrounds the building from the west has been replaced with a new, presumably same kind of stone, but with a different laying pattern. These two terraces are connected by two reinforced concrete staircases on the east and west. Both staircases are clad with thick basalt slabs.

MATERIAL

- Reinforced concrete;
- Preparation layer for concrete topping;
- concrete mixture;
- Basalt tiles.

DAMAGE

In the middle part of the northeastern and northern façades of the terrace the paving is lowered (the ground is settled). Cracking and breaking of individual stones are also observed.

CAUSES OF DAMAGE

The damage is linked to the infiltration of atmospheric precipitation, caused by the wrong location of water diversion pipes on the roof and balconies, as well as the absence of drainage and runoff water channels.



A Terrace on the Basement Floor. East Side of the Building. 2018



A Terrace on the Basement Floor. South of the Building. 2018

BALCONIES



East Façade. 2016



Renewed Stone Cladding on the East Façade.

DESCRIPTION

All balconies represent a reinforced concrete monolith, corbelling from the façade in the form of a console. The balcony of the first floor differs from that of the second floor only by a parapet, which is elevated from the floor level, and stone channels for water diversion are arranged in it. Balcony ceilings on all floors are plastered with a mortar and covered with whitish, light color paint. Basalt slabs are laid on the floors, as well as on parapet caps. The shields are finished with limestone (*Eklari* stone). The railings are made of welded metal and painted with corrosion-resistant paint. Currently, a large part of the balconies surrounding the building is enclosed/walled up (in a primitive way) and reinforced with just one metal support column added at a later stage, which only slightly prevents damage.

MATERIAL

- The main structure - reinforced concrete;
- Finishing - limestone (*Eklari*), basalt tiles;
- Railing - metal, painted with oil paint.

DAMAGE

New architectural drawings showed a slight deformation of the balconies, manifested in their uneven distribution of horizontal lines and the difference in level marks. This phenomenon is observed on the edges of almost all balcony ceilings.

Cladding - In some places, stones are coming loose; the original laying of the stone cladding was altered (thinner stone slabs were used, and the technique of attaching them to the support is unauthentic and wrongful). The three-row stone cladding pattern on the balcony parapet shield, on the

first floor, is replaced by new, two-row cladding. Their height is also increased at the expense of their alignment on one line. The surfaces of the majority of old tiles are scaled and delaminated.

Plasterwork - ceiling plasterwork is also damaged; it is powdered or lost in individual sections. The traces of rainwater infiltration are also visible on the newly plastered ceilings.

Metal Railing - the balcony's metal railing is slightly deformed, in some places - corroded, and small sections are removed from it.



Balcony on East Façade. 2018

CAUSES OF DAMAGE

The causes of damage, as in many other cases, is the lack of proper and continuous maintenance and improper repair works. For these reasons, the balconies are not protected against the aggressive impact of environmental factors. One of the reasons for their deformation can be the movement of concrete casting material during construction and soil settlement, another reason presumably is the presence of new additions and the impact of their weight. The traces of rainwater, existing on the ceiling are most likely caused by the absence of the drippers on the edges of balconies and in some cases their incorrect location.



Metal Railing. 2018

WINDOWS AND DOORS



Aluminum Vitrages. 2019

DESCRIPTION

On the entire perimeter, with exception of small parts on all floors, aluminum vitrages were arranged, which consist of whole glasses inserted in vertical, two-section (in some cases – without division) aluminum profiles from floor to the ceiling. Glassing on the façade was divided into 1.8 m vertical equal spans, which in many places were used as door openings and double-leaf glass doors of the same glass profile were installed in them. Major parts of these vitrages are presently redesigned, and some no longer exist. Instead, new, rougher-shaped profiled glass doors and windows are used, in some places, they are walled up and metal-plastic windows are installed. On the Basement Floor everywhere, except the authentic windows, existing in the part of the administration of the Alpine Club, the windows are replaced or built up. On the first and the second floors, on the north and northeast, the vestibule glassing is displaced at the expense of wide balconies, part of it is walled up and part is painted. All doors on the Basement Floor are replaced with new doors of improper design or material.

MATERIAL

- Aluminum;
- Glass;
- Metal plastic.

DAMAGE

The majority of the preserved original profiles have only minor damages, expressed in localized (spot) deformation-buckling. Part of the profile is lost, part is painted or altered.

CAUSES OF DAMAGE

Lack of maintenance, improper use, and mechanical impact. Improper installation of individual elements also occurs, which could be leading to the penetration of atmospheric precipitation or wind into the interior.

ROOF TERRACE

DESCRIPTION

The upper terrace of the building represents the surrounding area of the volume elevated above the terrace floor, just on top of the Main Hall space. Structurally, the terrace consists of a multilayered roofing system, on which a Ruberoid insulation layer is arranged. From the internal side, parapets were clad with *Eklari* stone; later, due to severe damage of the cladding stones, they were removed and the walls were plastered. For capping, as well as for the balcony parapets, basalt stone was used. The unit, repeating the shape of the Main Hall, elevated above the terrace floor was also clad with *Eklari* stone; On its walls as a result of the repairs, large and inconsistent protruded elements appeared, the function of which is to divert water from the roof.

MATERIAL

- Multi-layered layers, finished with Ruberoid;
- Cladding with *Eklari* stone;
- Balcony railing – metal, painted with oil paint.

DAMAGE

cladding stone is delaminated, Ruberoid is damaged in some places. Areas of paint loss and corrosion are observed on the railings.

CAUSE OF DAMAGE

The damages are mainly caused as a result of atmospheric (exposure to water, frost, and sun), as well as mechanical impact and improper use.



Roof Terrace. 2019

ROOF OF THE MAIN HALL

DESCRIPTION

The flat roof is the elevated space with the shape of the plan of the Main Hall, formerly covered with tin, which later was replaced with a Ruberoid. The roof has a low parapet. Four pipes that are eliminated today were used to divert rainwater from the roof. On the south of the roof, there is an elevated ventilation shaft cover made of the reinforced concrete structure. Its roof is covered with *terrazzo* tiles. On the north, on the ends of small pipes, tin smoke flues are attached.

MATERIAL

- Prefabricated reinforced concrete slab;
- Reinforced concrete;
- Multi-layered hydro insulation roofing, covered with tin leaves and Ruberoid.

DAMAGE

The tin and insulation layer is damaged in some places. The surface of the air unit of the vertical shaft is also damaged. The original rainwater pipes have been invalidated.

CAUSES OF DAMAGE

Damages are due to atmospheric (water, frost, and sun) and mechanical impacts, as well as improper installation and exploitation.

Decorative Stone Wall

A decorative stone wall on the west façade of both floors represents one of the important symbols of the concept of construction of the building.

DESCRIPTION

The decorative limestone wall of the façade is made of blocks of equal sizes, cut in the shape of a crown, that is distributed in a checkered manner on horizontally laid slabs of the same stone of relatively small size. The openings between the blocks add extra charm to the façade and provide special light and shade gradation in this part of the interior.

MATERIAL

- Limestone blocks laid on the concrete mortar.

DAMAGE

The decorative wall is preserved in its original, unaltered form. Its physical condition is satisfactory for the time being. No significant and progressive damages or irreversible processes causing damage are observed.

The damages, appearing on the decorative stone wall are not caused by a stone structure, composition, or any external chemical or physical impact. The damages are: Chipping, lacunas, small losses, and superficial cracks. This damage

pattern is evenly spread on almost all blocks of the wall as well as on the tiles under the blocks; In addition to the above-mentioned, the surface of the decorative wall is polluted by various exogenous deposits.

CAUSE OF DAMAGE

The cause of damage on the decorative limestone wall, in almost all cases, is of mechanical/physical character. Other causes are: Lack of maintenance and vandalism.



Decorative Stone Wall

INTERIOR

Nowadays the interior is significantly altered. A number of its valuable parts are walled up, partitioned, function-modified and damaged. These changes, mostly, occur in the visitor zone. The extent of damage and inadequate alterations are almost the same in the Chess Federation

zone, however, the damages here are easier to repair. Gypsum plasterboards are used for evening the walls and the partitions. Some areas of the ceiling are covered with plasterboard tiles mounted on metal profiles or other types of dropped ceiling tiles.

FLOOR

DESCRIPTION

Two different materials were used for the flooring throughout the building: a mixed pattern of stone cladding in the visitor zone, and a wooden floor in the Hall and administrative parts. *Sadakhlo* black marble slabs are arranged on primary construction, namely on pumice concrete and three-stratum cement layer.

In some places, the floor is made of granite flagstone or rectangular slabs. On top of the wooden parquet flooring of the administrative part today a laminate floor is laid. For sanitary facilities, ceramic tiles were chosen, which were laid on the

layers of pumice, Ruberoid, and concrete mortar, arranged on the main inter-floor overlapping. Most of these floors are presently altered, on certain parts, different materials are laid over and only a small part is preserved unchanged.

MATERIAL

- *Sadakhlo* marble;
- Granite;
- Basalt;
- Ceramic tiles;
- Wooden parquet;
- Laminate flooring.

DAMAGE

The preserved original material is in satisfactory condition; however, minor cracks and light abrasions, as well as fractures can be observed on stones. Part of the stone floor has been replaced with new granite, in some cases laid in a very irrelevant pattern. Damage to wood parquet is likely to be caused by the impact of water and condensate as a result of improper

exploitation. Laminate flooring was then laid on the parquet, which presumably also damaged the original parquet floor.

CAUSE OF DAMAGE

Improper use and inadequate intervention are the main causes of damage. The occurrence and development of damaging factors are also evidently linked to the lack of maintenance.

CEILING

DESCRIPTION

The original ceiling (except for the one in the Main Hall) was plastered with raw gypsum and clay mixture (Georgian *Gaji*) and was painted with light color oil paint. Presently gypsum cardboard tiles or other kinds of dropped ceiling tiles are used where a new modern lighting system is installed. Original plasterwork of the ceiling can be seen only in the administrative part of the Alpine Club, located on the Basement Floor.

MATERIAL

- Natural gypsum – earth plaster (*Gaji*);
- Dropped ceiling;
- Gypsum cardboard tiles.

DAMAGE

The damaged areas of the original ceiling are mainly found on the Basement Floor, where traces of water infiltration from several years ago are still visible. The arrangement of the new ceiling was likely due to the visually unappealing condition of the original one; presumably, the later interference has further damaged plasterwork of the ceiling and the inter-floor overlapping slab.

CAUSE OF DAMAGE

The failure of rooftop coating and engineering communications caused water leakage, resulting in damage to the ceilings.

COLUMNS

DESCRIPTION

The reinforced concrete columns in the interior are finished with *Bolnisi* tuff. The columns are polygonal in shape, the *Sadakhlo* marble slabs similar to those used for flooring are used as plinths. Presently part of the columns is hidden in the walls of various functions; part of them are painted or covered with a varnish layer.

MATERIAL

- Reinforced concrete;
- concrete plastering;
- *Bolnisi* tuff;
- *Sadakhlo* marble.



Tuff tiles cladding of the column covered with paint layer. 2018

DAMAGE

The columns on the second floor are painted several times with oil paint. The stone facing of some of the columns is scraped and impregnated with varnish.

CAUSE OF DAMAGE

Stone cladding was damaged due to improper use and inadequate intervention. The occurrence and development of damages as a result of the lack of maintenance are also evident.



Tuff tile cladding of the column covered with the layer of varnish. 2018

WALLS

DESCRIPTION

Part of the non-load bearing walls in the visitor zone i.e., calcium-silicate brickwork, in most cases, except for the interior of the Hall, are finished with *Bolnisi* tuff slabs. *Sadakhlo* marble, similar to the one used for flooring, is used for plinths. On the Basement Floor, in the Alpine Club’s vestibule, and on the partition walls of the second floor, there are thematic reliefs made of decorative stone carving. On the second floor, the ceiling of the Hall is mostly covered with wood finish: On the north, near the vestibule, the wall is covered by a decorated wooden panel, incorporating a double-leaf door for entering the Main Hall. On two linear, arch-shaped walls of the Hall, there are vertically sliding panels decorated with marquetry technique, and the jambs of the support columns and the wall, existing at the level of the railing is cased in plywood. In the same way are hidden heating batteries. The walls, in administrative parts, are plastered with natural gypsum – earth plaster – (*Gaji*) and painted with whitish light color oil paint. Pumice concrete tiles are also used, mainly on the Basement Floor for the walls which are in contact with the ground.

MATERIAL

- Calcium-silicate bricks;
- Pumice – concrete precast slabs;
- Raw gypsum and clay mixture *Gaji*;
- Wood, wooden veneer, plywood;
- *Bolnisi* tuff;
- *Sadakhlo* marble.

DAMAGE

The layout of partition walls is altered mainly in the visitor zone. Like columns, tuff stone cladding is painted or covered with varnish (except for decorative reliefs). The wooden

panel is cut and damaged in some places, heaters and other invasive elements are installed on the surfaces. The surfaces of the veneered sliding panels are bulged out and fractured at some places; the traces of water impact are also noticeable, especially in the corners and near the contact area with the railing.

It should also be noted that the mechanical system of the sliding panels is presently out of service.

CAUSE OF DAMAGE

The leading cause of damage to the walls and panels is improper use and inadequate intervention. Failure of the roofing layer and rainwater disposal system caused water infiltration into the walls and led to damage. The traces of mechanical impact are also evident.



Surface Damage on Vertically Slidable Marquetry Panels

STAIRCASE

DESCRIPTION

Several staircases existed in the building, out of which only three survived till present. One of them is located in the visitor zone and connects the first and second floors. Two staircases of different shapes can be found in the administrative area, the three-span one leading from the basement all the way to the second floor and the second one with two spans on opposite sides leading from the second floor to the roof terrace. All the staircases are built of reinforced concrete structures, on which stone steps are arranged. Only the steps of the staircase leading to the terrace were covered with parquet which has been replaced with ceramic tiles.

The construction of the railing is made of metal, with anodized surfaces, while the handle rail is made of solid wood.

MATERIAL

- Reinforced concrete;
- *Sadakhlo* marble;
- Ural marble;
- Granite tiles;
- Metal;
- Wood;
- Ceramic tiles.

DAMAGE

Minor damages like fractures and cracks can be found on the stone treads. On handrails, paint is removed in some places and some areas are repainted.

CAUSE OF DAMAGE

Mechanic impact, improper use, lack of maintenance.

DOORS

DESCRIPTION

In the interior, veneered wooden doors were installed; however, presently, only the Main Hall exit door is preserved in its original shape. The shapes of new doors do not differ much from the old ones, but the material is different.

Out of the four doors of the Main Hall, most likely, only one, located in the west, is replaced with Medium Density Fibreboard (MDF) door.

MATERIAL

- Veneered wood;
- Medium Density Fibreboard (MDF);
- Metal-plastic.

DAMAGE

The damages to the original doors can not be assessed. The door preserved in the Main Hall has superficial damages, mostly fractures, and degradation of veneer in its lower part.

CAUSE OF DAMAGE

Improper use, lack of adequate maintenance, and inappropriate use of its valuable architectural elements.



Administrative Zone of the First Floor. New MDF doors

MAIN HALL

DESCRIPTION

The Hall for 520 spectators is the only space that survived in more or less authentic form. Almost all the details that were intended for Main Hall’s technical and functional operation, and spectators’ comfort, met the standards of the time of construction. The named details are preserved in unaltered but damaged and depreciated form.

The Hall occupies the central part of the building. The spectators could enter and exit the Hall through two central entrances and two side exits. The central entrance is located in the vestibule of the second floor to the north, and the side entrances are to the east and west of the stage of the Hall. In addition, to enter the stage from the administrative part, there were two openings in the corners of the stage. Today only one, located southwest, maintains its original function.

The interior of the Hall is plain, not loaded with decorative elements. The main artistic elements of the Hall are: Staggered ceiling, assembled of rectangular panels, and artistically processed wooden sliding partitions on the side walls. The large stage is decorated in compliance with the Hall’s main function, a major part of the back wall of the stage is occupied by the red velvet curtain (the original curtain shown on archival photos is of a lighter color and different material) and chess boards.

Along the entire perimeter of the upper part of the Hall stalls, there is a balcony with a low railing, which could be accessed from the terrace of the building. Through this space, it is possible to get to the technical rooms of the Hall.

Due to its physical condition, this central part of the building is dysfunctional and cannot be used as a public space. Presently, part of the Hall stage is occupied by a Chess TV studio constructed of Medium-density fibreboard (MDF). The remaining area and the stalls are used as storage areas.

MATERIAL

- Iron structure of the ceiling – covered with rectangular wooden panels;
- Walls – are plastered with raw gypsum and clay mixture – *Gaji* and painted with several layers of oil paint;
- Floor – wooden, with soft carpet-like cover;
- Stage – wooden structure;
- Curtain of the stage – red velvet fabric;
- Lighting – decorative aluminum lamps;
- Furniture – wooden, with a soft textile surface.

DAMAGE

Almost all of the elements and technical details in the Main Hall are in poor physical condition. In some cases, these damages are manifested in alteration of the original appearance of these details, and in other cases – in physical and irreversible damage.



Ceiling of the Main Hall. 2019

Ceiling – The significant part of the wooden panels of the ceiling structure is sound. No losses or significant mechanical damage are observed. Only in one section, in the northern part of the Hall, there is damage caused by water infiltration, in particular – localized rotting of wooden panels and flaking of the paint layer on the surface.

Walls – like wooden panels of the ceiling, the walls of the Hall are preserved without severe and irreversible damages; there are only minor cracks in calcium silica brick walls. Dust and exogenous deposits of various origins, superficial cracks,

and small losses of plastering caused by a physical impact can be regarded as damage. The physical condition of sliding marquetry panels differs from that of the walls. The main wooden structure of the panels is sound; damages mainly occur on the surface, where, in some sections, the varnish layer is discolored, various types of deposits and thick layers of dust appear on the surface. The wooden surface is fractured only in some small areas. At panel joints, the edges of the marquetry are flaked and detached.

Floor – The carpet flooring of the stage and stage stairs had been renewed, in the stalls and other spaces, the old damaged carpet-like cover is preserved. Due to the more or less sensitive nature of the carpet, the old coating is in bad condition, significant mechanical damage, and in some sections – wear is observed. A layer of dust and dirt is deeply embedded in the carpet fibers.

Small Architectural Forms – The curtain of the stage and soft casings of chairs in the stalls are damaged, worn out, and deformed. The folding mechanism of the chairs is also partially amortized.

CAUSE OF DAMAGE

The main causes of damages found in the Hall, as well as in other spaces, are improper use, lack of maintenance.

FURNITURE AND SMALL ARCHITECTURAL FORMS

The main stationary furniture, that was designed for the palace, is built-in cabinets for the administrative spaces of the Chess Federation and the Alpine Club and the spectator seats installed in the Hall.

CABINETS

DESCRIPTION

In the rooms of the administrative part, almost everywhere, built-in cabinets are made of veneered chipboard. These types of cabinets are preserved in the meeting room of the Alpine Club on the Basement Floor and partially in the administrative zone of the first floor.

MATERIAL

- Veneered chipboard panels, assembled on a wooden carcass.

DAMAGE

Some parts of the locking mechanism of the cabinets, preserved till present, are quite cranky. The major part of the cabinets is re-painted several times, and their appearance is altered.

CAUSE OF DAMAGE

Improper use and inadequate intervention. The use of low-quality material for cabinets is also a factor.

SOFT CHAIRS OF THE HALL

DESCRIPTION

The chairs installed in the Hall are in unsatisfactory condition. Chairs with wooden construction are connected with the benched ramp of the stalls with metal supports, and the seats are presumably padded using furniture cushion foam with reddish textile on it. On the backs and handles there are base metal number tags with chess figure engraving. Photos from the period of construction show that the original chairs were covered with leather. The change is only documented in photos and took place around the early 1980s.

MATERIAL

- Wood;
- Metal;
- Fabric;
- Cushion foam.

DAMAGE

Wear and tear of fabric is apparent; it is worn out, torn, and ragged in some places. Presumably, its padding is also in a bad condition.

CAUSE OF DAMAGE

Lack of maintenance, age and wear, and improper exploitation.



Chairs of the Main Hall

WALL-MOUNTED LIGHTING FIXTURE AND CHANDELIER

DESCRIPTION

Original chandeliers in the vestibule represented plain, round, pot-shaped ceramics; and most likely, they were not covered with a paint layer.

These chandeliers cannot be found anywhere in the building today because they are covered with modern dropped ceiling panels. The bar chandelier and other authentic wall lamp brackets are also missing. Presently, dropped ceiling lighting fittings are arranged everywhere except the Main Hall.

Like the architectural details, the stage lights of the Main Hall have been preserved, but in poor condition. Lamps built into the ceiling are absent, although their sockets are preserved.

MATERIAL

- Ceramic;
- Metal;
- Metal plastic.

DAMAGE

It is impossible to list the damages to the original chandeliers.

CAUSE OF DAMAGE

The main cause of damage is improper use of the building and lack of maintenance.

Mechanical Systems

One of the studies undertaken within the scope of multidisciplinary research was the inspection of the technical communications of the building and the determination of their efficacy and safety parameters. This section includes a brief overview of outcomes, while the full version of the studies is presented as an appendix (See Appendix 2 Inspection of Mechanical systems)

The study revealed that the building’s original internal engineering communications network had been partially

amortized, and the remaining part has been modified following the new functions. The sanitary facilities on the first floor, which according to the original design were meant to be used by chess players only while they were playing in the Hall, are derelict. The sanitary facilities are redistributed according to the new functional spaces in the building, their number and the consumption has been increased due to the increase of functional units.

Internal Electrical System

The electrical supply to the building and its distribution happens from the main power distribution cabinet and the central switch, which due to prolonged operation is almost completely out of order and no longer meets the norms of operation. The four users of the building are supplied with

separate electrical wiring systems, and all four of them use the distributor mentioned above. The electrical network is set up chaotically, and in many cases, safety norms are violated, which increases the risk of a fire hazard.

Water Supply and Wastewater Disposal System

Like in the case of the building’s electrical system, several individual systems for various users are connected to the centralized water supply network. The main centralized system is defective in this case as well, increasing the risk of damage due to corrosion, adverse mechanical impact on the nodes, and increased total water consumption.

It should be noted that the water running in the sewer pipes of the building is flowing into the drainage wells. Drinking water in the building is distributed through polypropylene pipes, which in some places pass on the wall and ceiling, and in some places are hidden behind the plasterwork, and their condition can not be assessed.

The building, in addition to the internal water supply system, had an internal rainwater diversion system. Water collected on the roof was running through 150 mm thick cast iron pipes inside the building, passing through the basement

and connecting to the city stormwater system. Currently, the internal water diversion system is inactive. The cast iron drainage pipes on the first floor and in the basement are left idle, on the other floors, the pipes are removed.

The water from the roof is diverted as follows:

On the roof terrace, inside the parapet, there are grooves in which rainwater enters through a small inclination arranged on the terrace. The grooves too have inclinations in several directions, in the deepest places of which are embedded pipes. The aforementioned pipes run down the façade of the building as water pipes and the water running through the pipes falls directly to the ground. The same applies to the Hall roof level, from where water flows through water pipes into the terrace.

A visual inspection and survey revealed that the building does not have a drainage system.

Heating, Ventilation, and Air-Conditioning

There is virtually no ventilation system in the building. The only space equipped with the system was the Hall, which was the main functional space of the building. The original ventilation ducting system exists in this area today; however, there are no auxiliary technical installations, and the heating,

ventilation, and air-conditioning system are not working either. The rest of the spaces rely on natural ventilation. The heating was centrally provided by a network of radiators installed in the rooms, which no longer exists today. Only individual installations provide heating of separate spaces.

CAUSE OF DAMAGE

In the case of technical communications, the main causes of damage along with the improper use of the building are the functional obsolescence and long malfunction of the technical

network. Also, the primary input and distribution installations date back to the construction period of the building and are not designed for an increased workload.

Evaluation of the Energy Efficiency of the Building

The survey and the recommendations for increasing the energy efficiency of the building (See Appendix # 6) found that the building’s energy efficiency is low due to its construction, characteristics of construction materials, and technical systems. The operation of mechanical systems is not synchronized and designed to increase energy efficiency. The original air duct systems have not been conserved. Fans, HVAC dampers, etc., were removed and the ends of the air ducts were left open, which is the reason for the constant inflow and outflow of air.

The construction of the building is not winterized, which increases the risk of the appearance of condensate on the inner surfaces of the structures during winter through the so-called “cold bridges”, especially in the storerooms where there is no ventilation system.

One of the main factors of low energy efficiency of the building is the aluminum vitrages on the entire perimeter of the building, such construction is characterized by low energy efficiency due to high heat losses and intense infiltration.

Condition Assessment Table

Condition Assessment Table										
	Architectural Elements and Building Systems	Degree of Damage			Changes and Interventions		Dynamics of Deterioration		Authenticity Preserved	
#	Exterior	Light	Medium	Severe	Reversible	Irreversible	Progressive	Non-progressive	yes	No
1	Facade									
1.1	Terrace and the staircase of the basement and first floors									
1.2	Balconies									
1.3	Windows and Doors									
1.4	Roof Terrace									
1.5	Roof of the Main Hall									
1.6	Decorative Stone Wall									
2	Interior									
2.1	Floor									
2.2	Ceiling									
2.3	Columns									
2.4	Walls									
2.5	Staircase									
2.6	Door									
2.7	Main Hall									
2.8	Sanitary Facilities									
3	Furniture and small architectural forms									
3.1	Cabinets									
3.2	Soft chairs of the Main Hall									
3.3	Wall-mounted lighting fixture and chandelier									
4	Structure									
5	Mechanical systems									
5.1	Internal Electric Network									
5.2	Water Supply and Wastewater Disposal System									
5.3	Heating, ventilation, and air-conditioning									



Vera Park. 2018

CHAPTER 4: CONSERVATION PRINCIPLES AND POLICIES

INTRODUCTION

One of the main goals of the Conservation Management Plan (CMP) is to plan for the future and protect the values of historic places. A CMP avoids ad hoc work that may solve immediate short-term needs but damages overall building integrity and authenticity. A critical aspect of this plan is to address the overall conservation principles and policies. Thus, this chapter outlines the main goal of the Conservation and Management Plan of the building, that is – to ensure material and functional continuity of the Tbilisi Chess Palace and Alpine Club through the conservation and interpretation of its character-defining features and underlying values. It is a straightforward document that outlines the specific conservation principles and policies as well as intervention guidelines. The proposed intervention decisions are informed by the current state of conservation of the building as well as the current and future needs and requirements for its proper use.

4.1. CONSERVATION PRINCIPLES

The conservation goal of The Tbilisi Chess Palace and Alpine Club is to respond to the conservation needs and challenges described in the previous chapter. To achieve this goal, the conservation process should set the following specific objectives:

1. To reverse the intrusive changes and incompatible interventions within the building;
2. To conserve, restore, and maintain the preserved character-defining authentic elements;
3. To restore the original spatial planning of the building;
4. Continue the building’s purpose and function – to foster an appreciation of and education for the game of chess, and support and enhance the sport of mountaineering.

By meeting the above objectives, the plan hopes to protect the values that define the significance of the building, preserve its original function, and increase its economic potential and sustainability by carefully adapting its parts for new compatible uses.

The principles and policies outlined below have been developed based on the understanding that the building:

The chapter is divided into two subchapters:

Conservation Principles are outlined with the objectives and detailed activities for the conservation of the elements, components, and fabric of the building. Building Maintenance Plan is also part of this subchapter.

Needed Interventions are articulated for the conservation, interpretation, and adaptive reuse of various spaces within the building. The described interventions are grouped under two actions: 1. Adaptive reuse; and 2. Reconstruction of lost character-defining elements previously documented.

a. Is one of the most outstanding examples of late 20th-century Soviet architecture, yet, unique to Georgia which has been listed as a monument of immovable cultural heritage for its historical and artistic values;

b. Requires conservation of its fabric, elements, components, and integrity, requires the development and application of a set of comprehensive principles and policies, that are in line with the internationally recognized conservation standards. Specifically, following the *Approaches for The Conservation of Twentieth-Century Cultural Heritage*, the so-called *Madrid New Delhi Document*.

To achieve the above objectives, the following conservation solutions are proposed, followed by a maintenance plan. Below is a detailed description of these principles and solutions:

The structure of this section follows that of the Chapter 3.3. where damages and damaging factors of all the spaces are described. Through this parallel organization a logical linkage between the described damage and conservation proposals can be made. It is important to note that many of the changes to the building occurred over time and that many of these proposed detailed actions can also occur over time, slowly reversing the alterations of the building.

EXTERIOR

The original design and aesthetic appearance of the building should be restored and all factors having a negative effect on the architectural and structural elements and finishings should be eliminated.

To restore the original appearance of the façades, it is necessary to remove all inappropriate additions, replacing them with aluminum-framed vitrages, as well as return function to the staircases, restore balconies, entrances, and exits to their original appearance and repair damaged parts of the façade.

Considering the negative impact of the scuppers diverting water from the rooftop and terrace on the façade finishes and other elements, it is important to replace them with the ones having the dimensions specified in the original design drawings. They must be made of the same kind of stone and be provided with invisible reinforcement.

Cladding

Basalt Masonry – the damaged areas of the Alpine Club façade finishes should be treated locally, using stone conservation techniques tested over time. For filling the masonry, stone of the same properties and geometry readily available on the market should be used. Small voids can be filled with compatible mortar. For other types of damage, i.e. delamination, scaling and disintegration, compatible consolidant with relevant characteristics should be used.

Eklari Stone – superficial deposit must be removed from the original surviving *Eklari* facing stone. The lacunae shall be filled with compatible material.

Artificial Marble – while choosing material for restoring the damaged parts of the facing of round columns, preference must be given to the material whose physical and chemical properties are similar to those of the original.

Aluminum Vitrage

the lost and altered aluminum vitrages should be restored using a material similar to the original; the original shape and dimensions are also to be maintained.

TERRACE AND STAIRCASE ON THE BASEMENT AND FIRST FLOOR LEVELS

To prevent further damage to the Basement Floor, it is necessary to increase the length of scuppers diverting water from the rooftop and direct the water collected on the terrace into a new rainwater channel.

It is also recommended to restore separate damaged floor tiles rather than to replace them.

BALCONIES

All later additions shall be removed from the balconies. On the damaged or altered floors, new hydro-insulation layers shall be arranged and they shall be restored in their original form. The reasons, causing deformation of the balcony, shall be identified accurately and instrumental investigation and monitoring of internal, invisible structure shall be carried out, which will help determine how to stop deformation through adequate intervention.

Finishes – the *Eklari* stone facing masonry of the cantilevered balcony of the eastern façade on the first floor should be restored to its original appearance (a fine line of stone between two thick lines of equal height); however, the vulnerability of the stone used in water drains towards water related damages must be taken into consideration. For this reason, *Eklari* stones can be replaced by basalt as envisaged by the initial design, as

the latter is more resistant to water and the environment. In the near future, it is also desirable to replace *Eklari* stones used during the most recent rehabilitation of the façade masonry, as their thickness, installation technique and the type and quality of surface treatment cannot secure the long-term stability of the facing. A similar approach must be applied to all sections faced with new stone. Corner joints projecting from the wall planes interfere with the perception of the uniformity of the façade and should therefore also be replaced.

Plastering – The damaged sections of the ceiling should be removed, replastered with sand and cement mixture, and painted in whitish color.

Metal Railings – Despite the present satisfactory condition of the railings, it is necessary to carefully inspect the points of

anchorage (due to the finishing and several thick layers of oil paint, it was not possible to inspect them closely during the survey) and reinforce them, where required. Visible damages

should be repaired, deformed parts should be fixed in situ and corroded sections should be treated. The railings must be repainted by using the existing technique.

Windows and Doors

Non-authentic aluminum vitrages should be replaced along the entire perimeter with windows and doors of similar material and profile. Paint layers dating from a later period should be removed. To eliminate minor damages and deformations, it is necessary to conduct in-situ restoration and to replace degraded rubber resin pads.

To increase thermal efficiency, it is recommended to install double-pane glass in the existing frames, while load-bearing capacity of the building structure should be checked and considered.

Roof Terrace

The multi-layered roofing cover needs to be replaced. Hydro-insulation layers and perimetral water drain channels should be reinstalled and a metal grate arranged above the drain channel. Stone finishing of the parapet is to be restored. Following structural and hydro-engineering calculations, it

is possible to arrange marble mosaic tiles, as envisaged by the original design. To enable further use of the terrace, it is advisable to cover the floor with light, temporary material, making sure that the visual integrity of the building is not disturbed.

Roof of the Main Hall

Multi-layered roofing cover should be replaced. Hydro-insulation layers, water collectors, drainage channels, flashing, etc. should be reinstalled.

It is possible to install limited solar panels on the roof, but it must be in a way that the visual appearance of the so-called ‘fifth façade’ of the building is not disturbed. This is possible thanks to a raised parapet wall, which can hide the solar panels so that they cannot be seen from below, and the trees, which are not tall enough to block the sun. The present structural

condition of the Main Hall roof should also be taken into consideration and, if required, the potential of strengthening its structure should be estimated. The energy generated by solar panels should be used as a supplemental source for hot water and electricity systems, rather than their replacement. The dimensions of water drains, installed later into the walls of the hall, should be reduced. It is preferable to restore the original water removal system, which will require the replacement of vertical pipes running through the building and the installation of properly designed water collectors on the rooftop.

Decorative Stone Wall with the Crown Symbol

The surfaces of decorative wall elements are to be cleaned using a non-aggressive cleaning technique. Minor losses must

be filled and cracks consolidated. Compatible conservation mortar and strengthener must be used.

INTERIOR

All valuable decorative and architectural details should be preserved in the interior; they must be restored and conserved as described in detail in the sections below.

FLOOR

Stone Floor – In the case of all types of stone flooring, the newly added layer should be removed and the original floor should be restored and preserved. It is inadmissible to replace stone tiles because of minor damages. It is rather recommended to restore them locally in-situ, fill the voids and cracks with compatible conservation mortar. In addition to that, inappropriate stonework should be replaced and new stone tiles should be laid according to original patterns.

Wooden Floor – The damaged wooden floors can be replaced; in such case, the materials, stonework patterns, and laying techniques must be similar to those of the original.

Ceiling – The gypsum boards of the dropped ceiling, other later addition, and casings must be removed. The damaged building plaster (Natural gypsum and clay plaster – Georgian *Gaji*) should also be removed and a new layer of plastering must be applied using similar material. The ceiling must be painted with interior paint of whitish color.

Columns – The stone finishing of the columns should be cleaned, removing later incompatible deposits without damaging the stone surface. The losses should be restored using a material of a similar type. Small lacunae must be repaired with compatible conservation mortar.

Walls – All later partitions must be removed.

Based on the structural analysis, it is necessary to replaster the walls built of silica brick and reinforced with metal mesh. To increase their stability, contemporary materials, such as fiber-reinforced composites can be used. Afterwards, the wall surfaces must be plastered to regain their original appearance.

- The stone finishes should be cleaned and the damaged and decayed parts should be restored.
- All extra elements must be removed from the wooden panels and the damaged sections must be cleaned and conserved.
- Marquetry panels also require conservation.
- Wooden finishing of the corridor of the administrative zone of the Chess Federation should also be restored.

Doors – All original doors, which were later replaced with metal-plastic and MDF doors shall be replaced with new reproduction doors using original material and method. The doors installed in the sections that were redesigned later must also be replaced with new ones. The latter must be covered with surfaces similar to those of the original doors. The wooden veneer door of the visitors’ zone should be restored in accordance with the one surviving in the hall.

MAIN HALL

This section covers only those elements of the Main Hall that are to be preserved, restored and/or repaired. Detailed proposals for intervention for the adaptive reuse of the Main Hall follow in *Intervention Guidelines* provided in subchapter 4.2.

Complete technical renovation and restoration of valuable architectural details of the hall are required. The restoration and adaptation work must be conducted without disturbing the artistic qualities of the space. It must be made sure that all valuable details are preserved. Judging by the physical condition of these details, conservation and restoration will be sufficient to improve their state of preservation and appearance.

Ceiling – The wooden panels of the ceiling that survived without damages should be preserved without changes; they should be cleaned from the exogenous deposit. The damaged panels must be replaced by new panels of similar size and material. If required, it is admissible to remove the existing paint layer and apply a new layer of paint; however, this should be done without excessive mechanical damage to the panels.

Walls – It is recommended to renew the original plastering (mix of raw gypsum and clay) and treat the surface by using authentic techniques. The surfaces of the sliding panels require conservation.

Floor – It is necessary to preserve the type of floor finish and renew the carpet fabric.

FURNITURE AND SMALL ARCHITECTURAL FORMS

It is recommended to restore basic built-in furniture, spectators' seats in the hall, and the wooden grating of the heaters throughout the building according to the archival drawings and photographs.

Cabinets – It is recommended to replace the cabinets in the administrative zone with new ones made according to the drawings provided in the original designs.

Wall-Mounted Lighting Fixture and Chandelier – Original chandeliers and light fixtures should be restored in all spaces.

In the vestibules and side galleries along with both floors, the roofing cover added later, is to be removed to expose original ceramic lighting fixtures, which need to be restored. Most of the fixtures have survived; fixtures of the same shape and material should be made and installed in places where they are missing. Aluminum fixtures of the Main Hall stage should be preserved; new, elongated fixtures of simple design, similar to the old ones, can be installed in administrative spaces. Taking into account the functional requirements of the spaces, it may be necessary to increase lighting, which can be achieved by using higher-power LED bulbs.

STRUCTURE

In accordance with the recommendations of structural engineers, the development of architectural designs must be preceded by an instrumental survey, which will help identify specific types of required intervention. Silica brick

walls should be strengthened using reinforced plastering. To maintain the required structural stability of the building, short- and medium-term measures specified in the structural report must be implemented.

MECHANICAL SYSTEMS

The internal mechanical systems should be modified following the designs developed for the restoration of the original interior planning and functional adaptation of the building. In this regard, the building must meet modern standards and safety norms.

According to the recommendations developed based on the study of the water supply and wastewater disposal system, the rehabilitation project should include designs for the complete modernization of the water supply and disposal network, which is to be done by relevant specialists.

- Rehabilitation of sanitary facilities in the administrative zone is required;
- Mechanical systems, infrastructure and finishing of the former sanitary facilities in the visitor zone have to be completely reconstructed;
- Tap water, heating, ventilation, air-conditioning and electricity supply systems have to be reinstalled following the re-arrangement of interior spaces.

ELECTRIC POWER NETWORK

The existing power supply system should be redesigned following modern standards to ensure proper functional and technical operation of the building. The existing central system should be modified to allow for the installation of several individual networks. The system must be provided with a video surveillance network, heating, ventilation, and air-conditioning facilities, modern lighting, acoustic, and other facilities of similar functions. It must also allow for the later addition or adaptation of required facilities.

Fire alarm systems, to be integrated into the overall control system, should also be provided.

Modern, high-quality equipment should be installed to ensure the proper functioning and reliability of the network.

The designs should preferably include night lighting for the building.

WATER SUPPLY AND WASTEWATER DISPOSAL SYSTEMS

To ensure a steady and adequate water supply to all tenants after rehabilitation, it is recommended to make necessary improvements to the network. A new well needs to be arranged on the outer perimeter of the building for the pipes leading into the building. The pipes running from the building to the well should be replaced.

The study of the system revealed the need of installing new internal water supply and sewer pipes into walls or at least,

fixing them on the walls and the ceiling. Apart from that, the collector junction, rather than the cascade junction of sanitary facilities should be arranged to ensure better operation of the drainage system. Sewerage systems can be rearranged to reduce the number of horizontal sewer pipes in the inter-floor sections.

The system for removing rainwater from the rooftop should also be arranged.

HEATING, VENTILATION, AND AIR-CONDITIONING

A series of works should be carried out to maintain the climate and air quality required by modern standards. For this purpose, further detailed studies are to be conducted for each functional zone of the building. Heating and cooling losses of the building must be calculated. Fresh air and power requirements for each room must be assessed.

It is recommended to provide the building with centralized heating, cooling, and ventilation systems, which are more reliable and efficient than individual facilities.

It is necessary to equip the Main Hall, as well as other spaces, with a mechanical ventilation system. Recommendations should be taken into account for increasing energy efficiency.

4.1.1. BUILDING MAINTENANCE PLAN (BMP)

Proper maintenance is a prerequisite for the long-term conservation and preservation of the building. Regular maintenance as often synonymously called preventive conservation can significantly deter the irreversible damage to the heritage property and reduce the need for rehabilitation and restoration intervention, thus saving financial expenses that would otherwise be borne by its owner or user. It entails a variety of complex, multidisciplinary activities, which are tailored to the needs of each property and conducted according to a detailed schedule.

Buildings are subject to natural decay, as well as degradation caused by unfavorable environmental factors and use. It is impossible to fully eradicate these processes, however timely and adequate preventive intervention can prolong the life of the building.

Preventive Conservation is not just another word for maintenance. It is a change in thinking from a reactive response to proactive action. It is a move away from a narrow focus on cleaning or repairs to a more holistic and integrated approach. In recent years, focus in conservation has gradually changed from remedial conservation (which corrects what has gone wrong in the past) to preventive conservation (making sure that things do not go wrong in the future). In both object and site conservation, this change in focus has been evident. Preventive

Conservation encompasses management, monitoring, capacity building, risk assessment, and mitigation. Most critically, it provides and depends on the involvement of the community. The approach “empowers society at large to take care of its heritage by maintaining it”³².

This is true for the Chess Palace and Alpine Club building, more so that a large part of the property serves a variety of public functions and hosts large events. Major concerns associated with the building are the result of inappropriate use and lack of regular maintenance, which has further been attested by the condition assessment of the building in previous chapter 3. The Chess Palace and Alpine Club is also a modern building with all the associated problems of new materials, flat roofs, and large expanses of glass. Finally, it is located in a harsh environment with frequent freeze-thaw cycles and in an urban park which both contribute to the need for increased maintenance.

Drawn up on the basis of the Conservation Plan, the Building Maintenance Plan aims to ensure better preservation of the building, taking into account its uses and conservation needs.

Most of the activities under the Building Maintenance Plan (known hereafter as the BMP) are estimated for one year, making an allowance for annual renewal. However, the BMP also

³² Koenraad Van Balen. *Preventive Conservation of Historic Buildings*. International Journal for Restoration of Buildings and Monuments, (2015), 21 (2-3), 99-104.

includes measures that are to be carried out every five years. The document contains a schedule of regular maintenance activities and provides a checklist to assist the property owner or user in conducting regular monitoring and recording. These activities cover following components: Scheduled monitoring, preventive measures, and emergency intervention.

Main Areas

The Building Maintenance Plan was devised to ensure proper implementation and management of building monitoring, prevention and emergency maintenance (in the case of the detection of damages) measures, by taking into account the property needs, depreciation factors and properties of building materials.

As long as buildings require ongoing maintenance, both seasonal and non-seasonal monitoring and preventive

The BMP reflects the contemporary state of the building that is in need of conservation. Therefore, the BMP is a crucial step that should be undertaken prior to the implementation of Conservation Management Plan, as shown in an action plan matrix (5.6. Action Plan Matrix). The proposed Maintenance Plan shall be applicable both prior to and following conservation.

measures were identified. The BMP makes provisions for seasonal monitoring of the elements which, due to their location and orientation, are exposed to and directly influenced by climatic conditions and seasonal changes (rainwater, freeze-thaw cycles, wind, etc.). A similar scheme is applied to preventive measures. The following section will detail each beginning with monitoring, followed by preventive measures and emergency response.

must be paid to structurally vulnerable areas, which, apart from visual inspection, must also be subject to instrumental and analytical surveys. Records and photographs reflecting the damages identified through monitoring must be organized according to the numbering provided in the maintenance checklist; the locations must be marked on the building drawings.

#	Building systems	SCHEDULED MONITORING PLAN							
		Seasonal				Non - Seasonal			
		Spring	Summer	Autumn	Winter	Monthly	Quarterly	Annually	Once in 5 years
1	Façade								
1.1	Finishes								
1.2	Windows and Doors								
1.3	Terrace and the staircase of the basement and first floors								
1.4	Balconies								
1.5	Roof Terrace								
1.6	Roof of the Main Hall								
1.7	Decorative Stone Wall								
2	Interior								
2.1	Floor								
2.1.1	Stone Floor								
2.1.2	Wooden Floor								
2.2	Ceiling								
2.3	Columns								
2.4	Walls								
2.5	Staircase								
2.6	Door								
2.7	Main Hall								
2.7.1	Ceiling								
2.7.2	Wall								
2.7.3	Floor								
2.8	Furniture and small architectural forms								
2.8.1	Cabinets								
2.8.2	Wall-mounted lighting fixture and chandelier								
2.9	Structure								
2.9.1	Visual inspection of vulnerable structural parts of the building.								
2.10	Mechanical Systems								
2.10.1	Electric Network								
2.10.2	Water Supply and Wastewater Disposal System								
2.10.3	Heating, Ventilation, and Air-conditioning								
2.10.4	Safety Systems								

Preventive Maintenance

This is regular, standard, simple maintenance and consists of site cleaning, clearing of rubbish, animal and bird droppings, removal of stains, skylight and window cleaning, glass replacement, and drain cleaning, structural inspection on wood/metal temporary structures. Importantly, it includes removal of plants growing on the monuments, but at a lower level if they are relatively small and have not yet impacted the historic fabric. Importantly, for the preventive conservation aspect, many of these tasks can be done by volunteers, thus this is also low cost.

The need for and scope of preventive measures will be identified during the monitoring phase. It is therefore critically important to ensure careful monitoring and timely conduct of preventive measures.

Preventive measures should be aimed at mitigating the negative impact of various factors on the building and its technical facilities, and maintaining the physical stability of the building, including by:

- Regular cleaning of gutters to ensure proper functioning of a water removal system;
- Timely removal of dirt and undesirable surface deposits to prevent damage of valuable elements. Dust and dirt removal from building surfaces resistant to water should be done by using water, without chemical solvents. Dust and exogenous deposits on building surfaces sensitive to water should be removed using a dry method.
- Conducting an instrumental survey of critical elements, such as cantilevered balconies, the roof of the Main Hall, the amphitheatre structure and foundations. The Building Maintenance Plan requires that such surveys are carried out every five years, but the interval can be increased depending on the level of stability.
- Ensuring proper functioning of security systems, posting warning signs, as well as observation and other efforts that will reduce vandalism and minimize unintentional damage.
- Regular recording through photographs featuring general views of the building interior and exterior and areas at risk.

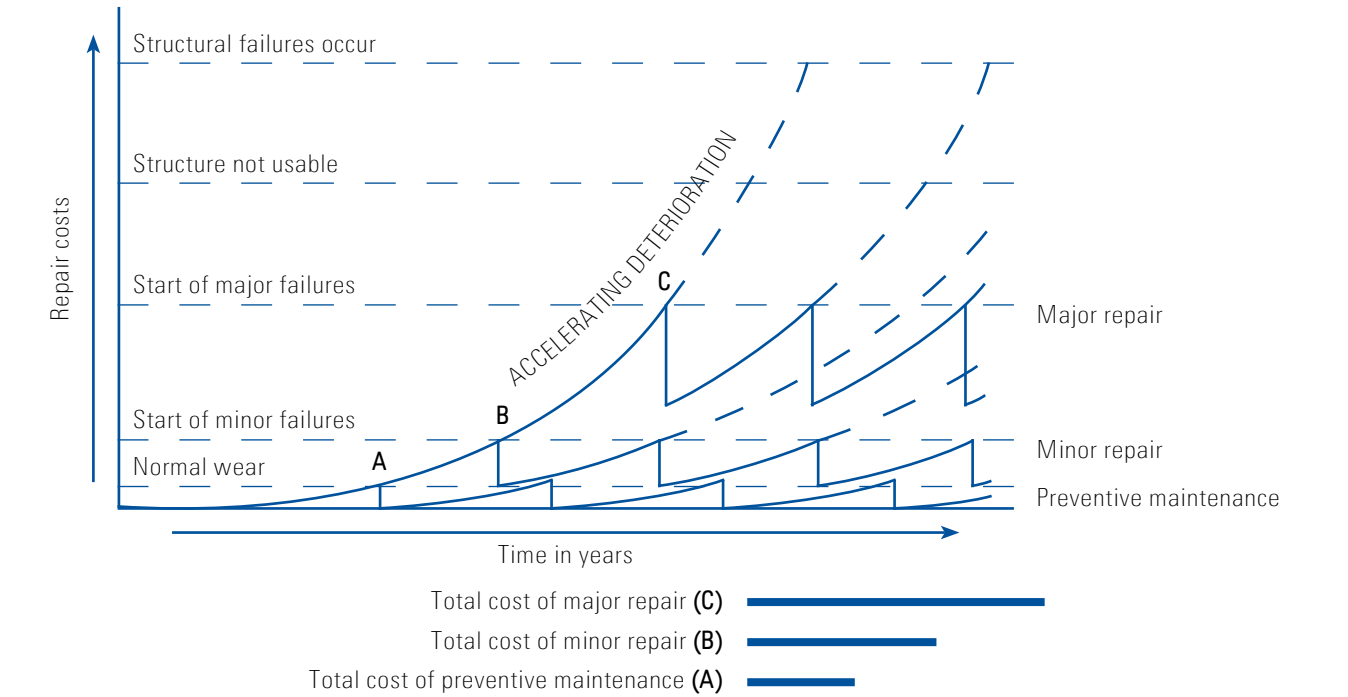


Diagram illustrating time and repair costs and the advantages of preventive maintenance (Raymond C. Matulionis and Joan C. Freitag Preventive Maintenance of Buildings, 1991)

#	Activity	PREVENTIVE MAINTENANCE PLAN							
		Seasonal				Non - Seasonal			
		Spring	Summer	Autumn	Winter	Monthly	Quarterly	Annually	Once in 5 years
1	Cleaning of the wastewater Disposal System								
2	Instrumental inspection of vulnerable structural parts of the building								
3	Cleaning of Architectural Surfaces								
4	Mitigate the facts of vandalism								
5	Photo-documentation of interior and exterior showing general views								

EMERGENCY MAINTENANCE

Even with the more careful planning there are unanticipated problems. Timely monitoring and prevention will minimize the unforeseen damage to architectural, structural, and technical elements of the building. However, a risk of damage should never be ruled out.

In the case of unforeseen problems, the body responsible for the building maintenance should determine the level of damage. Quick response measures may include only minimum intervention/repair, namely, measures to ensure temporary protection of the damaged roof from water infiltration and/or the replacement of cracked/broken glass of an aluminum window. It must be remembered that the building materials commonly used in the structures contemporary with the building require specific maintenance and expertise.

USE AND UPDATE OF THE BMP

The Building Maintenance Plan is a living document, which needs to be regularly reviewed and updated, especially in the case of the change of function of the building or of its parts, or radical deterioration of the physical condition of the building or its inner technical systems as a result of disaster.

The Building Maintenance Plan should be a guiding document for the building owner and user (usufructuary, lessee, etc.), who are responsible for the maintenance of the listed property. It is essential that representatives of the owner and the user come together to form a team, the most qualified member of which should be designated to conduct monitoring. He/she should know the building, be familiar with the Conservation Management Plan and be properly equipped. If necessary, he/she should be trained and equipped with relevant skills.

The Building Maintenance Plan should be updated by external specialists and be agreed upon by the team responsible for the building maintenance. The management of each organization using the building should be familiar with the plan. Each stakeholder must be immediately notified of any revision to the document.

THE FOLLOWING CONSIDERATIONS SHOULD BE TAKEN INTO ACCOUNT:

• Before Conservation

The risk of failure of the physical fabric and inner systems of the building will be minimized if the BMP is carefully followed. Regular monitoring enables timely identification of damage(s), while prevention deters damaging processes and even in the case of postponing the implementation of the Conservation Plan, maximum level of protection with minimum intervention can be achieved.

• After Conservation

Bearing in mind the intensive use and public function of the Tbilisi Chess Palace and Alpine Club building, regular maintenance should be ensured after conservation to safeguard the building and relieve the owner and the user of expenses associated with costly conservation.

• Filing Records

Documents and records drawn up as part of monitoring and prevention will be kept in a database that will be made available to all stakeholders and will be protected from loss or damage. The data will be properly systematized to enable the recording of any changes in the physical condition of the building and its use in future research and conservation.

WHERE DOES MAINTENANCE FINISH AND CONSERVATION BEGIN?

The Building Maintenance Plan does not entail conservation measures. It makes provisions solely for the monitoring of the process resulting from the interaction of the building – a living organism with its external factors. It also aims at reducing the level of undesirable interventions in the building or its technical facilities by means of conducting regular prevention.

In the interests of the heritage property and as prescribed by respective legislation³³, if damage is detected during regular monitoring, a specialist of the respective field, i.e. an architect, restoration architect or a technical engineer should be invited to devise conservation methodology, obtain a permit and conduct emergency conservation.

CHECKLIST												
Date		dd/mm/yy										
Filled by:												
№	Building Systems	Condition				Note	Damage			Damaged Area	Note	Photo №
		Stable	Slight decay	Medium decay	Severe decay		Active		Passive			
							Progressive	Non-progressive				
1	Façade											
1.1	Finishes											
1.2	Windows and Doors											
1.3	Terrace and the staircase of the basement and first floors											
1.4	Balconies											
1.5	Roof Terrace											
1.6	Roof of the Main Hall											
1.7	Decorative Stone Wall											
2	Interior											
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2.7.2	Wall											
2.7.3	Floor											
2.7.4	Furniture and technical equipments											
2.8	Furniture and small architectural forms											
2.8.1	Cabinets											
2.8.2	Wall-Mounted Lighting Fixture and Chandelier											
2.9	Structure											
2.9.1	Visual inspection of vulnerable structural parts of the building											
2.10	Mechanical Systems											
2.10.1	Electric Network											
2.10.2	Water Supply and Wastewater Disposal System											
2.10.3	Heating, Ventilation, and Air-conditioning											
2.10.4	Safety Systems											

³³ Law of Georgia on Cultural Heritage, May 22, 2007, Art. 47, The Legislative Herald of Georgia www.matsne.gov.ge/en/document/view/21076?publication=13 [accessed on 28.05.2020]

4.2. INTERVENTION GUIDELINES

This subchapter is divided into further three sections. The first one lists and describes the proposals for adaptation and reuse of some of the spaces, while the following section talks about

the economic justification of the proposed interventions. The last section lists the few elements which are proposed for reconstruction.

4.2.1. ADAPTIVE REUSE OF PARTS OF THE BUILDING FOR ITS INTERPRETATION AND FUNCTIONAL AND ECONOMICAL SUSTAINABILITY

Adaptive reuse is what many users and caretakers of cultural heritage sites turn to when the buildings have lost their original function or if it is otherwise impossible to conserve their values and cultural significance.

In the case of the Chess Palace and the Alpine Club, there were several reasons which led to the decision to propose adaptation for parts of its space. The reality is that presently, parts of the building are adapted and reused by its users, but in an inadequate manner. As described in the condition assessment section, these, more recent adaptation attempts have resulted in unacceptable alterations of the fabric and value-defining elements of the building and need to be reversed. On the other hand, these alterations were preconditioned by the need of the users to seek additional income for their operation by renting out space. For this reason, some of the spaces were either united, partitioned, or simply altered, to meet the needs of the new users – tenants, without any consideration of the building’s values and cultural significance.

Therefore, the authors of the Conservation Management Plan have a twofold task – on one hand, to demand a reversal of insensitive interventions in the adapted spaces to preserve and present the values of the building, but to also make sure that the economic gain on which the functioning of the user organizations depend, does not disappear. To return these spaces to the original function of the building and increase its economic viability, new, compatible functional spaces should be created.

The below proposal for the adaptation of certain spaces of the building is an inherent part of the Conservation Management Plan, which is based on the conservation priorities of the building and defines the actions required for its sustainable development.

Based on the results of the various studies conducted, one of the main priorities of its future development is the preservation of its historical function and creation of comfortable and modern space for the users, by retaining the artistic and architectural value of the building.

Proper planning and management of the use of the space of the building for educational, as well as commercial purposes for both sports, traditionally using the building, is crucial for the revitalization of the building and adequate use of its spaces.

Studies showed that there is sufficient space to achieve this goal. The presented adaptation proposal, will hopefully fully realize the idea of economic and viable development of the building.

Adaptive reuse proposals are concerned with the following spaces:

THE ADMINISTRATIVE ZONE OF BOTH SECTIONS OF THE BUILDING (CHESS AND ALPINE);

MAIN HALL, ITS VESTIBULES AND GALLERIES;

THE THEMATIC CAFÉ, MUSEUM AND GIFT SHOP ON THE BASEMENT FLOOR, A SPACE NOWADAYS USED AS BILLIARD HALL AND ORIGINALLY AS CANTEENS;

CLIMBING GYM OF THE ALPINE CLUB WHICH, ACCORDING TO THE ORIGINAL DESIGN, WAS AN AUDITORIUM;

ROOF TERRACE EVENT SPACE;

As the main task of the Conservation Management Plan is the conservation of the original appearance and design of the building, adaptation proposal, within the restored original layout and architectural elements, implies temporary partitioning of some spaces of the building using light, expandable wall structures, using them as required and thus, enabling further use of the building for its original and new compatible uses. This proposal does not interfere with the original zoning of the building, which implied division of the interior into two – administrative and visitor zones.

ADMINISTRATIVE ZONE

The administrative areas of both the Alpine Club and Chess Federation essentially remain unchanged. Minor interventions are proposed to meet the present needs of the users as revealed through the stakeholder survey and the findings of the sociological study.

The following changes refer to the administrative area of the Alpine Club:

Several small-size offices, which are currently unused, will be merged to extend the meeting room. Two storage rooms are to

be converted into changing rooms of the Climbing Gym, and two rooms will be turned into shower rooms.

The following changes preconditioned by the need for more small classroom spaces, will be made in the space used by the Chess Federation:

- The space of the small hall on the second floor shall be divided into three individual spaces using temporary partitions;
- The rooms, adjacent to the Main Hall to the east and the west will be turned into classroom spaces;
- At the level of the upper platform of the staircase going up to the terrace floor, two glassed rooms will be arranged, so that to ensure natural lighting of the two-span staircase.

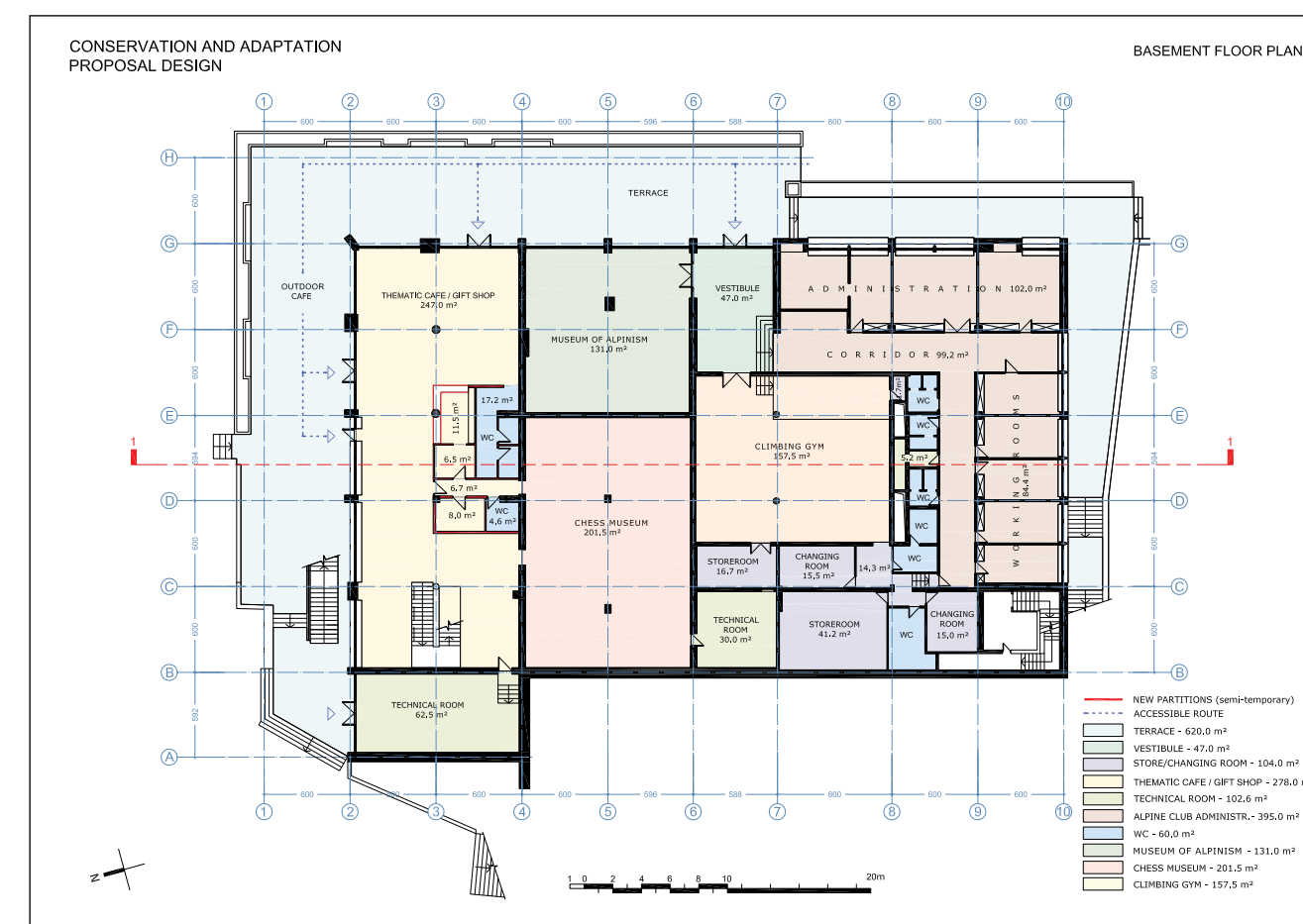
MAIN HALL, ITS VESTIBULES, AND GALLERIES

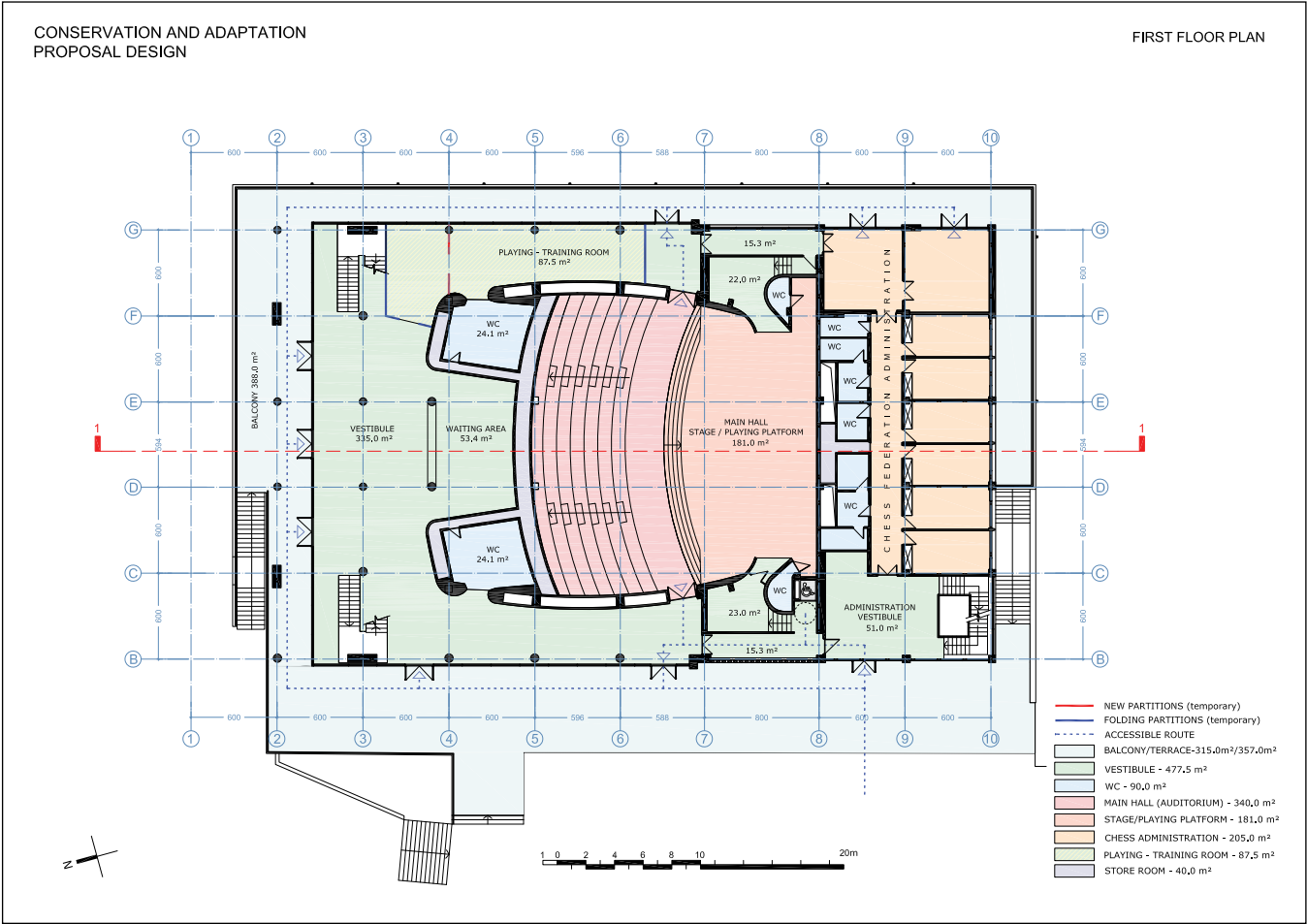
The Main Hall is the central element of the building, architecturally, as well as conceptually. Many of the building’s values are inherent with that of the hall as it is where historical chess matches were played and what turned the building into a public social space for sport, recreation, and culture.

With the time, the culture of observing chess matches in person in a large hall changed and the popularity that the sport had during the three decades of continuous victory of Georgian women

chess players, which fall on the first 20 years of the building’s existence, has eventually faded. Besides, in the digital era of today, the Main Hall will never be used in the future for only a single match, as originally often used.

As noted in the condition assessment chapter, it has not been used with its original function for several decades now and it is in a very poor state of repair, thus unable to host any kind of event. Meanwhile, the Chess Federation, the user of the part of the building where the Main Hall is located, notes that the city does not have a proper space to host large scale tournaments in Chess. When Georgia won the competition to host the World Chess Olympics in 2017, a large Sports Hall in Batumi was chosen as a venue. One of the stakeholder interviews with the Chess Federation authorities conducted as part of the research for the present document revealed that even for regular tournaments of local and national scale, the halls of the Chess Palace are not sufficient. Survey of event spaces in the neighboring districts, conducted as part of an exercise during the adaptive reuse workshop *Finding Compatible Uses for Modern Icons*, within the project, showed that there are no other venues of similar size nearby, and the Main Hall, when restored, could host various events. This, by itself, could create an opportunity for generating income through its rental and contribute to the financial sustainability of the site. This aspect is discussed further in the subchapter below.





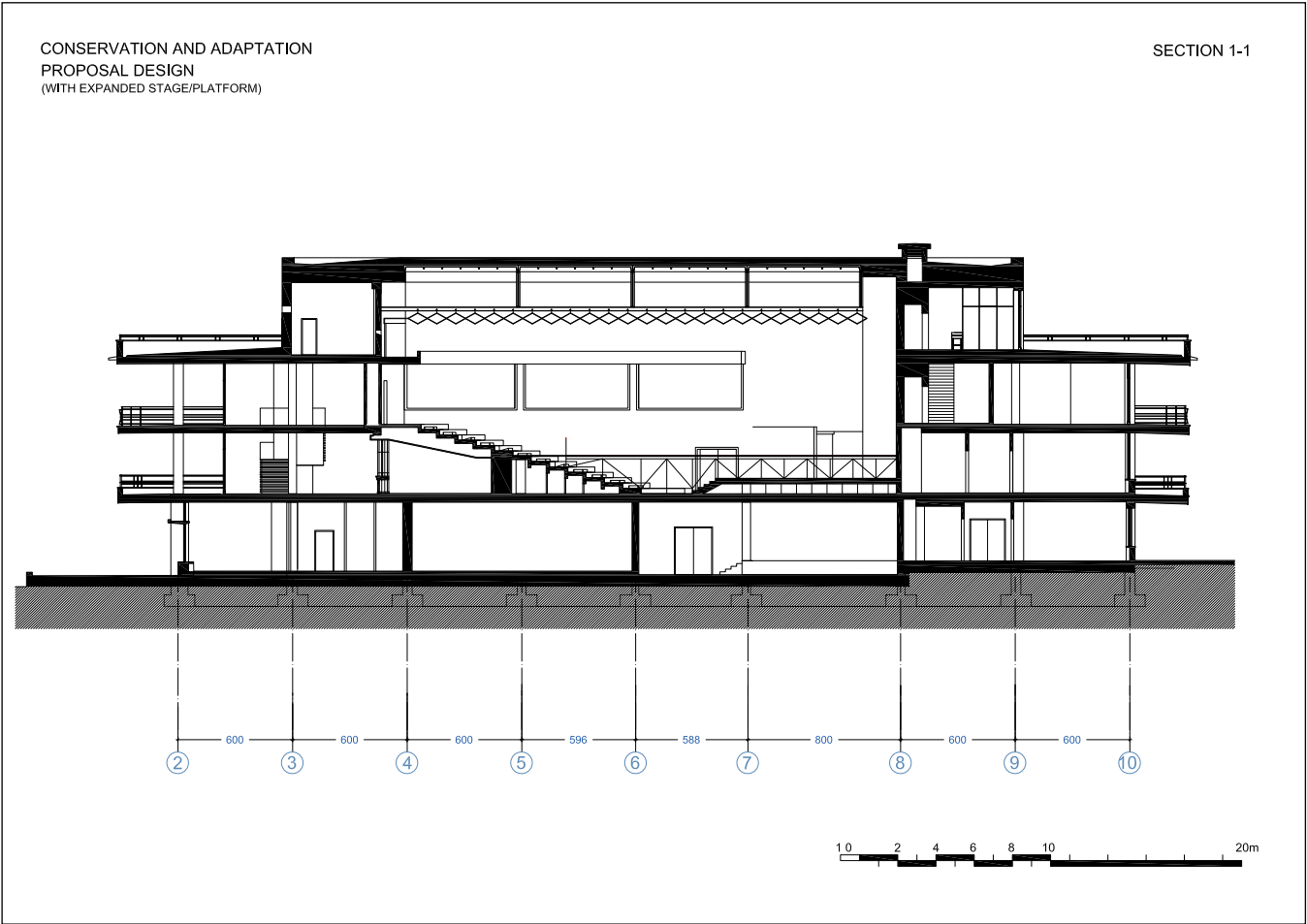
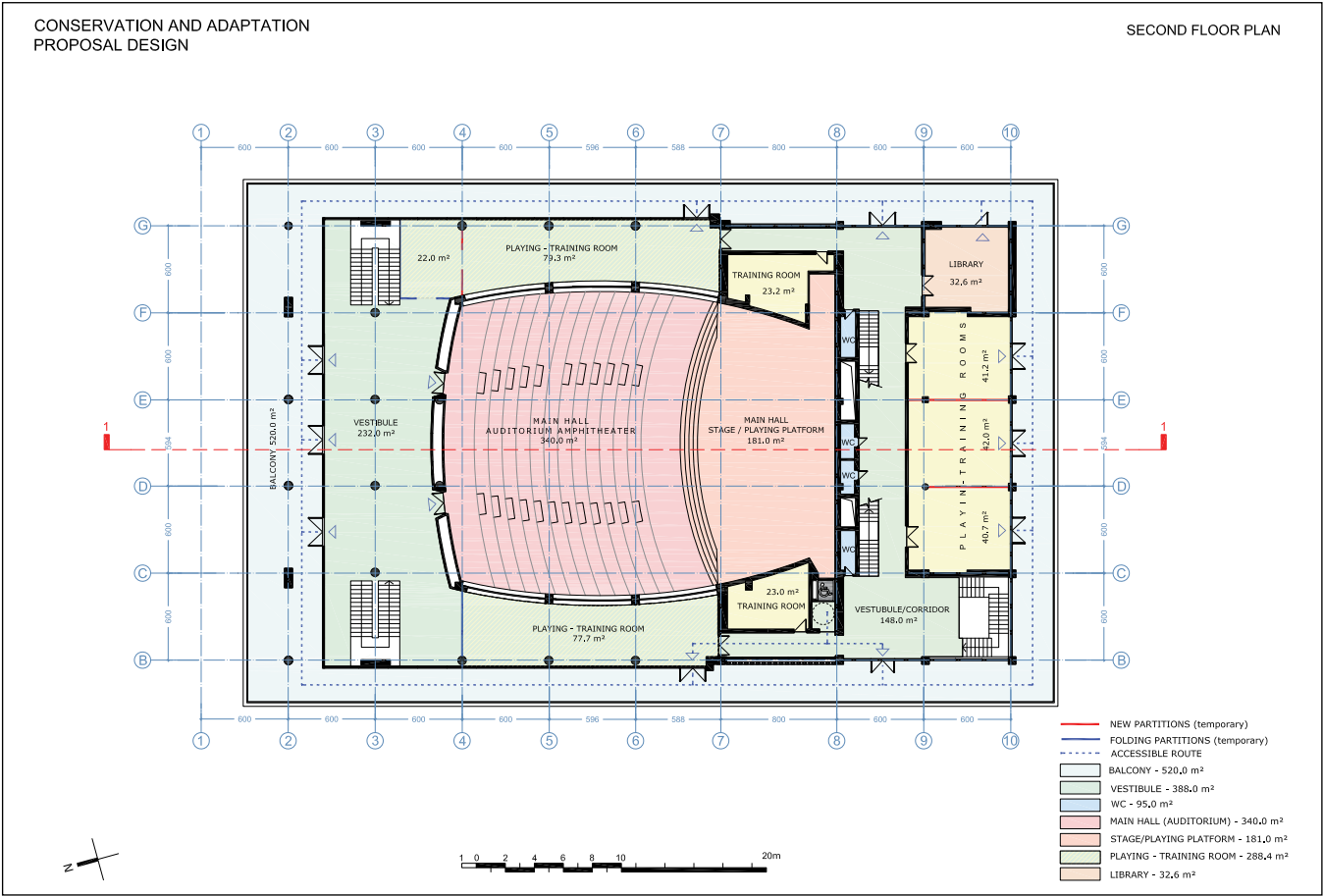
Adaptation proposal for the Main Hall, its vestibules and galleries implies the following points:

Providing the Main Hall with Modern Technical Equipment without infringing its uniform artistic appearance and retained authentic elements and integrity. Stylistic characteristics of the building period shall be taken in due consideration. In the process of technical modernization of the hall it is important to avoid alteration of the existing communication scheme (scheme of movement of the visitors and internal technical communication network);

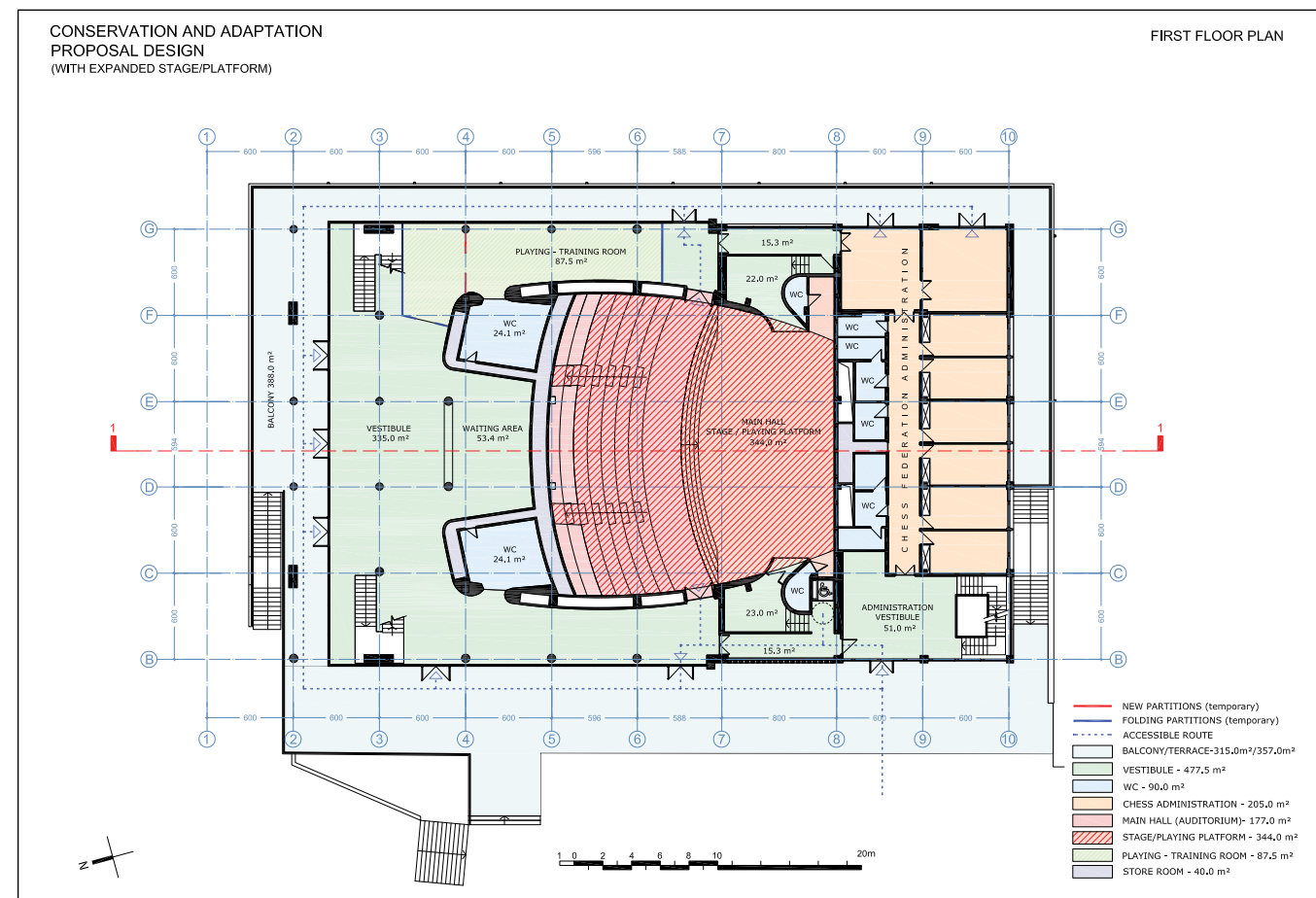
Renew the Soft Seats of the Main Hall. It is recommended to replace the seats of the Main Hall with new functional armchairs which in dimension and scale will resemble the original. It is important to use the emblematic numbering of old seats on the new seats.

Expand the Stage of the Main Hall using light, easily dismantlable and portable structure, allowing the use of the area of the expanded stage as a playing platform for holding large-scale chess championships. At the same time, it will enable hosting of conferences, public lectures, concerts and other similar events.

SKETCH OF THE MAIN HALL STAGE EXPANSION. 2019



PLAN OF THE FIRST FLOOR, SHOWING THE EXPANSION OF THE STAGE. 2019



Improve the Waiting Area. The use of the vestibule of the first floor as a waiting area and area for watching live TV matches. In the space under the Main Hall amphitheater, which also goes out to the vestibule of the first floor, a cloakroom shall be arranged; From the waiting space there is direct access to the cafe, shop and Chess Museum of the Basement Floor, proposed under the adaptation concept.

Reuse the Individual Vestibules. In vestibule areas, on the first and second floors, arrange partitions of temporary and easily movable light structure, which will allow isolation of the adjacent spaces on the eastern and western sides of the Main Hall as required, for holding chess competitions of different levels, or other events, such as exhibitions.

CLIMBING GYM

The Climbing Gym is a popular attraction for climbers and mountaineers in between mountain excursions. The gym encourages physical fitness, engages new members to the club, and most importantly serves as a social gathering space.

However, the gym, which is presently located in the original auditorium of the basement, does not meet modern training standards. Space does not have sufficient height, there is inadequate ventilation, safety equipment is lacking, and the floor

mats are insecure. For these reasons, it is necessary to modernize the gym and provide the artificial rock wall with modern equipment. Such intervention also implies the arrangement of shower rooms and cloakrooms within the administrative area, currently unused.

As the structure is limited in height, one possibility is the installation of an outdoor climbing wall in the park, but this would only be useful in good weather. However, such a structure as a tall climbing wall should be carefully positioned away from the building to avoid disrupting the view and respecting the physical and visual protection boundaries as prescribed by the Law on Heritage. This intervention should take into account the existing regulations in relation with the listed status of the building and the park.

THE THEMATIC CAFÉ, CHESS MUSEUM AND GIFT SHOP ON THE BASEMENT FLOOR, THE ORIGINAL CANTEN AND A SPACE NOWADAYS USED AS BILLIARD HALL

Findings of the sociological research and stakeholder surveys pointed to the need for a public space in the building. While the adaptation of the Main Hall entails the emergence of a waiting area for parents of the children participating in tournaments or attending classes and training, space that additionally will serve commercial and interpretive purposes, is considered of great importance.

The below proposal suggests relieving the space presently occupied by the billiard club and merging it with the original canteen space, currently unused on the Basement Floor, and adapting it for a new function - thematic cafe and gift shop of chess and alpinism. This space could accommodate both the active users of the building, such as youth training in the Climbing Gym, parents waiting for children training or attending competitions, as well as its visitors, such as visitors of the park, the building, and the museum.

To meet the need for the interpretation of the values of the building, it is suggested that an adjacent space of the suggested cafe and gift shop, a former technical room is adapted to house the Chess Museum. The justification of such a premise is further discussed in the following subchapter on economic justification as well as in Chapter 5.5. Interpretation.

The gift shop and cafe could unite the two themes and while the Museum of Alpinism And Museum of Chess would be housed

in the different sections of the building, this space would offer design elements of both sports as well as thematic souvenirs and literature.

This solution will create a source of income, which will compensate the income, presently earned by renting the areas out. Café & shop will be accessible from the outside, as well as from the interior, through the reconstructed staircase. A full financial study and business plan are strongly recommended.

ROOF TERRACE EVENT SPACE

Periodically, depending on the weather conditions, it is possible to use the terrace with various single-time functions. For this purpose, precast flooring, made of modern material, can be arranged on the terrace which will comply with the appearance of the building and will not put extra weight on the terrace structure. Thus, space can be rented out for occasional events such as fashion shows, receptions, etc.

4.2.2. ECONOMIC JUSTIFICATION OF ADAPTIVE REUSE

As previously noted, the above adaptation proposals have partly been dictated by the need to ensure the building is more financially self-sufficient for maintenance and ongoing operations. The adaptive reuse proposals have, therefore, been very carefully made and are based on sound judgment, to contribute to the conservation goals.

To further justify these decisions, during the research phase it became apparent that an economic analysis and market research would be necessary. A workshop for young professionals *Adaptive Reuse Workshop - Finding Compatible Uses for Modern Icons* held within the project inspired some of the findings and led the team to commission *The Highest and Best Use Study*. Unfortunately, a full economic analysis was beyond the scope of this project and budget. A comprehensive cost-benefit analysis of the adaptation proposals based on professional market research by a real estate company was, needless to state, expensive. Therefore, the justifications are based on the preliminary findings of *The Highest and Best Use Study* and the results of the workshop mentioned above.

Calculation of financial indicators demonstrates that the building's intrinsic values, such as its historical and artistic values, authenticity, and the intangible value related to its original preserved function, can be the basis of its sustainability.

If preserved and interpreted properly, the authenticity of the building can translate into economic value and contribute to its sustainability.

The results of *The Highest and Best Use Study* (a shortened version presented in Appendix 7) concern the Main Hall, Thematic Café-Museum, Bouldering Hall in the present Climbing Gym

including an outdoor climbing wall and the use of supplemental solar panels. The financial calculations which were part of the study served as an exercise and should not be presented in this document as a full comprehensive reflection of the costs involved and possible generated income and the profit. Besides, as mentioned in the limitations, the CMP does not include a cost estimate for the implementation of activities envisaged.

THE MAIN HALL

Currently, the derelict Main Hall which is the part of the building which has retained its authenticity the most, is considered as the one having the highest potential for unlocking the economic value of the building. Its adaptive reuse proposal while aiming at conservation of its character-defining elements offers the possibility of turning it into a multifunctional modernized auditorium. As explained above, the Main Hall, after its adaptation can accommodate the needs of the Chess Federation to host annual Chess Championships, and beyond, be used for various events, even at an international level.

As the mentioned study notes “the new function of the Main Hall is desirable to be consistent with the intrinsic concept of this space, which relates to victories in sports and intellectual activities” (Appendix. 7, p. 2) The study further notes the uniqueness of the Main Hall and its competitive advantage over the similar spaces in that neighborhood of the city. It suggests that the Main Hall is utilized for the activities of organizations such as **TEDx**, that aim at sharing knowledge, experience, and motivation through public speaking events. “This will attract intellectual society and will bring financial profits. Additionally, such events will emphasize the original function of the building, which is an educational and intellectual space.” - Notes the study.

It should be emphasized that The Main Hall can be fully repurposed, without altering the space, materials, or function, also thanks to its existing built-form: Its stairs offer easy access and accommodate emergency egress, the large vestibule, and the side galleries provide the necessary buffer spaces, sanitary facilities are of adequate size, while a direct individual entrance from the exterior avoids disruption of other activities held simultaneously in the building.

A round-table discussion with the main stakeholders in the process of drafting this document revealed the great interest of the municipality and especially its Department of Culture, Education, Sport and Youth Affairs in this proposal. A management scheme can later be agreed upon among the owner and the users to determine the periodicity of its use for chess purposes, for municipal events and outside rental.

A further financial study and a business plan calculating the costs for adaptation, maintenance, and wear against the potential income through rental is highly recommended.

THE CLIMBING GYM

At present, the gym, neither meets modern sports requirements (given low height) nor modern training standards. Therefore, its use is very limited. Results of an exercise survey undertaken by workshop participants showed that the demand for a Climbing Gym in the neighborhood is extremely high. A survey of its users also revealed their desire for a better-equipped gym. The gym currently contains a bouldering hall, locker room, and meeting spaces for training, but to meet the modern requirements of the consumer, several interventions are suggested. Again, according to the results of *The Highest and Best Use Study*, it is suggested that after adaptation a modern Climbing Gym can create a sustainable source of income for the Alpine Club. It can also help raise public awareness of the Alpine Club, thus, help interpret the historical function of the building.

The Study further suggests the erection of a high outdoor climbing wall to serve in conjunction with the bouldering hall

(See Appendix 7). The authors refrain from further elaborating this suggestion within the scope of this document while suggesting that such proposals be discussed in connection with the conservation of Vera Park which is also a historic listed site and requires a conservation plan of its own.

THEMATIC CAFÉ, MUSEUM OF CHESS AND A GIFT SHOP

Originally, the building included a café for visitors and users of the Chess Palace and Alpine Club. Unfortunately, the current café is insensitively installed on the open terrace of the Basement Floor and only serves the guests of the billiard club. The building also lacks a public space, which could accommodate lovers of both Chess and Alpinism as well as visitors to the building and the park. Such a space is needed for sufficient public interaction.

The café can become a gathering place for foreign and local visitors. It can offer the visitors thematic literature about chess and alpinism that will be provided in the sitting area. Besides, the very space can periodically host thematic video screenings which will further contribute to the promotion of the monument and the sports housed in it and serve as a communication tool to the wider public.

If it will be possible to arrange it in the space as described in the section above (4.2.1.) then it will have sufficient floor space to accommodate both a public space – a sitting area, a museum ticket office with a gift shop, and a café – all with a potential to generate income.

The Museum of Chess is an important element and serves the goal of a better interpretation of the building and its values. The next chapter talks further about the goal of interpretation.

The gift shop can offer souvenirs as well as necessary items and equipment related to the game of chess and mountaineering. This space could also accommodate a Visitors Center, as suggested by the same study, and provide visitors with important information regarding the hiking routes, mountain guides, etc.

4.2.3. RECONSTRUCTION OF MISSING CHARACTER-DEFINING ELEMENTS

STAIRCASE

Reconstruction of the staircase is justified for many reasons. Because of the functional value of the vestibules of both floors, as well as to manage visitor flows and safe evacuation, it is essential to reconstruct the staircase located on the eastern side in its initial form and also reconstruct the removed flight of the western staircase. For this purpose, the degree of intervention should be specified and the negative impact of the removal of the later-added inter-floor slab on the main structure should be determined. The stairs will be used to get to the thematic cafe, museum, and shop, and serve as an alternative means of egress in cases of emergency.

The wooden casing of the steps of the staircase, going up to the

terrace, shall also be reconstructed in accordance with the initial condition of the staircase. The existing original stone stairs and railings of the staircase should be repaired.

THE SANITARY FACILITIES

The sanitary facilities of the administrative area are sufficient from a space and location point of view and meet the requirements envisaged by the adaptation plan and no additional facilities are needed. Formerly existing sanitary facilities of the visitor zone require complete reconstruction.

Reconstructed facilities, in the case of isolation of the adjacent space, will serve individually for the visitors.

CHAPTER 5: RECOMMENDATIONS FOR MANAGEMENT

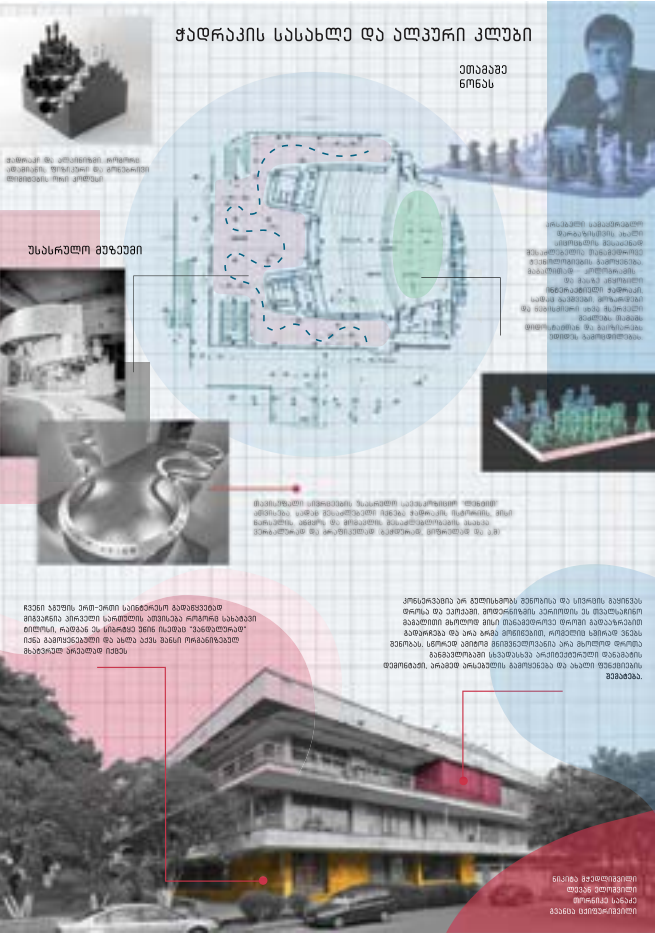


*Visitor of the Museum
of Alpinism. 2019*

The Conservation Management Plan is created with an understanding that it is a dynamic living document that can be revised and updated over time in the light of changing circumstances and new information and to meet the emerging needs. This statement is particularly relevant for this chapter. It is recommended that the management plan is revisited every year when major changes are planned, but thoroughly revised every five years and upon implementation.

This CMP was developed, not by the owners, occupants, or managers, but by cultural heritage professionals who care for the building and what it represents. The policies and recommendations outlined in the document have been created in extensive coordination with those responsible. While the team plans to continue to follow-up, it is beyond the team and their capacities to ensure its implementation and to fulfill specific expectations from the various stakeholders.

5.1. INTERPRETATION AND PRESENTATION



Interpretation concept prepared by one of the groups of young professionals participating in the workshop: Creation of the concept of interpretation center for Tbilisi Chess Palace and Alpine Club.

Following the previous chapters, which captured the values, identified the vulnerabilities that affect those values, presented policies and principles to protect the building’s significance, this chapter focuses on the management policies for the building and details recommendations for responding to its present and future management challenges and needs.

The Chapter consists of the following six subchapters:

- 5.1. Interpretation and Presentation
- 5.2. Integration within the Park
- 5.3. Accessibility
- 5.4. Improve Energy Efficiency
- 5.5. Implementation
- 5.6. Action Plan Matrix

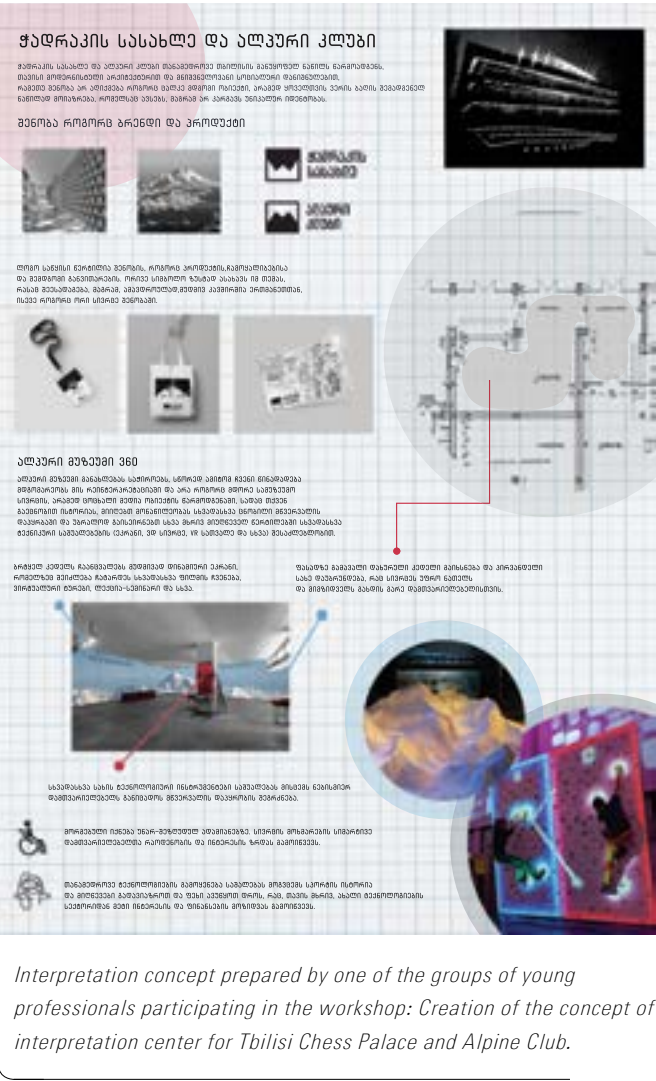
The lack of interpretation and the need to enhance it is mentioned several times throughout the document. Here it is necessary to emphasize it even more and particularly in relation to the existing interpretative tools, but also making suggestions for new ones.

Interpretation is a way of presenting the cultural significance of the building and it is an important part of the heritage management cycle. “Interpretation refers to the full range of potential activities intended to heighten public awareness and enhance understanding of cultural heritage site”.³⁴

To this date, the building and its various values have not been presented and interpreted sufficiently. It was only within the duration and leadership of this project that the Tbilisi Chess Palace and Alpine Club was listed as a protected monument and received statutory recognition for its cultural and historical values. Therefore, interpretation of the values that contribute to the significance of the site and the various character-defining features is one of the present priority actions for the building.

- It is recommended that a comprehensive interpretation plan is developed at a later stage. Until then, the present recommendations point to two directions:
- To enhance the existing interpretation;
 - Create new interpretation and presentation opportunities

To enhance the existing interpretation and presentation, the Museum of Alpinism needs to develop a new concept.



Interpretation concept prepared by one of the groups of young professionals participating in the workshop: Creation of the concept of interpretation center for Tbilisi Chess Palace and Alpine Club.

5.2. INTEGRATION WITHIN THE PARK

The management recommendations not only include the building, but also its context. It is necessary to preserve the building and its harmonious original setting and landscape.

While the creation of the plan for the immediate landscape of the building was beyond the scope of this project, the recommendation is that management must take into account the rehabilitation of Vera Park, which is presently under consideration. If and when the park gets its own CMP, it would be expected that this document is considered. It would serve the purposes of conservation and interpretation of the building, if its existence in the park would be better accentuated, such as with the help of signage and information material.

While currently both main users have had attempts and desire of integration with the park (The Chess Federation recently initiated a *Queen’s Garden* where the four women chess players planted

In the Basement Floor of the building is a museum celebrating the long history of mountaineering in Georgia. While it contains interesting artifacts and exhibits, it is undervisited and largely unknown. In the framework of the CMP, the museum should stay where it is currently located but enhanced with improved interpretation. The museum also serves another purpose, as a meeting space. In enhancing the interpretation, the space can still be used for meetings of the Alpine Club with the addition of light mobile partitions in accordance with the needs and requirements of the museum. For shading the sunlight, coming in from the restored vitrages, similar partitions can be used.

The intervention guidelines and justification thereof, in the previous chapter, talked in detail about the adaptation of part of the Basement Floor space into a Museum of Chess, a gift shop and a thematic café. Along with the potential to generate income, all of these facilities would serve the purpose of interpretation of the building’s values.

To create new interpretation opportunities, the creation of the Chess Museum would help interpret the glorious history of the sport closely connected with the creation and the history of the building itself. The Chess Federation also has a television channel and this could be another outlet for interpretation of the building and its history. While the separate museums would tell the stories of the respective sport, the gift shop and the thematic cafe could combine the two and offer souvenirs as well as necessary items and equipment related to the game of chess and mountaineering sport. These spaces could also host public events of educational character and be in line with the interpretation plan.



East Façade 2016
Photo: Gogita Bukhaidze

³⁴ ICOMOS Charter for the Interpretation and Presentation of Cultural Heritage Sites, 4 October 2008, www.icip.icomos.org/downloads/ICOMOS_Interpretation_Charter_ENG_04_10_08.pdf [accessed on 02.02.2021]

fruits trees in their name in the park at the eastern side of the building and the mountaineers have long been having the idea of erecting a climbing wall in the park), any such intervention should be very carefully thought out. Earlier discussion on

5.3. ACCESSIBILITY

One other management recommendation is improving the access to the building for the persons with disabilities. On the Basement Floor and the first-floor persons with disabilities can enter and move about the building without problems. However, it is not possible for wheelchair users to get to the upper floors without assistance as there is no elevator. To improve the situation, one

5.4. IMPROVE ENERGY EFFICIENCY

Increase of energy efficiency is another management recommendation that will significantly reduce operating costs and benefit all users. This aspect of management is strongly recommended given the large expanses of glass in the building.

The study of thermal losses led to the following recommendations for increasing energy efficiency:

- Conduct a full energy audit of the building including investigation with infrared cameras during the winter and a review of the current energy bills;
- Optimize the existing HVAC systems by means of improved smart thermostats and other relevant devices;
- Install energy saving LED lighting and automatic motion sensor switches;

the introduction of the climbing wall in conjunction with the remodelling of the Climbing Gym also stressed the necessity of placing it sufficiently away from the building and with careful consideration of the requirements of the park.

option is the installation of an elevator in the area adjacent to the stage, to the west, which will allow access from the first floor to the terrace level. The grid structure of the building allows for this adaptation. Such an installation would not affect the authenticity or integrity of the building.

- Double the glazing of the existing windows along the perimeter of the building by adding glass with energy-efficient tape;
- Investigate the possibility of installing solar water heating panels or photovoltaic cells on the roof as it has a clear view to the south thus exposed to year-round sun and a high parapet to hide any equipment seen from the ground. It is also desirable to install solar energy generating panels on the roof. The solar panels could be either for domestic hot water supply or photovoltaic and would be considered supplemental and not a replacement for the current heating sources;
- Install additional insulation in the roof (the least expensive option) and ensure that all heating pipes have proper insulation. Also close any gaps or holes in the façade.

5.5. IMPLEMENTATION - HOW WILL THE CMP BE IMPLEMENTED?

Having a Conservation Management Plan is not a statutory requirement for a listed building. According to the Law of Georgia on Cultural Heritage³⁵, the minister of culture certifies a conservation plan only for cultural property of complex structure. Since the Chess Palace and Alpine Club is not a complex property, its CMP will not be adopted through the minister’s normative act. Nonetheless, it is hoped that the owner, Tbilisi Municipality City Hall will find a way to adopt it as a working document.

As the first step, a meeting and presentation will be held with both the Chess Federation and the Alpine Club. Copies of the

plan will be delivered, and each section will be explained. A copy and presentation will also be delivered to the owner, the Tbilisi Municipality City Hall. The Action Plan and the maintenance portion of the CMP will be of particular focus in these discussions. The TMCH will be persuaded to officially adopt the CMP and plan for the implementation of the immediate actions as described in Phase I of the Action Plan.

As an active supporter of the development of this document, It is hoped that the TMCH will then follow up with the rest of the phases of the Action Plan.

5.6. ACTION PLAN MATRIX

The below matrix lists priority actions grouped in three phases and indicates their estimated duration. Each phase then lists the few main steps under it, referring to the concrete subchapter of the CMP. The matrix also makes an indication of the main bodies having primary responsibility and supportive role for each phase and step.

ACTION PLAN				
Steps	Priority Actions and their estimated duration (56 months)			
PHASE I - IMMEDIATE ACTIONS (UP TO 6 MONTHS MAX.)				
1.1	Discussion and Adoption of the CMP	Responsible Body	Implementing Body	Other possible participants/support role
1.1.1	Official Presentation and Discussion of the CMP	GNCBS	GNCBS	TMCH, NACHPG, Users - GCF, GAC
1.1.2	Adoption of the CMP	TMCH	-	-
1.2	Implementation of Building Maintenance Plan (BMP)			
1.2.1	Creation of a working group (As per ch. 4.1.2. BMP - use and renewal)	TMCH, Users - GCF, GAC	TMCH/Users - GCF, GAC	Other users
1.2.2	Capacity building of the selected individual	TMCH, Users - GCF, GAC	Qualified institution	-
1.2.3	Undertaking preventive maintenance actions (ch. 4.1.2. BMP- Preventive Maintenance)	TMCH, Users - GCF, GAC	Trained specialist	Other users
PHASE II - PLANNING (NEXT 6 - 30 MONTHS)				
2.1	Planning and Fundraising for project design phase (The below processes may differ according to the source of funding, e.g.: State, Donor or Private funds)			
2.1.1	Elaboration of ToR, making price estimate, developing and submitting funding proposal	TMCH	TMCH	GNCBS/Other Qualified institution
2.1.2	Obligatory studies for project design and studies outlined as necessary in the CMP (ch. 5.)	TMCH	Contractor	GNCBS
2.1.3	Design of conservation and adaptation project (ch. 4)	TMCH	Contractor	Users - GCF, GAC
	Preparation of plans recommended in the CMP (ch. 5.)	TMCH	Contractor	Users - GCF, GAC
	Implement actions for improving interpretation and presentation of the building (ch. 5.1.)	TMCH	Contractor	Users - GCF, GAC, other stakeholders
	Implement actions for improving energy efficiency (ch. 5.4.)	TMCH	Contractor	Users - GCF, GAC
	Implement actions for ensuring access for disabled (ch. 5.3)	TMCH	Contractor	Users - GCF, GAC
2.1.4	Submission of design of conservation and adaptation project for approval	TMCH	Contractor	Users - GCF, GAC, GNCBS
PHASE III - IMPLEMENTATION (NEXT 30- 56 MONTHS)				
3.1	Planning and Fundraising for Conservation Works and Interventions (4.1. and 4.2.)			
3.1.1	ToR for physical works	TMCH	Author of conservation of adaptation project Design	GNCBS
3.2	Undertaking Conservation Actions and Interventions			
3.2.1	Implementing interventions (conservation, adaptation and reconstruction of character-defining elements)	TMCH	Contractor	Users - GCF, GAC/Author of Conservation and Adaptation project Design

³⁵ Law of Georgia on Cultural Heritage, May 22, 2007, The Legislative Herald of Georgia, Act 27, www.matsne.gov.ge/en/document/view/21076?publication=13 [accessed on 28.05.2020]

ACRONYMS

CMP – Conservation Management Plan
DOCOMOMO – International Committee for Documentation and Conservation of Buildings, Sites and Neighbourhoods of the Modern Movement
GAC – Georgian Alpine Club, Ltd.
GCF – Georgian Chess Federation
GEL – Georgian Lari (active currency in Georgia)
Georgian SSR – Georgian Soviet Socialist Republic
GNCBS – Georgian National Committee of the Blue Shield
IFSC – The International Federation of Sport Climbing
ICOMOS – The International Council on Monuments and Sites
ICOMOS CIPA – International Scientific Committee of ICOMOS on Documentation of Cultural Heritage
LEPL – Legal Entity under Public Law
MDF – Medium Density Fibreboard
MESCS – Ministry of Education, Science, Culture, and Sport of Georgia
NACHPG – National Agency for Cultural Heritage Preservation of Georgia
NNLE – Non-entrepreneurial (Non-commercial) Legal Entity
TMCH – Tbilisi Municipality City Hall

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APPENDIX 1. STRUCTURAL SURVEY OF THE BUILDING

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Tbilisi 2019

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1. Retrieval technical documentation and description of the property to be studied;
 2. General visual inspection of the building to assess the general technical condition of the building and identification of damaged sections;
 3. Determination of major structural solutions employed in the building;
 4. Identification of physical and mechanical properties of building materials (concrete grade in collar beams, roof tiles, and walls);
 5. Key findings: Conclusions and recommendations.

INTRODUCTION

The present investigation was conducted under the agreement concluded with the Georgian National Committee of Blue Shield regarding the development of an expert report on the technical condition of the Tbilisi Chess Palace and Alpine Club building at 37 Kostava Street, Tbilisi based on visual examination.

For this purpose, we studied the obtained design drawings and documents, visually examined load-bearing structures of the building, and conducted an instrumental examination of the physical and mechanical properties of some load-bearing elements.

Examinations were conducted in several phases:

Phase 1: Tracing and studying technical documentation, as well as data on the construction and maintenance of the building;

- Phase 2:** General visual inspection of the building to assess the technical condition of the building and identify damaged sections;
- Phase 3:** Identifying the technical parameters of the foundation and physical-mechanical characteristics of the ground;
- Phase 4:** Identifying causes of damage and deformation in the main load-bearing structures of the building;
- Phase 5:** Making conclusions and recommendations.

The requirements of the Instruction on Examination of Residential and Public Buildings Located in the Territory of the Republic of Georgia and Identification of their Technical Condition from the Seismic Point of View issued in 1992 by the Ministry of Architecture and Construction of the Republic of Georgia and SP-13-102-2003 – Rules of Examination of Load-bearing Structural Components of Buildings and Structures were taken into consideration in the process of visual examinations.

1. TRACING TECHNICAL DOCUMENTATION AND DESCRIPTION OF THE PROPERTY TO BE STUDIED

1.1. DESCRIPTION OF THE STUDIED OBJECT

The client has presented the following material:

- The architectural design of the Tbilisi Chess Palace and Alpine Club building, Structural designs of the Tbilisi Chess Palace and Alpine Club building;
- Overview of the history of the construction of the Tbilisi Chess Palace and Alpine Club building, Earlier and recent measured drawings of the Tbilisi Chess Palace and Alpine Club building, Tbilisi, tracing alterations to and interferences in the building;
- Study of building materials employed in the construction of the Tbilisi Chess Palace and Alpine Club;
- Acceptance Act issued on 28 December 1972 by the State

Commission, commissioning the building of the Tbilisi Chess Palace and Alpine Club (37a Kostava Street, Tbilisi) functioning at the Committee of Physical Culture and Sports under the Council of Ministers of Georgian SSR.

According to the documents presented by the client, an agreement was concluded between the Division of Construction and Architecture of the City and the Political Committee of the Orjonikidze District on the allocation of a plot of land in the then Kirov Park (what is now the Vera Park) based on the 5 March 1960 Resolution issued by the Executive Committee of the Tbilisi City Workers Deputies’ Council. According to the above-mentioned resolution, greenhouses had been located on the site designed for the building.

In 1965, State Design Institute *Tbilkalaproekti* was commissioned by the Union of Sports Societies and Organizations of the Georgian SSR to develop the Tbilisi Chess Palace and Alpine Club building design.

Architects: Vladimer Aleksī-Meskhishvili, Germane Gudushauri;

Artists: Alexandre Slovinisky, Oleg Kochakidze, Yuri Chikvaidze

Structural designer: Otar Mebuke.

The building is one of the most outstanding examples of Late Soviet Modernism.

The construction work was to last from 1966 to 1967, but it took 8 years. At different times, the work was carried out by the following entities:

- Until February 1967 – by the Construction Department # 4 of the Council of Ministers of the Georgian SSR. During that period, major vertical planning work was carried out, piles were installed, foundation frame and Basement Floor platform structure were constructed;
- From February 1967 to December 1972 – by Construction Division # 21 of Trust # 14 of the Council of Ministers of Georgian SSR, which led the construction work to its completion and carried out facing works.

The following organizations also participated in construction: Construction Department #10 at the Trust #14 of the Council of Ministers of the Georgian SSR, *Mtavarkhidmsheni* (installation of piles), *Saksantekmontazhi*, the Division of Industrial Ventilation, Rustavi Division of *Sakmekmontazhi* (refrigeration equipment), Trust *Sakelektromontazhi*, the Installation Division of Industrial Communications, the Division of Thermal Equipment, the Factory of School Equipment, Industrial Complex of the Artists Fund of Georgia.

The Tbilisi Chess Palace and Alpine Club building was opened on April 15, 1973. Since 1990, it has undergone a variety of transformations. In the 1970s and 1980s, it was hailed as a magnificent building, while in the 1990s it turned into the “headquarters” of the paramilitary organization *Mkhedrioni*. It was then that the division of the building started with separate sections rented out to serve as a canine club, a casino, a burger club, a pharmacy, a bank, a Climbing Gym, and a beauty salon.

The occupants of the building made numerous alterations both to the interior and exterior of the building, which led to the loss of its authentic appearance. More specifically, along with other changes, the internal staircases were removed, granite pillars were painted and walls were relocated to expand the interior, etc.

In 2001 the building was named after Nona Gaprindashvili. In December 2018, on the initiative of the Georgian National Committee of Blue Shield, an application on granting the status

of an immovable monument of national importance to the Tbilisi Chess Palace and Alpine Club building was again submitted to the National Agency for Cultural Heritage Preservation of Georgia.

According to the Resolution of the Government of Georgia, dated 27 May 2019, the status of an immovable monument of cultural heritage (date of compilation of registration card 21.05.2018) was granted to the Tbilisi Chess Palace and Alpine Club building.

The district, where the building is located, has the following properties:

- Seismicity – level 8;
- Normative wind load – 48 kg/m²;
- Normative snow load – 50 kg/m².

It is to be noted that at the time when the design was developed (1966), the seismic intensity parameter for Tbilisi was set at level 7.

The site is in what is now known as Vera Park (formerly called Kirov Park), where the Chess Palace and Alpine Club building stands now, used to be occupied by greenhouses. In the presented construction design plan, the building has a rectangular geometric shape with dimensions 39,0X52,0, the number of floors is 2 – 2,5. The area of development is 1640 m². The height of the first floor is 4,0 m and, of the second floor – 2,9 m. Reinforced concrete piles are used as a foundation of the building. The monolithic reinforced concrete framework is filled with brickwork and aluminum glass vitrage. The building has a spacious hall designed to accommodate 520 spectators.

According to the scale of seismic intensity MSK-64, the examined building may be qualified as a “g-type” structure: *reinforced concrete frame buildings*.

The foundation footing is composed of alluvium of cobblestones, with allowable stress R=4,0-5,0 kg/cm². The above-mentioned ground is located 5,0 – 11,0 m below the design level.

The pile foundation represents a group of support piles, on which a reinforced concrete foundation frame (65 cm thick reinforced concrete slab) is arranged, which, in its turn, is bound by monolithic reinforced concrete edge beams. The foundation frame and edge beams are connected using monolithic reinforced concrete column fittings. The estimated resistance at the top of the pile is R=82 t/m².

The Main Hall is covered with metal girders. Windows and doors are made of softwood, aluminum vitrage have metal framings. Outer staircases are covered with basalt, while the ones in the interior are made of marble slabs arranged on metal frames.

The terrace, arranged around the roof of the building, was originally intended for public use and can be accessed from the second floor. It was designed as an open-air space for playing chess; nevertheless, due to the lack of shade (or for other reasons), it has never been used for this purpose. One section of

the roof space in the hall accommodated a projection facility, as well as various services and four auxiliary rooms.

Construction and installation works of the building were divided into two stages:

1. Preparatory work;
2. Implementation;

The following activities were carried out in the preparatory phase:

- Building new greenhouses as compensation for dismantled greenhouses;
- Dismantling of the existing greenhouses;
- Installation of temporary water drainage and electric wiring;
- Fencing around the construction site;

The following activities were carried out in the second phase:

- Underground and overground work that entailed the construction of all external utilities;
- Prefabricated reinforced concrete piles were dug into the ground to the depth of 6,0 – 9,0 m using diesel-hammers;
- Monolithic reinforced concrete foundation frame was arranged on the top of the piles;
- Over-ground works were carried out: a reinforced concrete frame was built; walls were filled with brickwork with a mixture of sand and cement; metal frames of aluminum glass vitrage were installed.

The Main Hall was covered with metal girders, on which prefabricated faceted reinforced concrete roofing slabs (the so-called large-panel reinforced concrete slab) were arranged. Then the roof support was installed.



Fig. 3 front view of the Recent addition



Fig. 4 Recent addition at the basement level



Fig. 7. View to the roof terrace



Fig. 8. The roof of the Main Hall



Fig. 1. The original appearance of the building
Photo: The G. Chubinashvili
National Research Centre for Georgian Art History and Heritage Preservation



Fig. 2. The building as it looks today

Concrete was supplied by a concrete factory. Wooden chambers were used as a concrete framework.

According to the physical work plan of the construction process, presented by the Client, there was a lack of lifting devices at the time of construction due to which the works were performed by using two truck-cranes (due to the low height, i.e. up to 8 meters); roofing girders were installed by using a caterpillar crane, while concrete work was done by using superficial and in-depth vibration.

As the piles were installed in the environment of aggressive groundwaters, concrete was prepared according to the technology employed at the time, i.e. using cement made of pozzolanic Portland cement.



Fig. 5. The original appearance of the Main Hall
Photo: Germane Ghudushauri
Private archive



Fig. 6. Main Hall as it looks today



Fig. 9. Roofing of the Main Hall, arranged with pre-fabricated girders



Fig. 10. Roofing arranged on metal girders with prefabricated reinforced concrete slabs

2. GENERAL VISUAL INSPECTION OF THE BUILDING TO ASSESS THE GENERAL TECHNICAL CONDITION OF THE BUILDING AND IDENTIFICATION OF DAMAGED SECTIONS

Visual examination of the site revealed the following violations and compliance:

A drain close to the Alpine Club section is damaged due to insufficient compacting of the ground and the flow of water into the ground.

As mentioned in the first section, additions were made to the cantilivered balconies of the building, the walls were relocated, and the balcony loads were increased. For this purpose, only one part of the second-floor balconies was reinforced with a vertical metal pipe.

Cracks are visible in the walls and door openings of the Main Hall (for 520 persons), which were caused by the earthquakes that had occurred in the region. The newly refurbished roof plastering also has cracks; they can be seen near the gutter diverting rainwater from the roof, most likely due to leakages from an improperly installed gutter. The space under this part of the roof is in use, which means the collapse of the plastering may cause injuries to the people who may happen to be there.

Most of the roofing tiles are badly damaged due to moisture; leaching of tiles has started, the protective layer on some tiles has been removed and corrosion of the bar mat reinforcement has begun. Leaching of the ribbed prefabricated concrete tiles (so-called large-panel reinforced concrete slab) arranged on metal trusses has also started.

Rainwater leaking from the roof has damaged the suspended ceiling in the Main Hall (520 seats).

The building framework is filled mainly by silica brick, the use of which is prohibited under the current Construction Norms and Regulations.



Fig. 21 The suspended ceiling in the Main Hall, damaged by roof leaks



Figs. 11 and 12 Cracks in the walls of the Main Hall



Figs. 13 and 14 Cracks in the walls of the Main Hall



Figs. 15 and 16 Cracks in the recent plastering



Figs. 17 and 18 Leaching in ribbed prefabricated concrete tiles arranged on metal trusses



Figs. 19 and 20 Silica bricks used in the building



3. DETERMINATION OF MAJOR STRUCTURAL SOLUTIONS EMPLOYED IN THE BUILDING

Visual examination of the site and the analysis of the building documents and design drawings presented by the client enabled us to identify structural solutions employed in the construction of the building:

1. According to the structural design diagram, this is mainly a framework structure; some of the framework elements – columns, span pieces, and roofing tiles are prefabricated, while others are monolithic.
2. The foundation footing is composed of alluvium of cobblestones, with allowable stress $R=4,0-5,0 \text{ kg/cm}^2$. The ground is located 5,0 – 11,0 m below the design level.
3. Reinforced concrete piles are used in the foundation of the building. The pile foundation represents a group of vertical piles, on which a reinforced concrete frame is arranged (65 m thick reinforced concrete slab), which, in its turn, is bound by monolithic reinforced concrete foundation beams. The frame of the pile footing and edge beams are joined by monolithic reinforced concrete column fittings. The estimated resistance at the top of the pile is $R=82 \text{ t/m}^2$.
4. One part of inter-floor overlapping is of monolithic reinforced concrete, while another is made of precast hollow-core slabs of reinforced concrete.
5. Windows and doors are made of coniferous trees.
6. Aluminum vitrages have metal frames and 6,0 to 9,0 mm thick glass.
7. External staircases are finished with basalt tiles, and internal staircases feature marble steps on metal frames.
8. External enclosing walls are made of fine-grain filler, mainly silica brickwork on the sand and concrete mortar, the application of which is prohibited in Georgia under the Construction Norms and Regulations approved in 2010 (*Earthquake-Resistant Construction*, PN 01.01-09, Article 15(1e): “The use of silica bricks shall be prohibited in the construction of load-bearing and non-load-bearing elements”).
9. Span pieces are rectangular. They are made of monolithic reinforced concrete and their cross-section is 50X60 cm.
10. Columns are square and circular, and their cross-sections are 40X40 cm and diameter – 40 cm respectively; they are made of monolithic reinforced concrete.
11. The Main Hall is covered with 21,2 m long metal trusses, the load-bearing elements of which are alloy-treated profile angle pieces. The trusses are trapezoidal, and their maximum height is 2,00 m in the middle; on the top of metal trusses precast reinforced concrete ribbed slabs are arranged.
12. The remaining part of the roofing is flat and has a reinforced concrete slab.

4. IDENTIFICATION OF PHYSICAL AND MECHANICAL PROPERTIES OF BUILDING MATERIALS (CONCRETE GRADE IN COLLAR BEAMS, ROOF TILES, AND WALLS)

For the identification of strength characteristics of the load-bearing elements of the examined building, an instrumental survey was carried out using non-destructive testing. As long as inspection at this stage is limited to visual examination, concrete grades were identified only for some elements; in the future, a more detailed examination of strength characteristics of load-bearing elements and an observational survey will be required to determine the possibility of the development of cracks.

The following reinforced concrete structures, selected in advance, were examined: roofing slabs; span pieces, terraced flooring of the Main Hall, and walls. Concrete grades were identified using the sclerometric method.

Concrete strength control was performed following the requirements of GOST¹ – 22690-80; GOST – 1018-90; GOST 1018-200 and GOST 18105-86. Italian-made hammer “CONTROLS”, model “ELCOMETER 181” was used (see pictures) to determine the strength of samples of cubic (150x150x150 mm) shape in the range of 10-65 N/mm². Measurement inaccuracy for the compression strength is 15-20% for grade B15 – B25 concrete.

The reading results are given in N/mm². After statistical processing mean square deviation of strength was determined, the variation coefficient was calculated and the standardized value of concrete strength was determined.

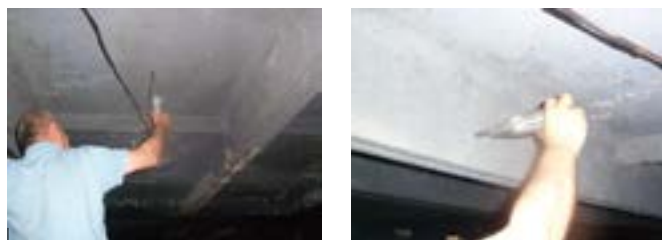


Fig. 22,23. Identification of concrete grade in ribbed slabs of roofing

Square deviation of mean strength is calculated according to the following formula:

$$S = \frac{(R - Ri)}{(n+1)} + \frac{Sr}{p}$$

where:

Sr – mean square deviation of calibration of test tool;

n – total number of individual results in the lot;

p – number of test areas in the reinforced concrete structure.

The average coefficient of variation of concrete strength is determined as a percentage:

$$Va = \frac{S}{R} \cdot 100\%$$

Finally, the standardized value of concrete strength, i.e. concrete strength according to grades, is calculated according to the formula: D

$$R_{\text{standardized}} = \frac{R}{K_{\text{req}}} \cdot 100$$

where K_{req} – is the required strength coefficient in percentage value, which is taken from the table of Annex IV of GOST – 18105-86 for all types of concrete. In our case $K_{\text{req}} = 88.2$

Examination showed that concrete grades in monolithic reinforced concrete slabs of roofing, terraced floor, walls of the Main Hall are within M200, and in precast hollow-core reinforced concrete and ribbed roofing slabs – within M300.

Visual examination of metal trusses was carried out. Visually, noticeable damages and deformations were not observed; nevertheless, as there are traces of roof leaks, an instrumental survey is required to check for corrosion; the welded seams shall also be inspected.

5. KEY FINDINGS: CONCLUSIONS AND RECOMMENDATIONS

The following types of damage were observed in the building during visual examination:

- The ground near the stairs of the Alpine Club is lowered and the gutter is deformed;
- The quality of attachment of slabs to the façade of the second floor adjacent to the Alpine Club is poor;
- Calcium-silicate bricks are used;
- Cracks are noticeable in the walls of the Main Hall (520 seats);
- There are bulges and cracks in the plastering in the section where water diversion systems are located;
- Most of the roofing tiles are badly damaged due to humidity; leaching of tiles has begun, affecting concrete and leading to concrete grade depreciation. Protecting concrete layers of some of the tiles are damaged and corrosion of the bar mat reinforcement has started.

IDENTIFICATION OF THE CAUSES OF DAMAGE

1. Cracks may have been caused by frequent earthquakes that have taken place in the region since putting the building into operation;
2. The damage of roofing tiles (leaching, corrosion of the bar mat reinforcement) may be caused by the old age of the hydro-insulation system and roof deterioration caused by intensive precipitation.

RECOMMENDATIONS FOR THE SAFE MAINTENANCE OF THE BUILDING

- According to the Terms of Reference, the assessment of the technical condition of the Tbilisi Chess Palace was performed based on visual examination. In the future, it is necessary to perform an additional, instrumental survey of the building to make a more accurate assessment of its physical state (metal trusses of the roof shall be inspected for corrosion, more so that there are the traces of roof leaks; the joints of tiles near the staircases which are no more in use and cantilevered balconies with additions also require an instrumental survey).

- At the time of the construction, buildings were designed to resist grade 7 earthquakes; nowadays it is required that buildings are designed for grade 8 earthquakes, due to which the stability of the building shall be recalculated.
- According to Construction Norms and Regulations (*Earthquake Resistant Construction* PN 01.01-09), “The use of calcium-silicate bricks in load-bearing and non-load-bearing elements is prohibited”. According to this requirement, each of the walls built of calcium-silicate bricks shall be dismantled and replaced by new walls of common red clay bricks or smaller concrete wall blocks, which is difficult to implement in our case. Therefore, the plastering must be removed from the damaged parts of walls (around cracks), metal grids shall be arranged to cover the cracked area and new plastering shall be applied.
- Due to the damage of the protective concrete layer, the naked longitudinal reinforcement bars shall be cleaned by removing dirt and rust and covered with anti-corrosion solution, while the damaged concrete layer shall be restored;
- The surfaces of roofing tile reinforcement shall be cleaned of rust and covered with anti-corrosion solution and then the protecting concrete layer shall be restored;
- The concrete surfaces of the roofing tiles, damaged of humidity shall be dried and cleaned by removing fungal and moisture stains; concrete must be applied on the damaged section of the protective concrete layer;
- The bulges on recently plastered parts on the edge of the roof shall be removed and plastered anew;
- It is expedient to restore the original state of the balconies, as, due to the later additions, the loading on balconies has increased. It was probably for this reason that a part of the balcony was reinforced using metal columns;
- The slabs, which are poorly attached to the wall (the second-floor level façade on the side of the Alpine Club) shall be removed and arranged anew;
- The deformed gutter near the Alpine Club stairs shall be removed and installed anew.

¹ A set of technical standards maintained during the Soviet Union and still valid in Georgia

APPENDIX 2. INSPECTION OF MECHANICAL SYSTEMS

CONTENTS

- 1. Water supply and Wastewater Disposal System;
- 2. Heating, ventilation and air-conditioning;
- 3. Electric Power Network

WATER SUPPLY AND WASTEWATER DISPOSAL SYSTEM

Author: Alexandre Mikiashvili - Technical Engineer

Tbilisi 2019

INTRODUCTION

The Tbilisi Chess Palace and Alpine Club opened in 1973 in what was then called Kirov (now Vera) Park. It is one of the outstanding buildings of Late Soviet modernism. The Chess Palace, as it is often referred to, was dedicated to the 5-time world champion in chess, Grandmaster Nona Gaprindashvili, who first won the title of the world champion in 1962, at the age of 21.

It is often assumed that the building was designed to function as a Chess Palace only, but all the official documents related to its construction attest to the fact that it was intended both as a Chess Palace and Alpine Club. Set in Vera Park, the building is adapted to the local terrain. It is two-storeyed on the western side and three-storeyed, on the east; there is a terrace on the roof. The center of the building is a Main Hall designed to seat 520 spectators, which is enclosed by glazed galleries on two floors, on the northern, eastern, and western sides.

At present, apart from the users, the building is used by several tenants leasing several spaces. The latter have drastically changed the interior, as well as the exterior of the building. There are pool halls and a café.

The need to accommodate additional functions in the building has led to the installation of partitioning walls and additional sanitary systems.

DESCRIPTION OF THE CURRENT CONDITION OF WATER SUPPLY AND WASTEWATER DISPOSAL SYSTEMS

The inspection of water supply, wastewater, and stormwater systems revealed the following:

Water is supplied to the building through a DN100 mm steel pipe, running from the side of the front façade (Vera Park fountain). The pipe reaches the section of the building occupied by the Chess Federation, on a basement level. It was installed at the time of construction of the building. It appears that the original pipe has not been replaced in recent years. To allow separate water supply and metering facilities for the Chess Palace and the Alpine Club, the steel pipe was cut, and separate, branched polypropylene (PP) 32 mm pipes were placed. (See figures 1 and 2). At the same place, is located the Chess Federation’s water meter.



fig. 1-2



fig. 3

The picture shows that the steel pipe is very corroded. It is always moist on the outside because of condensation; interaction with air further corrodes it. It does not have an anti-corrosion cover and, after its cutting and blocking, highly corroded areas are visible at the points of welding.

The polypropylene pipes extending from the point of branching are arranged hastily. There are no holders that would properly fix them to the wall and the ceilings (fig. 2) They are fixed only at some points along the walls and ceiling, and, to avoid damage that may occur as a result of any kind of impact, are fixed by nails to the walls at some points or by wires to the wall reinforcement.

From that point, the pipe extends down to the basement, from where it is connected to all water supply points.

At the same branch, on the basement level, are located polypropylene valves, which, in the case of damage, will be used for blocking individual passages. In the basement, pipes are connected to different points. In most cases, they are hanging loosely (fig. 3).



fig. 4-5



fig. 6

The basement itself consists of several individual halls, which are not connected with doorways. There is only one small opening, a hole made in the wall of ground and concrete, in which only a thin, flexible person may fit through. There are several smaller holes for pipes and cables (see fig. 4, 5, and 6).

As it was impossible to arrange new polypropylene pipes in the halls next to the basement, plastic pipes were joined again to old distribution pipes of steel. It was thus only a partial improvement. (See fig. 5 and 6).

The basement-level sewerage system, made up of DN100 mm cross-section cast iron pipes, has never been replaced. Sealing has been damaged at many points of connection (nipples) and became wet in certain sections. It is likely that water leaks in these areas when flushing the toilets (See fig. 4 and 5).

In the basement, all pipes, except for the one in the main collector, are made of cast iron. The cast-iron pipes pass through and above the first-floor flooring. Some of them running at the height of 1-1,2m and connecting to PVC (sewer plastic) pipes, while the majority of cast iron pipes have been left untouched (see fig. 7).

Apart from that, next to 100 mm sewer pipes, there are 150 mm diameter rainwater pipes, which are not functioning. Most of these pipes on the upper floors have been dismantled; only the ones on the first-floor level, going down to the basement level, remain (see fig. 7).

Despite old age and visual appearance, the cast iron pipes located on the first and upper floors are in satisfactory condition; the points of connection are not properly sealed, creating the risk of leakage.

Most disturbing is the situation in the basement of the section of the building used by the Chess Federation, namely at one of the joints of sewer pipes, from where the collected water is discharged into the manhole via the backyard. At that point, cast



fig. 7



fig. 8



fig. 9



fig. 10

iron pipes are connected to a rainwater pipe, instead of sewer, and sewage waters likely discharge into the central rainwater system, instead of sewers (see fig. 7).

Besides, the pipes are damaged and most likely blocked at this point, due to which, during water consumption, part of sewage water leaks through pipes. The foundation becomes wet with sewage water at this place (fig. 9). It is also aggressive to concrete and reinforcement.

Toilet facilities on the first and upper floors in the section used by the Chess Federation are made of new materials, according to modern designs using, but the toilet on the backstage of the Main Hall is in a bad shape. It is most probably out of use now (fig. 10). In addition to that, several sewer pipes go down the backstage of the Main Hall and are done without proper designs. Other pipes pass through narrow service openings in the walls, which are full of garbage. Some of the pipes are new, while some are old and need to be replaced.

Through plastic pipes, water is supplied to the boiler installed in the roof space; however, there is no drain pipe in the boiler; neither is there any floor drain to remove leakages.



fig. 11



fig. 12

From the sewer pipe outside the building, water is discharged into sewage wells next to the parking lot in the backyard. One of the wells serves the facilities of the Chess Federation (fig. 18), and the other – those of the Alpine Club.



fig. 18



fig. 19



fig. 13



fig. 14

In the pool halls and the café, the sanitary conveniences appear to be in satisfactory condition (fig. 14), however, it was impossible to access the basement, as the access to it was blocked.

The water supply and sewerage system in the Alpine Club section are in poor condition. Although toilets are more or less clean (fig. 15 and 16), the steel pipelines (water as well as sewage) in the basement are old and corroded and need to be replaced.



fig. 15-16



fig. 17

BRIEF DESCRIPTION OF THE RAINWATER DRAINAGE SYSTEM

In addition to the water supply and sewerage system, the building had cast-iron pipes that removed rainwater from the roof. The pipes, which passed through the basement, evacuated water outside, where they were connected to the central stormwater system. The internal system is now out of use. Cast-iron rainwater pipes on the first floor and in the basement are not used; those on the other floors had most probably



fig. 21



fig. 20

been dismantled. At present, rainwater is removed from the roof through gutters installed in the parapet of the roof terrace. The gutters have inclination from different sides to catch water. Pipes are placed in the deepest sections of gutters. The pipes extend to the façade of the building in the form of scuppers, from which water directly discharges on the ground. The arrangement is similar on the other (high) level of the roof, from where water is evacuated through the same type of scuppers down to the first level.

DRAINAGE SYSTEM IN THE BUILDING

During visual examination and interviewing it was impossible to determine whether the building has a drainage system; however, the Basement Floor and foundation walls are not damp and there are no signs of damage caused by groundwaters or rainwater. The foundation walls are damp at some points only because of the poor condition of the water supply and sewerage systems, as described in the previous section.

RECOMMENDATIONS ON THE REHABILITATION OF WATER SUPPLY, SEWERAGE, RAINWATER DISPOSAL AND DRAINAGE SYSTEMS

Following recommendations have been suggested to ensure a safe and convenient water supply to all consumers in the building (i.e. the Chess Federation, the Alpine Club, pool halls, and a café) after rehabilitation:

- Stop using incoming steel pipes and arrange a new branch from the central (city) network.
- Install a distribution well outside the building, which will be connected to each consumer's facilities by using pipes. It is possible to install meters for each user inside the building or in meter wells outside. It is desirable to arrange internal water supply and sewage using new pipes, inside walls, or, at least, by fixing them on the wall and ceiling. For the better functioning

of the water supply system, it should be re-installed in a different configuration, to diminish the number of horizontal sewer pipes in inter-floor roofing. The pipes extending to the outside sewerage wells are also to be replaced by SN8 type PVC (plastic) pipes with thick walls.

- To ensure the service personnel's access to each pipe in the basement in case of their damage, arrange a door (if structurally possible) or at least small openings in the walls of the halls.
- Install a 50-mm sewer pipe in the roof space where the boiler is located to arrange a floor drain that will safely remove accidental leaks or water discharged through a discharge pipe.
- Arrange supports for rainwater pipes. If the installation of pipes outside the balconies affects the visual appearance of the building, or if their placement inside the building is deemed unsafe for further maintenance, it is possible to extend rainwater pipes to internal walls of balconies and, passing through balcony tiles run down to the ground level, from where they would extend outside the building via bend and horizontal pipes to join the external stormwater system. This solution, which respects the visual appearance of the building, also allows the installation of rainwater pipes within the building. Thus, the water that now drips from the roof on the asphalt or the ground, damaging it, will be removed through pipes and discharged into the stormwater system or smoothly flow onto the asphalt cover.

Considering the shape of the building and its immediate surrounding, there is no need for additional drainage for the building. Groundwater levels are not high and there is no indication that they may affect the foundation walls of the building. The basement itself is dry, except for one small section that was affected by the poorly functioning sewerage system. The problem shall be resolved by timely repair of the sewerage system rather than building additional drainage.

HEATING, VENTILATION AND AIR CONDITIONING (HVAC)

Author: David Gogokhia - Technical Engineer

BRIEF DESCRIPTION OF THE BUILDING

The Tbilisi Chess Palace and Alpine Club was opened in 1973 in Kirov (presently Vera) Park. It is one of the most remarkable buildings designed in the so-called Late Soviet modernist style. Commonly known as the Chess Palace, it was dedicated to a five-time world champion in chess, grandmaster Nona Gaprindashvili.

The Chess Palace and Alpine Club building in Tbilisi stands out among the buildings of similar profile around the world thanks to its shape and volume. The building has a high-ceiling Main Hall which can accommodate 520 seats and has a stage, 17 rooms-offices, including those for coaches and grandmasters, a library, and a computer center. It also shelters the office of the Chess Federation of Georgia and the Chess School. The Palace was named after Nona Gaprindashvili in 2001.

DESCRIPTION OF HVAC SYSTEM IN THE BUILDING AS DESIGNED

A central heating, ventilation and air-conditioning system was designed for the building. Both heating and ventilation (calorifiers working in water) were provided by a central boiler, from which pipes ran down to the building basement; from there heating and ventilation were distributed using standpipes. Cast iron radiators were installed throughout the building, except the Main Hall for spectators and sanitary utilities. The solution applied to the heating system design was based on a double-pipe principle, which is indicated by several steel pipes, surviving in the building.

In the Main Hall for spectators, which was designed for 500 visitors, there was mechanical ventilation, which could also serve the function of heating the hall. The main ventilation device was installed in a service room located on the roof, in a utility facility between exits G-F and 4-5. The heating distribution system was



fig. 1



fig. 2



fig. 3



fig. 4



fig. 5



fig. 6



fig. 8



fig. 7

also present; part of the equipment supplied heating to radiators, while others ensured ventilation and hot water supply.

SUPPLY OF FRESH, HEATED AIR

The air from the airflow ventilation device was distributed as follows:

From a service room, the heated fresh air, through a standpipe and an especially arranged shaft would be transported to the roof, where a horizontal main air pipe was located.

From the main pipe, through air pipes, the air was distributed to the top corner zone of the hall, from where a flow of fresh, heated air was supplied into the Main Hall. The air pipes were wrapped with glass wool.

The airflow device was supplied with fresh air from an air intake located outside the building, the air pipes extending from which ran underground, reaching into the service room.

AIR EXTRACTION

Air extraction from the building was ensured by several systems. From the Main Hall air was extracted through a ventilator installed on the roof of the building; the air was received from the

floor level of the Main Hall, where air grills were located. The air received through the grills accumulated in the structure located under the chairs in the Hall, which was hermetically sealed; all flows then accumulated in the extracting air pipe and, like an air intake, was located underground, from where the air flowed outside through an air discharge facility.

Air was also extracted using sanitary utilities, a shaft air pipe, and a standpipe. It was transported to the roof, from where it was discharged outside.

CONDITION OF HVAC SYSTEM

The building accommodates the needs of mainly two entities: the Chess Federation and the Alpine Club. There are also two pool halls and a café.

The systems provided in the original design are completely damaged and out of use; local systems were installed in different sections to ensure heating, cooling, and ventilation of the building at least partially. More specifically, the Chess Palace is served by three wall boilers, which supply the office space and several halls; ventilation is provided only in the sanitary utilities. A local cooling system is also present, which uses split-type air conditioners.

Like the Chess Federation, the Alpine Club has local heating, cooling, and ventilation systems.

The pool hall, located on the first floor, is served by an independent water heating wall boiler. Heating is supplied through standing fan coils, located in the pool hall, which are provided with hot water from the wall boiler installed in the kitchen.

Mechanical air extraction and cooling systems are also installed in the same pool hall, which, like the systems supplying the Chess Federation, make use of independent split system air conditioners.

The pool hall located on the Basement Floor has central heating, cooling, and ventilation system, which is installed in the specially allocated area.

The HVAC system of the pool hall on the Basement Floor operates effectively, unlike the systems serving the other organizations. Air intake and extraction systems, as well as cooling and heating systems, are provided. Some of the outer facilities serving these systems are located on the roof of the building.

In general, the local systems present in the building are safe and properly installed. They operate properly. In the event of building a central heating/cooling/ventilation system for the building, it will be possible to integrate some of these facilities in it. Concerning the question about the suitability of the locations of the equipment of these systems, it appears that they were properly selected.

MAINTENANCE NEEDS OF HVAC SYSTEMS AND RECOMMENDATIONS

As the heating, cooling, and ventilation system of the entire building does not work properly, except for the facilities serving the pool hall located on the Basement Floor, it is suggested that some work should be performed. These interventions are essential to maintain the climate and air quality required by respective regulations and standards.

As a primary measure, the function of each space shall be determined and the heating and cooling losses shall be calculated, which is to be followed by estimating the amount of fresh air required in specific spaces of the building, as well as the energy capacity needed. It is recommended to provide a central heating/cooling/ventilation system, which, unlike local systems, is more efficient and effective.

It is necessary to equip the Main Hall of the Chess Palace, as well as other, relatively smaller halls, with a mechanical ventilation system. A similar system shall be installed in each space used by the Alpine Club.

ENERGY EFFICIENCY IMPROVEMENT MEASURES

Improvement of energy efficiency in the building is necessary to prepare for the anticipated standardization and also, to reduce energy consumption in the building, which will allow the users

to save on their energy bills. Preliminary inspection of the site showed that the building's energy efficiency level is low.

The main partitioning structures of the building are enclosed by aluminum vitrages, which significantly increases energy losses. A major recommendation is to replace the them with new, energy-efficient double-pane windows containing low-emission glass (with low heat loss coefficient). Replacement of aluminum vitrages and installation of new double-pane can be done without damaging the existing fitting frame.

Winterization of the building will be difficult, as the main partition is made of aluminum vitrages, while the rest are finished with stone, further increasing the losses.

As for the energy efficiency of the technical unit, it is recommended to use condensing boilers, automated heat valves or radiators (in the case of the use of radiators for heating), and high-efficiency cooling devices having so-called remunerators of air heat exchange, which provide a considerable difference in terms of energy consumption. Besides, it is desirable and recommended to use solar collectors for hot water supply; it is possible to install them on the roof.

To ensure the improvement of the building's energy efficiency, a detailed ToR (Terms of Reference) must be prepared by respective specialists before the commencement of the project. It must include specific heat loss coefficients of each partitioning and other indicators, which will later be used for developing designs for heating, cooling, ventilation, and lighting schemes.

RECOMMENDATIONS

Specific solutions can be offered after conducting small-scale research on the issues related to energy efficiency. The high energy efficiency of the building can be achieved by using several methods. First of all, winterization of external walls; for this purpose, different heat insulation materials may be used, but it is to be taken into account that the external walls of the building are covered with stone tiles, installed earlier and their removal, installation of heat insulation material and then repeated installation of tiles will be very difficult and inefficient.

Another, most realistic method is the replacement of aluminum vitrages of the building. The existing aluminum vitrages have one layer and their heat loss coefficient is very high, about 4,00 wat/m².°C or even higher. The existing aluminum vitrages shall be removed and replaced by double-pane windows, having a much lower heat loss coefficient; their k will equal approximately 1.6, wat/m².°C.

The third method is the winterization of flat roofing with various winterization materials, which, like the winterization of external walls, is associated with a number of problems.

ELECTRIC POWER NETWORK

Author: David Andronikashvili - Electrical Engineer

CONDITION OF THE MAIN TECHNICAL ROOM AND ELECTRIC MECHANISMS

Power to the Tbilisi Chess Palace and Alpine Club is supplied from an electrical substation #4045 of JSC Telasi.

The electricity metering unit is located on the wall of an electrical substation. From this point, power is supplied to the building through a low voltage cable, which is placed in the ditch. It shall be mentioned that the service power cable was replaced several years ago and its condition is satisfactory. There are no power supply problems due to this low voltage cable (there is no need for replacement or repair).



fig. 1-2



fig. 3

The main distribution unit of the power supply is located on the southern side of the ground floor, which can be accessed only through a Climbing Gym and a cloakroom of the Alpine Club. The design would likely envisage access to the facility from another side, or it may also be that the present-day facilities had a different function. It is possible to get there without any barrier, which is concerning as the door has no lock and there are no warning signs; safety norms are violated (according to electrical network installation standards, the distribution unit must preferably have separate access; the lack of direct access, i.e. the need to pass through different functional zones (Climbing Gym, where there is training, meeting or other events) makes maintenance difficult; the door shall be locked and only authorized personnel shall have access to repair work. Warning signs are necessary.

Two distribution cabinets present in this space, which were part of the overall power supply scheme of the building, are out of order. The above-mentioned electric equipment with wooden planks, which suggests that they do not function properly.

In the same space, there is a power cable, which either was part of the old power supply system and is not used presently because of the new supply cable or is considered as a standby cable. There are a lot of such abolished cables, cabinets, etc. all over the building.

In the above-mentioned service room, cables of different sizes hang in the air violating the safety rules. There is a threat of their overlapping, breakdown, and interruption of power supply.

Besides, there are many electric service panels, intended for the initial functioning of the building, presently abolished, and the cables coming out of there.



fig. 4



fig. 5

Judging by the surviving technical equipment, it can be assumed that the initial power supply network was arranged through conduits, in which special metal pipes were installed to protect against mechanical impact. Electrical cables were placed inside them.



fig. 6



fig. 7

POWER SUPPLY NETWORK OF THE BUILDING: CURRENT CONDITION

Due to significant alterations made to the building at different times, power supply schemes envisaged by the original design

are compromised. The building has been altered according to different needs and functions. New spaces received power through an internal electrical network, as well as external installations.

On the façades of the building, one can see electrical cables placed in plastic protective pipes; the protective pipes have lost integrity, creating the threat of scrubbing of the cable.



fig. 8



fig. 9

The interior on the first- and second-floor levels have partially been renovated. The distribution box and network, respectively, have also been replaced.

Electricity is delivered to the second floor from the distribution unit located on the first floor. It is difficult to say through which box and what type of cables do the newly refurbished spaces get power supply. (These are low voltage cables, installed in different periods. After the last rehabilitation works walls and partitions were built. For this reason, it is difficult to visually inspect installation routes and determine the reliability of the network. It is to be mentioned that these spaces are used and are supplied with power without interruption.)

A Main Hall is also located on the first floor of the building; the main space of this building, which initially represented the main energy-consuming facility (i.e. ventilation, air cooling-heating, acoustic, and lighting systems).

One of the valuable details of the Main Hall includes wooden panels, which could slide and visually integrate the hall with the

surroundings through an open, paned corridor. The mechanism of the sliding panel is out of order. Assumedly, the majority of boxes, located in the electrical distribution facility on the first floor, served this and other similar systems.

The utility facilities on the third floor include heating boilers, which receive power through both old and new electrical wiring. Meaning that the new electric network of newly installed boilers is connected to old cables, which threatens their proper operation (damage of equipment, interruption/or termination of power supply, obstruction of operation process), as well as the technical safety of the building.

In addition to the above-mentioned, the inspection revealed the lack of working and emergency lighting, as well as fire alarm and ventilation systems in the building.

CONCLUSION AND RECOMMENDATIONS

To conclude, the power supply system present in the Chess Palace and Alpine Club building is a network designed and installed in the 1970s in compliance with the design requirements. Its facilities and systems have relevant technical capacities.

In the past, the network was modified several times to respond to various needs of the tenants, which has led to the state in which these facilities are now to be found.

To ensure faultless functional and technical operation of the building, the power supply network needs to be fully redesigned in compliance with modern standards, by taking into consideration video surveillance, ventilation, heating/cooling, modern lighting, and acoustic systems, and other facilities of similar purpose.

Fire alarm systems shall be designed and integrated into the overall management system so that they operate accordingly in the case of an accident.

Installation of modern, high-quality equipment is essential to increase the reliability of the network and guarantee its safe operation.

APPENDIX 3. STUDY OF THE BUILDING MATERIALS

Authors:**Lela Ninoshvili** – Stone and wall painting conservator
Manana Kavsadze – Geologist

Tbilisi 2019

CONTENTS

- 1. Construction in Soviet Georgia
- 2. Tbilisi Chess Palace and Alpine Club Building Structure
- 3. Structural Concrete
- 4. Mineral and Petrographic Analysis of Construction Material
- 5. Specification of the Used Building Materials

Prepared in the framework of the Project Conservation and Sustainable Use of Modernist Architecture in Georgia, the present study provides a general overview of the building materials and techniques employed during the construction of the Tbilisi Chess Palace and Alpine Club building, located at 37, Kostava Street, Tbilisi.

Within the frames of the study, archival documents and drawings related to the building were studied. These included an initial design, which provides general information on the building materials used. Along with that, mineral and petrographic analysis of the building materials was carried out and the building was studied on the basis of visual inspection.

1.CONSTRUCTION IN SOVIET GEORGIA

After the establishment of the Soviet regime in Georgia, the understanding of and attitudes to the aesthetics of architecture, building tradition, and historical values changed. Inspired by the Soviet ideology, the society became preoccupied with the idea of implementing ambitious socialist projects, which notably included the large-scale growth of production and industrial development. Determined to encourage the establishment of a sharing economy and carry out fundamental political and economic transformations, Soviet authorities viewed the low pace and inefficiency of construction as a major challenge. In this light, they stressed the “unsuitability” of traditional Georgian building materials and the “primitiveness” of building techniques. “Before the establishment of the Soviet regime, building materials in Georgia were simply processed. Some construction materials, such as cement and chalk, were imported. Other works were also performed manually.”² The need for the development of fast and efficient construction techniques was emerging.

Soviet authorities saw the solution in industrializing construction and increasing the speed and cost-effectiveness through producing precast reinforced concrete constructions.

The period from 1922 to the 1950s saw a large-scale campaign of construction of factories and other industrial facilities for which precast reinforced concrete details and structures were

used. Construction work was carried out in accordance with the regulations established through numerous governmental resolutions³. Buildings of different purposes were built as part of the experiment. These included the Kaspi Cement Factory, the Tbilisi House of Unions, the Tbilisi State Medical Institute, the industrial building of Knitting Factory.

Construction work was accompanied by research and testing activities; calculations were made to understand technical properties and economic indicators of prefabricated structures. Ore processing plants, factories of prefabricated concrete structures, and precasting yards were built in large cities of Georgia. All studies and economic estimates produced at that time showed great technical potential and cost-effectiveness of these products.

Before World War II, the use of prefabricated components was more common in the construction of technical, industrial, and civil buildings; following the recovery from the damages caused by World War II, a new wave of development of precast concrete started. The technique began to be applied to multi-apartment residential blocks and multi-story buildings.

The use of precast components reached its height in the 1960s and 1970s.

2.THE TBILISI CHESS PALACE AND ALPINE CLUB BUILDING STRUCTURE

Along with the large-scale construction campaign driven by the Soviet agenda of ‘cheapening’ cities and in conditions of strictly centralized control of construction activity, a number of buildings erected in Tbilisi at that a number of buildings erected in Tbilisi at that time, were constructed in compliance with standards and norms applicable at the time, however they differed in quality and artistic values. The Tbilisi Chess Palace and Alpine Club, built in 1973, is one of the most outstanding examples among these buildings.

Standing on uneven terrain, the three-story building is rectangular in plan. It is built of reinforced concrete frame and prefabricated structure⁴, the main load-bearing volume of which is connected to the ground with piles. The ground is made of the strong rock.

3.STRUCTURAL CONCRETE

The study of the building material of the load-bearing wall showed that the concrete used in the construction is of high density and, in combination with pebbles, makes coarse aggregate filler, which has a structure similar to that of concrete.

The study also showed that the inclusions of coarse, artificially segmented pieces of diorites and weakly marbleized chemogenous limestone are used in a concrete structure, instead

The building walls are constructed of the monolithic reinforced concrete frame, which is filled with the so-called silica brickwork (diaphragms). Light interior partitions are made of pumice concrete slabs. According to their structural load and stability needs, two types of inter-floor overlapping are used: multi-spanned, monolithic, fine-grain slag blocks and monolithic reinforced concrete slab covered with insulation layers. The main roof is built with flat hollow core slabs⁵, and pumice fill with asphalt layer and Ruberoid insulation.

Typical for this period, all the above-mentioned construction materials are mostly prefabricated products that use cement and metal reinforcement for binding and granular pebbles of different sizes and sand as a filler.

of the so-called *Mtkvari sand*, which was widely applied as filler in construction projects in Tbilisi. It must be mentioned that concrete strength largely depends on the physical and chemical properties of fillers; to a certain extent, it is the shape, size, and type of filler that determines the concrete strength coefficient. Consequently, the use of an agglomerative composition of structural concrete in the construction of the Chess Palace was part of a purposeful structural solution.

² Nodar Bichiashvili. Development of Precast Reinforced Concrete in Georgia.(Tbilisi, Sabchota Sakartvelo, 1983)

³ 1922 – National Assembly of the Communist Party of Georgia: Economic Measures of the Sharing Economy of Georgia.
1929 – The 4 July Assembly of the Communist Party. The first 5-year plan of development of the sharing economy was adopted, which prioritized the production of building materials and development of facilities for construction.
In 1948, according to the Resolution of the State Committee for Architecture under the Council of Ministers of the USSR, all Soviet Republics were ordered to build standardized houses using prefabricated concrete parts.
On 1 September 1954, an Order was issued by the Ministry of Industry of the USSR on the construction of factories of prefabricated concrete parts.
The Resolution of XVII Assembly of the Communist Party of Georgia provided for the construction of factories producing prefabricated concrete parts and prefabrication yards for the large-scale industrialization of construction activity.

⁴ Shalva Burchuladze, “Technological process of the production of prefabricated reinforced concrete involves the following sequence of operations: preparation of concrete mixture and reinforcement frame, thermal and moisture treatment of precast structures for accelerating the hardening of concrete.” in Construction Materials, (Tbilisi, Ganatleba, 1988) p. 175.
⁵ “According to the type of construction, floor panels and spreads may be flat, ribbed monolithic and hollow. Spreads are manufactured with round and oval voids, which reduce their weight and concrete consumption; the length of the spread is up to 6 m, thickness – 200 mm, and width – up to 0,8- 1,5 m. The spreads are made of concrete of min. grade 200, with ordinary or prestressed reinforcement. Floor panel is rectangular and has round or oval voids. inter-floor slabs are the size of a room. Single-layered spreads are made of heavy-weight or light-weight concrete, while layered spreads are made of heavy-weight and cellular concrete (thermal insulation layer); in the case of combined spread, the ribs are made of heavy-weight concrete and slabs of cellular concrete. The grade of the heavy-weight concrete in all the above-mentioned cases shall be min. 200, light-weight – 150 and cellular – 50.” ibid, p. 179.

4.MINERAL AND PETROGRAPHIC ANALYSIS OF BUILDING MATERIALS (MONOLITHIC CONSTRUCTION MORTAR) OF THE TBILISI CHESS PALACE AND ALPINE CLUB BUILDING

Place of sample collection:

Basement Plan

Sample N1/824 – monolithic construction mortar.

Macroscopically, the sample represents light-grey dense mortar with coarse aggregate, surface of which is plastered with a kind of lining:

Under binocular, in the main dense fine-grain mass, large pieces of diorites and weakly marbleized chemogenous limestone occur;

According to microscopic analysis of transparent petrographic section, the sample is a coarse-grain mortar, represented

by Portland cement consolidator, with the addition of filler, consisting of granodiorites, marbleized chemogenous limestones, effusive and intrusive, sediment and organogenic rocks and their elements. This filler does not look like *Mtkvari sand*, widely used in Tbilisi. Granodiorites and limestones create pebble fractions.

According to granulometric (sieve) analysis:

Fraction size, mm	Fraction weight, g	%
Initial	40,280	100
+10	17,103	40,460
+7	2,809	6,974
+5	1,462	3,630
+3	0,738	1,832
+2	0,345	0,857
+1	2,417	6,000
+0,5	3,737	9,276
+0,25	4,540	11,271
+0,1	2,800	6,951
+0,05	1,370	3,401
-0,05	2,943	7,306
Sum	40,264	

According to sieve analysis, the sample represents coarse-grained mortar, actually concrete, where the proportion of filler with the binder is 5,5 :1,5, besides, the proportion of fractions is 3,5:2:1,5.



fig. 1. Sampling area, Basement, bearing construction



fig. 2. Sampling area, basement, bearing construction, close up



fig. 3. A sample to be studied in the laboratory



fig. 4. Sample under the microscope



fig. 5. Sample under the microscope

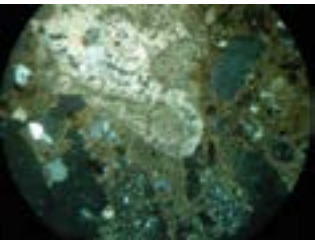


fig. 6. transparent petrographic cross-section under the microscope

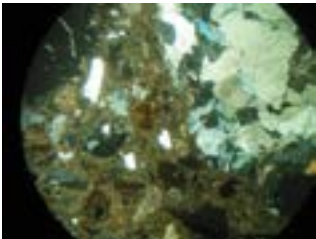


fig. 7. transparent petrographic cross-section under the microscope



fig. 8. Disintegrated study sample



fig. 9. HCl (hydrochloric acid) test to determine presence of calcium carbonate



fig. 10. Sand grains of the mortar under the microscope

Disintegrated material has an extensively sizzling reaction with hydrochloric acid, which implies the presence of carbonate up to 45-50%. The Calcareousness of materials is increased by the presence of multiple carbonated fillers.

In carbonate-free, washed sediment, clinker granules, grains of quartz, intrusive, effusive, and sedimentary rocks are present in large numbers.

The inspected sample represents high strength concrete (agglomerative) mortar. The sections of coarse-grained round filler may be considered as weak areas, prone to exhaustion. Cornered carbonates increase binding, but they are vulnerable to water and acidic aggression; however, the given sample does not demonstrate such weaknesses.

5.SPECIFICATION OF USED CONSTRUCTION MATERIALS

- **Building** – three-storeyed, with a flat roof;
- **Foundation** – reinforced concrete piles;
- **Walls** – monolithic framework of reinforced concrete, filled with brickwork;
- **Interfloor overlapping** – multi-spanned, monolithic, with fine-grained slag block filling;
- **Cover of the Main Hall** – iron trusses, prefabricated reinforced concrete slabs;
- **Roofing** – winterization with pumice layer, covered on the top with the layers of asphalt, Ruberoid insulation, terazzo tiles;
- **Partitions** – prefabricated pumice stone concrete slabs;
- **The floor of the basement, first and second floor** – finished according to the function of the space – with marble tiles, oak parquet, clean-cut basalt tiles, ceramic tiles;
- **Terrace Floor** – reinforced concrete structure;
- **Main Hall** – carpet flooring is used on the first and second floor;
- **Stairs** – monolithic reinforced concrete, platforms – faced with marble tiles;
- **Windows and glass-cases** – Duralumin;
- **Door blocks** – high-value timber plywood;
- **Internal facing** – textured surface of ceiling and walls;
- **Foyer walls on the second floor and radiator niches on the first floor** – covered with artistically carved wood panels;
- **Part of internal wall surfaces** – faced with artistically carved *Bolnisi* tuff;
- **External facing** – aluminum vitrage, interfenestrations, and balconies are faced with *Eklari* stone tiles. Handrails – metal, painted with oil paint.

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APPENDIX 4. RECOMMENDATIONS ON IMPROVING OCCUPATIONAL SAFETY

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Tbilisi 2019

INTRODUCTION

The purpose of the present report is to offer recommendations on how to improve occupational safety in the Chess Palace and Alpine Club building and make sure that the requirements prescribed by respective legislation are duly met. It takes into consideration the profile and use of the building. Apart from that, the recommendations will be used by the client for the development of the relevant Terms of Reference for a contractor.

The Report has the following structure: Chapter 1 provides information related to the building and its users; Chapter 2 offers an overview of key legislative acts establishing occupational safety standards and requirements in Georgia; Chapter 3 contains recommendations on improving occupational safety in the Chess Palace and Alpine Club building based on the requirements prescribed by Georgian legislation.

1. INFORMATION ON THE BUILDING AND ITS USERS

Design: Tbilisi Chess Palace and Alpine Club Building

Architects: Vladimir Aleks-i-Meskhishvili (1915-1978), Germane Gudushauri (1939);

Location: Vera Park, Tbilisi;

Year of the completion of construction: 1973;

Owner of the building: Tbilisi City Municipality

Users: The building was designed and constructed to accommodate two users, namely the Georgian Chess Federation and Alpine Club. These two organizations have been using the building since its construction. Presently, under the usufruct agreement, the building is shared by the Georgian Chess Federation and Alpine Club Ltd, although the terms of the usufruct agreement with the Alpine Club have expired. According to the extract available on the website of the National Agency of Public Registry, on the basis of the usufruct agreement, 5033,93 sq. m has been transferred to the Chess Federation; part of this space – 550 sq. m is currently leased out, with the Chess Federation using the remaining 4483,93 sq. m. The spaces leased out by the Chess Federation are used by *Metropool* Ltd (an open café and a pool hall on the first floor and a pool hall, on the second floor). The space belonging to the Chess Federation is also used by Chess TV and the Tbilisi International Chess Academy. The Alpine Club Ltd uses the space on the first floor of the building.

2. OVERVIEW OF KEY LEGISLATIVE ACTS ESTABLISHING OCCUPATIONAL SAFETY STANDARDS IN GEORGIA

Below is a list of main legislative acts that regulate occupational safety in Georgia. They apply to organizations with a profile similar to that of the Chess Palace and Alpine Club. A brief overview of the safety requirements to be met by employees and obligations for the observance thereof is also provided.

2.1. LABOR CODE OF GEORGIA

(Document #4113-RS, the approver of the document – the Parliament of Georgia, dated 17/12/2010, registration code 2700000000.04.001.016012).

- Employers shall be obliged to provide employees with a working environment that is maximally safe for the life and health of the employees;
- Employers shall be obliged to provide employees, within reasonable time, with full, objective, and comprehensive information available on all factors affecting employees’ life and health or safety of the natural environment;
- Employers shall be obliged to introduce a preventive system ensuring occupational safety and timely provide employees with relevant information about occupational safety-related risks and measures for preventing the risks. Additionally, employers shall inform employees about the rules for handling dangerous equipment and, if necessary, provide employees with personal protective equipment. Along with technological progress, employers shall timely replace hazardous equipment with safe or less hazardous equipment, as well as shall take all other reasonable steps for employees’ safety and for protecting their health;
- An employer shall be obliged to take every reasonable step to timely localize and liquidate the effects of an industrial accident, to administer first aid, and to implement evacuation;
- Employers shall be obliged to fully compensate employees for a work-related injury and loss caused by deteriorating employees’ health and for costs of treatment required.

2.2. ORGANIC LAW OF GEORGIA ON OCCUPATIONAL SAFETY

(Document #4283-IIS, the approver of the document – the Parliament of Georgia, dated 19/02/2019, registration code 2700000000.04.001.017910).

According to this Law, the employer is obliged to:

- Ensure that the safety of the life and health of employees and other persons present in the working area is not endangered;
- Ensure that health and safety of employees and other persons present at the workplace do not face any threat because of chemical, physical and biological factors;
- Record accidents, cases of occupational diseases and dangerous occurrences in the working area, and where requested, provide relevant information to an employee and/or a representative of employees;
- Regularly, within the periodicity provided for by the legislation of Georgia:

- › Examine and document the safety of relevant technical equipment;
- › ensure the maintenance and cleaning of personal protective equipment and other protective equipment, control their proper use, and, where necessary, replace them in a timely manner;

- examine, measure and assess the following factors of the occupational environment within the periodicity provided for by the legislation of Georgia:

- › Physical factors (including, temperature, humidity, airflow velocity, thermal radiation, non-ionizing radiation, ionizing radiation, occupational noise, ultrasound, infrasound, vibration, aerosols with predominant fibrogenic action (dust), improper lighting, air ions);
- › Chemical factors (including some substances of a biological nature, derived by chemical synthesis (antibiotics, vitamins, hormones, enzymes, protein preparations) and/or substances for whose control methods of chemical analysis are used).
- › Biological factors (including viruses, living cells and spores, pathogenic microorganisms, microorganisms in the medicines – producents)

- Taking into account the size of the enterprise, the number of its employees, work conditions, as well as the degree, nature, and structure of the threat and with regard to relevant risks, an employer shall ensure to conduct training and instructions for employees, and provide them with information in a language which they understand. An employer shall provide employees with information on emergency situations, evacuation measures, and their implementation, and, on the measures which need to be taken in the cases of increased danger, as those measures and procedures which need to be followed in the cases of accident and fire, and in any emergency;
- An employer shall provide information to employees regarding occupational safety and occupational risks, as well as measures needed to manage such risks; occupational risks and hazardous factors of production that are related to a workplace, and their possible effect on the health of employees, as well as the mechanisms for safeguarding from such factors used by the employer;
- An employer shall ensure the conduct of trainings and provision of instructions:

- › When hiring employees, before they commence the performance of work;
- › When transferring employees to another workplace or change of work;
- › Before the introduction of new technological processes and work methods, the use of new machinery, and/or the commencement of a change of production process;
- › On a regular basis, in accordance with the plan defined by him/her, or where necessary.

- An employer shall provide information to employees on prohibitions related to the entry into and being present in an enterprise, and to performing such work that endangers the life and/or health of an employee;
- If employees of several enterprises work together, each employer participating in the process is obliged to:

- › Cooperate with other employers with regard to matters related to the observance of occupational safety, health and hygiene standards;
- › Depending on the specificity of work, ensure the coordination of activities of employers in matters related to the occupational safety of employees, and the prevention of occupational risks;
- › Exchange information with other employers regarding occupational safety and occupational risks.

- An employer is obliged to cover all expenses related to occupational safety, and health and hygiene measures in the working area.
- If an occupational safety specialist is appointed by an employer or another authorized person is invited to provide relevant services (external services), the fact shall not relieve the employer from the responsibilities provided for by the Law on Occupation Safety.
- Take necessary measures to ensure first aid, and fire safety and evacuation, taking into account the size of an enterprise, the scope of its activities, and other conditions;
- Establish necessary and instantaneous communication with an emergency, rescue, fire, and other special services.

2.3. ORDINANCE OF THE GOVERNMENT OF GEORGIA ON THE APPROVAL OF THE TECHNICAL REGULATION ON FIRE SAFETY RULES AND CONDITIONS

(Document #370, dated 23/07/2015, registration code 300160070.10.003.018754).

The above-mentioned Technical Regulations establish general requirements for fire safety, prescribing rules for human behavior, organization of production processes, and/ or maintenance of building/ structures, facilities, areas throughout the territory of Georgia. Observance of these rules is obligatory for state authorities, municipal bodies, entities, enterprises, and organizations (irrespective of their legal form and type of ownership), as well as by population.

2.4. ORDINANCE OF THE GOVERNMENT OF GEORGIA ON THE APPROVAL OF SAFETY RULES DURING OPERATION OF ELECTRICAL EQUIPMENT

(Document #340, dated 17/12/2013, registration code 300160070.10.003.017507).

Safety rules provided in the Ordinance include safety norms/rules for the operation of electrical networks, equipment, and devices. They apply to the personnel of the organizations (irrespective of the legal form) and individuals responsible for the maintenance of electrical equipment, routine switchings, as well as those performing design, construction, installation, arrangement, repair, testing, and measurement work.

2.5. ORDINANCE OF THE GOVERNMENT OF GEORGIA ON THE APPROVAL OF TECHNICAL REGULATIONS: SAFETY RULES FOR BUILDINGS AND STRUCTURES

(Document #41, date of receipt 28/01/2016, registration code 300160070.10.003.019106).

The above-mentioned Regulations provide basic standards and requirements which must be met to ensure the safety of buildings and structures. This Resolution applies to the design, construction, and maintenance of Class 3, Class 4, and Class 5 buildings and structures as defined by the legislation of Georgia.

2.6. ORDINANCE OF THE GOVERNMENT OF GEORGIA ON THE APPROVAL OF THE LIST OF ACTIVITIES RELATED TO HEAVY, HARMFUL AND HAZARDOUS WORKS INVOLVING AN INCREASED LEVEL OF DANGER

(Document #381, Dated 27/07/2018, registration code 270000000.10.003.020697)

This governmental Resolution provides a list of activities related to heavy, harmful, and hazardous work involving an increased level of danger. It obliges relevant legal entities to register their organization with the Registry of Economic Activities within the Ministry of Justice of Georgia.

2.7. ORDER OF THE MINISTER OF LABOR, HEALTH AND SOCIAL AFFAIRS OF GEORGIA ON THE APPROVAL OF ENVIRONMENTAL QUALITY STANDARDS

(Document #297/N, dated 16/08/2001, registration code 470.230.000.11.119.004.920).

The Order sets environmental quality standards aimed at ensuring a healthy environment and preventing negative effects of environmental and anthropogenic factors on the population. It prescribes:

- Sanitary rules and hygienic norms regarding the effect of radiofrequency range and electromagnetic radiation on humans;
- Sanitary rules and hygienic norms regarding the effect of noise and vibration human health;
 - › Noise at workplaces, and in residential and public building facilities and areas with residential development – sanitary rules and norms;
 - › Industrial vibration, vibration in residential and public building facilities – sanitary rules and norms;

2.8. THE ORDER OF THE MINISTER OF LABOR, HEALTH AND SOCIAL AFFAIRS OF GEORGIA ON THE APPROVAL OF THE LIST OF ACTIVITIES RELATED TO HEAVY, HARMFUL AND HAZARDOUS WORKS

(Document #147/N, dated 03/05/2007, registration code 470.230.000.22.035.010.318).

The Minister's Order approves a list of activities related to heavy, harmful, and hazardous works, as well as classification of hygiene conditions according to factors related to occupational, harmfulness, and danger associated with work; it also provides recommendations on how to manage relevant hazards and risks.

3. OVERVIEW OF OCCUPATIONAL SAFETY IN THE CHESS PALACE AND ALPINE CLUB

Below are the findings of the visual examination of the Chess Palace and Alpine Club building:

- Fire extinguishers are present in the building, however, further study is required to determine whether they comply with standards considering the space of the building and its structural characteristics. The section of the building occupied by the Chess Federation has been inspected for fire safety by an authorized organization, however, it is unknown what actions were taken by the Chess Federation with regard to the problems identified as a result of the inspection;
- Evacuation plans are not posted in the building. It can thus be assumed that the employees are not informed on emergency response procedures and behavior (in case of fire, earthquake, etc.).
- There are power supply facilities (i.e. various electronic devices and a master-switch) installed in one of the rooms

used by the Alpine Club. The door leading into the room does not have a proper lock and there is no warning sign on it, which may be dangerous for the employees and third persons present in the building.

- The preliminary visual examination which included the inspection of air quality, temperature, lighting, and humidity in the building revealed a need for a further instrumental survey (especially on the lower floors) that is to be done by a relevant specialist; it is necessary to determine the compliance with the relevant standards and requirements established in Georgia.
- Preliminary visual examination revealed that further examination is required to determine the compliance and technical faultlessness of ventilation, heating, and lighting systems present in the building.
- There are no signs and labels (i.e. those indicating exits, first aid boxes and fire extinguishers) posted in the building;
- There are no first aid boxes in the building.

4. RECOMMENDATIONS ON IMPROVING OCCUPATIONAL SAFETY IN THE BUILDINGS SIMILAR TO THAT OF THE CHESS PALACE AND ALPINE CLUB AND OTHER BUILDINGS USED BY ORGANIZATIONS WITH SPECIFIC FUNCTIONS TO MEET THE REQUIREMENTS OF THE RELEVANT LEGISLATION OF GEORGIA

This section of the Report offers recommendations on improving occupational safety in the Chess Palace and Alpine Club-type buildings in accordance with the requirements prescribed by the legislation of Georgia:

- An expert examination shall be conducted (by the Levan Samkharauli National Forensics Bureau or a different authorized organization) for the assessment of the building's structural stability and safety; recommendations, if any, shall be followed/implemented.
- Fire safety inspection shall be conducted by an authorized organization (Emergency Management Service); recommendations, if any, shall be followed/implemented.
- Electrical wiring and electrical equipment shall be inspected by an authorized organization; recommendations, if any, shall be followed/implemented.
- Technical condition and compliance of the ventilation and heating systems (HVAC) shall be checked by a relevant specialist; recommendations, if any, shall be followed/implemented.
- Technical condition and compliance of the sewage and water supply systems shall be inspected by a relevant specialist; recommendations, if any, shall be followed/implemented.
- Emergency Management Plan shall be developed for the Chess Palace and Alpine Club. The information about the above-mentioned plans shall be communicated to the employees. Periodical simulation exercises shall be conducted to train employees in emergency procedures.
- Taking into account the size of the building, the number of employees and the specificity of work, first aid boxes provided

with relevant medical supplies and equipment shall be available in the building. First aid training/briefings shall be planned and conducted for employees by an authorized organization or person.

- Eco-friendly building materials of proper quality, safe for human health (i.e. those free of heavy metals, asbestos, and other hazardous substances) shall be used in the construction, rehabilitation, or refurbishment work.
- Each organization/legal entity shall introduce occupational safety systems into their organizations in compliance with the requirements prescribed by Georgian legislation, with the help of a certified occupational safety specialist.
- Each organization/legal entity shall identify occupational safety threats, assess risks, plan and implement structural and non-structural risk control measures according to their profile and specificity of work, through a certified occupational safety specialist,
- A competent organization or person shall measure and assess physical factors (temperature, humidity, noise, vibration, mostly fibrogenic aerosols (dust), lighting, etc.) of the occupational environment in the building; recommendations, if any, shall be followed/implemented.
- Occupational safety-related training and briefings shall be planned and conducted for the employees as prescribed by Law.
- Legal entities and organizations operating in the Chess Palace and Alpine Club shall cooperate with each other with regard to the observance of the occupational safety, health, and hygienic standards and ensure coordination of their activities with regard to occupational safety of employees and prevention of occupational risks; exchange information on occupational safety and occupational risks.

APPENDIX 5. SOCIOLOGICAL SURVEY - KEY FINDINGS

Author: Tamar Peikrishvili – Sociologist

Tbilisi 2019

1. INTRODUCTION

The main objective of the survey was to elaborate a new concept for Tbilisi Chess Palace and Alpine Club development by taking into account the opinions and attitudes of target groups. For this purpose, a survey design was developed, and specific tasks and survey methodology were determined in agreement with the leadership of the Georgian National Committee of the Blue Shield.

2. KEY FINDINGS

2.1. VERA PARK AND ITS USERS

Completed in 1973, the Nona Gaprindashvili Chess Palace is located in Vera Park, one of the central districts of Tbilisi.

The park is visited by locals and tourists alike. It is a popular destination for pensioners who are often seen playing chess, backgammon, domino, and draughts in the so-called pavilion with iron roofing. The majority of visitors are not aware of the present function of the Chess Palace.

The survey was carried out in Tbilisi and lasted from July 2019 to September 2019, using a qualitative research method. A key criterion of selection of target groups and individuals was their association with Chess Palace and Alpine Club. More specifically, owners, usufructuaries, tenants, and groups represented by a broader public were invited to take part in the survey. 10 mini focus group discussions and 6 in-depth interviews were conducted as part of the qualitative research survey.

2.2. BUILDING OWNER

The present owner of the Chess Palace building is the Tbilisi City Hall Municipality.

The representatives of the The Municipal Property Management Agency and Municipal Department of Economic Development of the City Hall, who participated in the survey, are not informed on the specific type of activities held in the Chess Palace. Neither the public nor the relevant services of the City Hall are aware of the type of tournaments and events hosted by Chess Palace. The general understanding is that the building cannot serve as a venue for any large-scale or contemporary event due to the lack of facilities and its “old-fashioned” visual appearance.

Registry almost fully matched with the information provided by the respondents).

The Chess Palace is home to the Chess Academy of the Tbilisi International Chess Federation, which was established in 2005 by Zurab Azmaiparashvili. The Chess Academy aims to train already advanced young chess players.

At present, the Chess Academy has 120 students from different regions of Georgia and 20 coaches. Students participate in a European school, as well as World and European championships. Studying at the Academy is free. Free preparatory lessons are also offered to identify young talents. The Chess Academy presently occupies the area of 100-120 sq. m in the Chess Palace. The Academy is the holder of the FIDE license; there is an annual fee (300-350 EUR) for the renewal of the license and extension of the registration period, which is paid by the Chess Academy. The Chess Academy identified the following problems: 1. When

the classrooms were organized in the Chess Palace, the rooms were partitioned using the so-called plasterboards, which are not sound-proof and children interfere with each other’s classes. 2. Lack of chess coaches with relevant qualifications in regions. In 2014 the Chess Academy tried to arrange “guest rooms” to provide free accommodation for parents of students living in the regions. The rooms (between 80 m² and 100 m²) were located in the now-closed section of the Chess Palace building, between the open café and the Alpine Club.

The Chess Palace hosts about 80 tournaments each year. The Chess Federation has to additionally rent a hall or other kinds of premises for holding large-scale chess tournaments and various events, while the building has a hall with 520 seats, which is now out of use.

Presently, there is one six meter wall in the Chess Palace, which features exhibits for the Chess Museum, namely cups, diplomas of famous Georgian chess players, and various museum items.

The space of the Chess Library on the second floor is 40 sq. m. The salaries of the people working at the Chess Palace, including those hired by the Chess Federation and the Chess TV, are paid by the Chess Federation.

The Chess Federation is funded by the state. Transfers, in equal tranches, are made on a monthly basis; however, all of the respondents aware of financial issues abstained from providing funding related details.

Events held in the Chess Palace are funded by the Ministry of Education, Science, Culture, and Sports of Georgia. The funding, received by the Chess Federation, is not sufficient to cover the utility fees of the Chess Palace and the salaries of its employees.

Specific concerns expressed by the representatives of Chess Academy:

- The lack of proper partitioning (improper noise isolation) impedes teaching process in classrooms;
- There is not enough space for training children;
- There is not enough space for holding large-scale tournaments/events;
- There is a lack of support for children who are beginner chess players and live in the regions.

CHESS TV

The Chess TV / Georgian Chess TV has operated in the Chess Palace and Alpine Club for one year. Its primary purpose is to broadcast on-air / cover tournaments, championships, and other events held in the Chess Palace. Initially, Chess TV broadcasted only through a YouTube channel, but currently, it is also available on local cable TV (Silknet, Magti, etc). It employs 12 persons, mainly youth, who are most likely volunteering considering the extremely low budget of TV. The Chess TV will be funded by the Chess Federation until 2020, after which it will have to find a sponsor to continue broadcasting.

From October 2019, Chess TV will start broadcasting chess classes three times a week (on Mondays, Wednesdays, and Fridays) so far, the Chess TV audience is limited to chess players, their parents, families, and relatives, also, as well as supporters of participants of individual chess tournaments. Chess TV received an authorization document from the relevant regulatory commission on April 1, 2019. The TV company has arranged a stage in the Main Hall of the Chess Palace, which is used for broadcasting. It also occupies two small rooms on the third floor, covering about 40 sq. m, which are used for live transmission of events. Thanks to Chess TV, it is possible to follow chess tournaments and various events, and provide their coverage right from the site.

METROPOOL LTD

Another part of the building is rented to *Metropool* Ltd, which operates a pool hall and an open café in the Chess Palace.

The pool hall, which started functioning sixteen months ago, works from 10 a.m. to 2 a.m. The majority of its visitors are permanent clients. The menu is the same as in the café (i.e. the so-called lunch menu). The rates are different on holidays. Normally the hall costs GEL 6 per hour. Presently there are 16 tables in the pool hall.

OPEN CAFE

The open café is located outside the Chess Palace. It has been in place for about 18 months. The café is open every day, from 10 a.m. to 12 at midnight. Despite having a status of an open café, it works throughout the year. Its visitors are permanent clients, as well as people who take walks in Vera Park. The café and pool hall have 9 permanent employees. The open café is intended for 46 persons. The café does not serve traditional dishes; only a lunch menu is provided.

When the café receives an offer for a large-scale event, the management has to rent other premises or reject the offer. Even if the café space were sufficient for the event, it cannot remain open after midnight due to the residential housing in the vicinity of the park.

The owner of the open café wanted to paint the walls in the café in different colors, but as it is a listed building, he was not allowed to do so by relevant authorities.

3.2. THE ALPINE CLUB

The building is also home to the Alpine Club, which has traditionally used 2100 sq. m. However, the most recent usufruct agreement with the Alpine Club mentions only 124 sq. m.

The extract from the website of the National Agency of the Public Registry says usufruct holder: Alpine Club Ltd 203855113, owner: Tbilisi self-government entity. Property: 124,96 sq. m out of 1471,5 sq.m on the first floor, the term: 5 years. Date of the registration of the right: 11.09.2013.

The term of the usufruct agreement with the Alpine Club expired in December 2018. According to the extract, the term of the agreement has not been extended.

The relevant agency of the City Hall had offered the extension of the term of validity of the usufruct agreement to the National Alpine Club on the same conditions, but the Federation refused due to the small space.

The reason is not clear, as the Alpine Club does not have information on the further extension of the term of validity of the usufruct agreement.

According to the Alpine Club, the reason why the agreement had not been extended is that in 1999 the Alpine Club Federation was transformed into the Ltd. Alpine Club, as instructed by the City Hall.

One section of the building (80-100 m²) between the Alpine Club and the open café is now locked and unused.

As for the part that is currently used by the Alpine Club, it is in bad need of repair. The infrastructure is also damaged.

The Alpine Club does not have a permanent source of funding; in the last year, it only twice received subsidies from the City Hall.

The Alpine Club has a Museum of Alpinism and a small Climbing

Gym, which is not equipped properly. It is neither ventilated nor heated.

Due to the lack of funding, the Alpine Club hardly manages to pay utility fees. The amount of fee to be paid for training in the Climbing Gym is very low. Apart from the Alpine Club Ltd, there is an organization with a similar name, i.e. Alpine Club NNLE operating in the Chess Palace building. Founded in 2014, the Alpine Club NNLE aims at training future mountaineers for their employment by the State Rescue Service. Presently, the Alpine Club NNLE is funded by the Ministry of Education, Science, Culture, and Sports of Georgia.

The Alpine Club NNLE has five employees: A PR manager, an accountant, a storage worker, a founder of the organization, and an expeditor; it has a national united team: juveniles and adults. It is planning to open a mountaineers' school. As the National Federation of Mountaineers is a member of the Alpine Club NNLE, the NNLE can use two small rooms handed over to the Alpine Club for usage. The NNLE staff works in one room and uses another as a storage facility. The total area of both rooms makes 60 sq. m. The NNLE needs more space for storing equipment but doesn't have sufficient funds to find such space.

On the right and left sides of the hall are decorated panels, which add value to the building.

The Chess Palace has an international function. It serves to teach chess to children and organize international tournaments and championships for children and adults.

Being a work of modernist architecture, the Chess Palace is interesting for tourists. A favorable location also adds value to the building.

Ideas expressed regarding the maintenance and development of the Chess Palace:

- Specialized Chess School – in the Chess Palace;
- Functioning Chess Palace;
- Thematic (Chess) café – adjacent to the Chess Palace ;
- Conference space – the Chess Palace Main Hall;
- Ceremonies and events – on the terrace of the Chess Palace;
- Chess Club;
- Business tourism /MICE⁶
- Chess gift shop – close to the Chess Palace;
- Climbing wall for children – outside the Chess Palace.

⁶ MICE (Meetings, Incentive, Conferences/congresses, Exhibitions/Events) tourism involves four types of activities: Meetings – business meetings, strategic planning, negotiations, presentations; Incentive – trips planned as a professional reward, motivational programmes, trips to stimulate partnership and cooperation; Conferences/Congresses – organization of conferences, forums, congresses; Exhibitions/Events – attending exhibitions and specific (educational, cultural, musical, sport, etc) events, corporate events.

RESULTS OF THE SURVEY:

The following recommendations are offered on the basis of the results of the survey:

- Raising public awareness of the tournaments and events held in the Chess Palace is important in order to dispel doubts about the Chess Palace being used sufficiently;
- Activities of the Chess Palace require better promotion;
- The activities of the Chess Academy require better promotion; the public awareness (general public, parents of children who play chess) about the fact that the training is free for children is low.
- Chess TV is available on Myvideo, Silknet, Magti and cable TVs to promote chess;
- Chess TV shall be supported in order for it to be able to continue functioning;
- Information on tournaments held at the Chess Palace shall be disseminated through social networks. This will significantly contribute to the popularization of chess in the country.
- Issues regarding the division of space between the Chess Federation and the Alpine Club shall be resolved;
- With a view to resolving the dispute regarding the division of space, it is considered expedient to make new measurements before transferring the parts of the building space under usufruct agreement to the Chess Federation and the Alpine Club;
- On the basis of new measurements and following negotiations between the parties, the relevant services of the City Hall shall conclude a usufruct agreement with Alpine Club as the recent one has expired;
- For the development and maintenance of the building, it is very important to ensure intensive communication among the relevant divisions/agencies of the City Hall, the Chess Federation, and the Alpine Club with regard to the issues that are vague and to which the users are extremely sensitive, including 1. distribution of spaces between the users; 2. Who shall be the user of the part of the building (80-100 sq. m) that is currently unused? 3. Will the usufruct agreement be extended for the Alpine Club? 4. If yes, on what conditions? 5. When will the agreement be concluded?
- Detailed information on the restrictions associated with the listing of the Chess Palace and the way they may interfere with the plans to make alterations to the building shall be provided to the users.
- It is desirable not to have lessees in the Chess Palace, as it is not clear who leases out spaces and who receives revenues from leasing;
- The Chess Palace building was originally designed to serve the needs of two sports and the presence of organizations of different profiles is perceived as incompatible with the original function of the building;
- Another reason why the presence of lessees is inappropriate in the Chess Palace is that the loud music played in the open café interfere with the concentration of tournaments participants;
- Besides, the noise made by pool players in the pool hall can be

heard in the hall from which tournaments are live-streamed;

- The tenants have certain restrictions to follow on days when tournaments/events are held. All kinds of noise must be avoided on such days, especially in the open café, due to which its management has to decline any offer regarding hosting a large-scale event;
- The Chess Academy, functioning in the Chess Palace, is one of the most important units that contributes to the popularization of chess as a sport, which implies the promotion of the Chess Palace building;
- Events held in the Chess Palace, be it tournaments or other types of chess competitions or professional events, need to be properly promoted and communicated to the public. The City Hall and the relevant divisions of the City Hall shall also be better informed on the activities taking place in the Chess Palace and Alpine Club so that they become more willing to support the Chess Palace project, including the development of the Chess Palace and building maintenance;
- The Alpine Club is extremely important for the advancement of alpinism in the country; for this purpose, it is essential to support the Club in creating proper working conditions;
- The Alpine Club and the Chess Federation shall be treated equally by the relevant agencies of the City Hall;
- Having a Chess Museum in the country is important and it needs further promotion;
- The Chess Museum will make the public feel proud about themselves; it will also facilitate the development of tourism in the country;
- The hall of the Chess Palace must be rehabilitated in accordance with the overall concept;
- It is desirable for the Chess Federation and the Alpine Club to have the required funding in order to avoid the leasing out of spaces. The presence of other commercial organizations in the building has a negative effect; the Chess Palace shall be dedicated to development of chess and alpinism;
- For the Alpine Club it is essential to have a properly furnished Climbing Gym space with a climbing wall; the Climbing Gym needs to be rehabilitated and provided with needed facilities;
- It is important to promote the Museum of Alpinism;
- The Basement Floor façade of the part of the building that houses the Alpine Club is in need of repair.
- It is desirable for the Chess Academy to have a hostel of its own to accommodate guests from abroad and different regions of Georgia;
- In the opinion of the Chess Academy, a hostel shall be located on the roof terrace (if this is not a possible location for a hostel due to the restrictions associated with the listing status of the building, the management of the Chess Academy shall be notified on this promptly in order for them not to have false expectations);
- The Chess Federation rents additional spaces for holding chess tournaments and other large-scale events, which is associated with extra expenses; Arrangement of conference halls on two floors can be considered as an option;

- It is important that the conference hall meets the requirements of modern-day events and at the same time complies with the restrictions associated with the heritage status of the building.
- Rehabilitation of the hall of the Chess Palace is essential, yet it is technically difficult. It is impossible to remove the existing chairs in the hall and level the entire space, as, according to the respondents, the structure is made of concrete;
- Apart from technical difficulties, the rehabilitation of the Hall to its original appearance and return of the function it had from the beginning seems unrealistic considering the present requirements. If earlier there were 10 chess players playing in the hall and the number of spectators was around, now there are far more players, sometimes over 200 persons, who gather in the hall for a single tournament.
- The respondents unanimously agree that a Chess Museum shall be established in the Chess Academy; however, there is a divide in opinion regarding its specific location.
- Some of the respondents suggested that a Chess Museum be located on the flat roof (terrace) of the Chess Palace. The hall of the Chess Palace was named as another possible location for the museum.
- The creation of a Chess Museum is one of the top priorities. It is essential to retain the achievements made so far. The Chess Palace preserves the history of chess in Georgia, which is important for the country, and it is essential to make sure that it is not lost. The Chess Museum can become a tourist destination, as the building is located in the park, which is visited by many tourists. The respondents suggested that chess rounds be organized for tourists visiting the Chess Museum.
- The respondents appreciate the existence of a library at the Chess Academy.
- The library is now largely underused. It stores materials that are not available on the internet. The use of licensed material can be made free for chess players, which will make the library more functional and appealing.
- The majority of respondents have come to the conclusion that listing would prevent any kind of incompatible intervention in the building of the Chess Palace.
- Experts must make decisions regarding the maintenance and development of the Chess Palace building.
- The respondents believe that a more rational use must be made of the revenues obtained from leasing building spaces.
- In the opinion of the respondents, the maintenance and development of the Chess Palace building is the prerogative and responsibility of the City Municipality, relevant divisions/ agencies of the City, and the Chess Federation.
- MICE tourism was identified as one of the options for the development of the Chess Palace. Started in western countries, the MICE industry has developed into one of the most promising fields of economy. Presently, the most important centers of MICE tourism are the USA, the UK, Australia, Germany, France, and Spain; among the countries of the East, China holds the leading position.
- Engagement of all stakeholders (i.e.: the Chess Federation, the Alpine Club, the Chess Academy, the Property Management Agency of the City Hall, the Economic Development Office of the City Hall, the Architecture Service of the City Hall, Department of Culture and Sports of the City Hall and other relevant divisions) is essential for developing the final version of maintenance and development concept for the Chess Palace.
- It is recommended that the relevant offices of the Tbilisi City Municipality have a more active exchange of opinions and ideas with the users of the Chess Palace buildings; the latter must be engaged in discussions of development concepts rather than act as mere observers of the process.

APPENDIX 6. RECOMMENDATIONS FOR INCREASING THE ENERGY EFFICIENCY OF THE BUILDING

Author: Giorgi Stephnadze – MEP consultant

Tbilisi 2019

1.A BRIEF DESCRIPTION OF THE STRUCTURE AND GLAZING OF THE BUILDING

The building is a monolithic reinforced concrete structure. The partitions separating the spaces are built of silicate brick, which in some cases is plastered with a solution of sand-cement, the part is covered with stone, and the part is packed with wooden decorative panels. The inter-floor overlapping is partly made of monolithic reinforced concrete, and the reinforced concrete slabs are also used.

Local materials are mainly used for paving. The exterior of the plinth floor is covered with basalt stone, Kutaisi *Eklari* (limestone) stone was selected for all other floors. The same stone is used in the interior to decorate walls, decorative walls and columns, and for round columns – artificial marble. The black marble of *Sadakhlo* region was mainly used for laying the floors, thick tiles of the same material were laid on the stairs.

The inter-floor overlapping, everywhere, is arranged with special insulation layers, on which different types of flooring are arranged (stone flooring in the lobby and open spaces, and parquet in the administrative part). Pumice in bulk, asphalt layer, and bitumen is used for roof insulation.

The building has added new elements and alterations at various times. Unified ventilation, heating, rainwater transfer, and sewerage systems have been abolished and/or rebuilt.

The construction of the building is not thermally insulated, so during the winter it is possible to create "cold bridges", condensate is generated on the inner surfaces of the structures, which increases the humidity especially in the storerooms where there is no ventilation system.

There are two main ways to Increase the Energy Efficiency of Existing Buildings:

1. Reduction of heat losses of building structures (façade, roof, floor) and arrangement of air curtains or gateway in the entrances of the building;
2. By optimizing the operation of existing heating-cooling-ventilation systems. Optimization involves the reconstruction or replacement of low-efficiency systems to increase the energy efficiency of other systems to achieve the parameters embedded in them.

The Heat Loss of a Building Consists of:

- Heat loss from vitrages;
- Heat loss from reinforced concrete construction;
- Infiltration.

Below (Table # 1) is the calculation of heat loss taking into account all three constituents. Since accurate measurement of infiltration is not possible in a given building, this parameter is assigned a practice-based coefficient based on measurements of the velocity of air leaking from the building, taken in 30-points within the entire vitrage area. An anemometer TESTO-405V1 was used.

It should be noted that the vitrage is of low quality, and incorrectly installed. Single glazing with glass with a thickness of 6 mm is used, the frames are metal in some places, the rest is an aluminum profile, steel angles are used to fix the glass (photo # 1), which are attached to the frame with self-tapping screws. Isolation is practically not used. Such a construction is characterized by low energy efficiency due to high heat losses and intense infiltration.



fig. 1

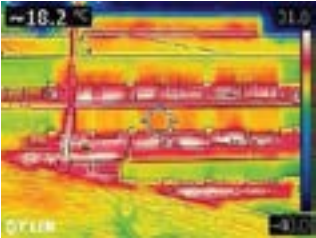
The heat loss of the building is comparable if modern structures and materials are used in the Aluminum Vitrage windows. The comparison shows that heat losses are reduced by 3 times. This is the most important issue for improving energy efficiency.

To study and visualize the heat losses, thermal losses of the building façade were recorded by means of a thermal camera. Thermal camera FLIR-C2 with following parameters was used:

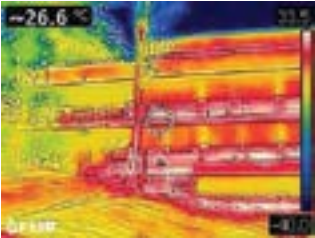
Accuracy: ±2°C (±36°F) or 2%, whichever is greater, at 25°C (77°F)
Nominal Focal Length: 1.54 mm (0.061 in.)
NETD: 100 mK
Object Temperature Range: -10°C to +150°C (14 to 302°F)
IR Sensor: 80 × 60 (4,800 measurement pixels)
Measurements correction: Reflected apparent temperature Emissivity Spot Meter: On/off
Thermal Sensitivity: <0.10°C

The following results were obtained:

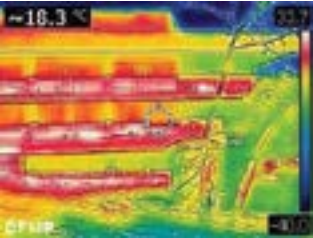
- Southern façade. A thermal photo taken on a sunny day shows that the railing is warmed by the sun to 18.2°C, with only heat loss from the Aluminum Vitrage (IR photo #1).
- Southern façade. The construction element is heated to 26.6°C, only the losses are more clearly separated from the vitrage (#2).
- Southern façade (#3).
- Eastern façade. Well visible heat loss from the glazing (#4).
- Eastern façade. High losses due to low-quality glazing (#5).



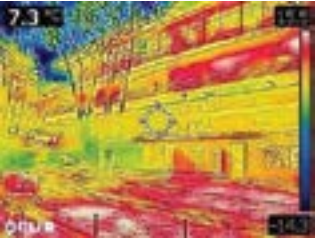
IR photo #1



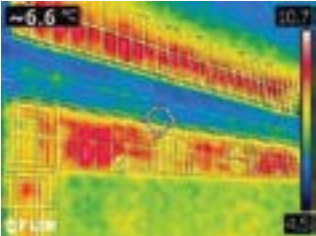
IR photo #2



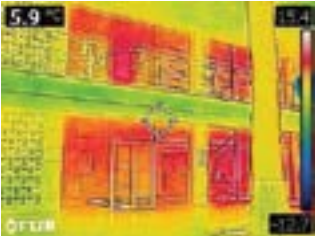
IR photo #3



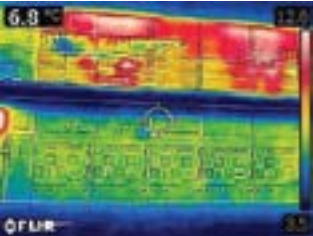
IR photo #4



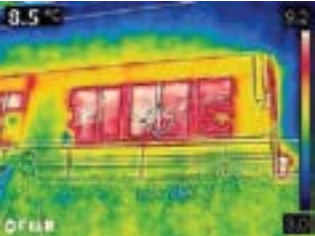
IR photo #5



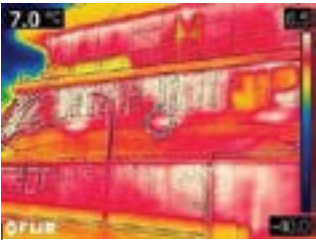
IR photo #6



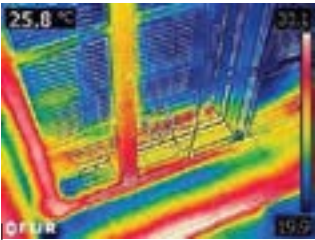
IR photo #7



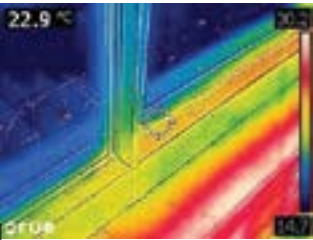
IR photo #8



IR photo #9



IR photo #10



IR photo #11

- Western façade. High heat losses from vitrages (#6).
- Eastern façade (#7).
- Northern façade. High losses from windows (#8).
- Northern facade. Very high losses from the cafe envelope polyethylene film and second-floor windows (#9).
- Thermal and infiltration losses from the window (#10).
- Losses by window infiltration (#11).

From these thermal images, it is clear that the main losses of the building are due to low-quality glazing. And since 80% of the façade of the building is glazing, replacing these aluminum vitrage windows with modern, high-quality vitrages with low-emissivity glass will dramatically reduce heat loss and increase the energy efficiency of the building. The calculation tables show such a comparison – in case the vitrage is replaced by high quality, low-emission vitrage. The following parameters are taken: U Value = 1.5 W / m²K; Gvalue = 0.4.

Below are (Tables # 1, # 2,) heat loss and heat gains reports for existing vitrages.

The heat losses of the building are calculated for comparison (Table # 3, Table # 4) if modern constructions and materials are used in the vitrages. It appears from the comparison that heat losses are reduced by 3 times and heat flow by 2.5 times. This is the most important issue to increase energy efficiency.

CHESS HOUSE - CALCULATION OF HEAT DISSIPATION - EXISTING GLASSING													
Description of the building												Heat dissipation	
Protecting walling	Air temperature			Dimension		Area		K _f w/m ² *K	Correction factors		Qwt	Qkw	
	T _{in}	T _{out}	dT	L	H	Qty	Sum		Sites	Infiltration			
SOUTH FASADE													
BASEMENT FLOOR (LEVEL -3,5M)													
Doors	22	-8	30	0.9	2.1	-	-	3.00	1.00	1.20	-	0.00	
Glassing	22	-8	30	2.7	2.0	1	5.4	7.00	1.00	1.30	1,474	1.47	
Wall	22	-8	30	21.00	3.00	1	63.0	2.00	1.00	1.10	4,158	4.16	
Floor	22	5	17			1	-	0.70	1.00	1.00	-	0.00	
Sum											5,632	5.63	
FIRST FLOOR													
Doors	22	-8	30	0.9	2.1	1	1.9	3.00	1.00	1.20	204	0.20	
Glassing	22	-8	30	20.0	2.5	1	49.0	7.00	1.00	1.30	13,377	13.38	
Wall	22	-8	30	7.50	3.00	1	22.5	2.00	1.00	1.10	1,485	1.49	
Floor	22	5	17			1	-	0.70	1.00	1.00	-	0.00	
Sum											15,066	15.07	
SECOND FLOOR													
Doors	22	-8	30	0.9	2.1	1	1.9	3.00	1.00	1.20	204	0.20	
Window	22	-8	30	20.0	3.0	1	60.0	7.00	1.00	1.30	16,380	16.38	
Wall	22	-8	30	6.00	3.00	1	18.0	2.00	1.00	1.10	1,188	1.19	
Floor	22	5	17							1.00	-	0.00	
Sum											17,772	17.77	
THIRD FLOOR													
Doors	22	-8	30	0.9	2.1	-	-	3.00	1.00	1.20	-	0.00	
Window	22	-8	30	16.5	3.0	1	49.5	7.00	1.00	1.30	13,514	13.51	
Wall	22	-8	30	12.50	4.13	1	51.6	2.00	1.00	1.10	3,407	3.41	
Floor	22	5	17							1.00	-	0.00	
Roof	22	-8	30								-	0.00	
Sum											16,921	16.92	
NORTH FASADE													
BASEMENT FLOOR (LEVEL -4,3M)													
Doors	22	-8	30	0.9	2.1	-	-	3.00	1.20	1.20	-	0.00	
Glassing	22	-8	30	21.0	1.8	1	37.8	7.00	1.20	1.30	12,383	12.38	
Wall	22	-8	30	21.00	3.00	1	63.0	2.00	1.20	1.10	4,990	4.99	
Floor	22	5	17			1	-	0.70	1.00	1.00	-	0.00	
Sum											17,373	17.37	
FIRST FLOOR													
Doors	22	-8	30	0.9	2.1	1	1.9	3.00	1.20	1.20	245	0.24	
Glassing	22	-8	30	26.5	1.6	1	42.4	7.00	1.20	1.30	13,890	13.89	
Wall	22	-8	30	6.00	3.00	1	18.0	2.00	1.20	1.10	1,426	1.43	
Floor	22	5	17			1	-	0.70	1.00	1.00	-	0.00	
Sum											15,561	15.56	
SECOND FLOOR													
Doors	22	-8	30	0.9	2.1	1	1.9	3.00	1.20	1.20	245	0.24	
Window	22	-8	30	30.0	3.0	1	90.0	7.00	1.20	1.30	29,484	29.48	
Wall	22	-8	30	-	3.00	1	-	2.00	1.20	1.10	-	0.00	
Floor	22	5	17							1.00	-	0.00	
Sum											29,729	29.73	
THIRD FLOOR													
Doors	22	-8	30	0.9	2.1	2	3.8	3.00	1.20	1.20	490	0.49	
Window	22	-8	30	0.5	2.8	1	1.4	7.00	1.20	1.30	459	458.64	
Wall	22	-8	30	27.00	4.13	1	111.5	2.00	1.20	1.10	8,832	9538.12	
Floor	22	5	17							1.00	-	0.00	
Roof	22	-8	30								-		
Sum											9,780	10.00	
SubTotal-1, kW												128.05	

CHESS HOUSE - CALCULATION OF HEAT DISSIPATION - EXISTING GLASSING													
Protecting walling	Description of the building										Heat dissipation		
	Air temperature			Dimension		Area	K w/m²·K	Correction factors		Qwt	Qkw		
	Tin	Tout	dT	L	H	Qty		Sum	Sites			Infiltration	
EAST FASADE													
BASEMENT FLOOR (LEVEL -3,76M)													
Doors	22	-8	30	1.5	2.1	2	6.3	3.00	1.20	1.20	816	0.82	
Glassing	22	-8	30	14.0	2.0	1	28.0	7.00	1.20	1.30	9,173	9.17	
Wall	22	-8	30	7.80	3.00	1	23.4	2.00	1.20	1.10	1,853	1.85	
G blocks	22	-8	30	34.60	0.80	1	27.7	2.00	1.20	1.10	2,192	2.19	
Unkn wall	22	-8	30	21.85	1.50	1	32.8	2.00	1.20	1.10	2,596	2.60	
Floor	22	5	17			1	-	0.70	1.00	1.00	-	0.00	
Sum											16,631	16.63	
FIRST FLOOR (+0,25M)													
Doors	22	-8	30	0.9	2.1	1	1.9	3.00	1.20	1.20	245	0.24	
Glassing	22	-8	30	46.0	2.8	1	127.4	7.00	1.20	1.30	41,743	41.74	
Wall	22	-8	30	7.90	2.50	1	19.8	2.00	1.20	1.10	1,564	1.56	
Sum											43,552	43.55	
SECOND FLOOR													
Doors	22	-8	30	0.9	2.1	1	1.9	3.00	1.20	1.20	245	0.24	
Window	22	-8	30	53.0	3.2	1	167.0	7.00	1.20	1.30	54,693	54.69	
Wall	22	-8	30	1.50	3.00	1	4.5	2.00	1.20	1.10	356	0.36	
Sum											55,294	55.29	
THIRD FLOOR													
Doors	22	-8	30	0.9	2.1	3	5.7	3.00	1.20	1.20	735	0.73	
Window	22	-8	30	16.5	3.0	-	-	7.00	1.20	1.30	-	0.00	
Wall	22	-8	30	40.00	4.13	1	165.2	2.00	1.20	1.10	13,084	13.08	
Roof	22	-8	30								-	0.00	
Sum											13,819	13.82	
WEST FASADE													
BASEMENT FLOOR (LEVEL -3,11M)													
Doors	22	-8	30	0.9	2.1	-	-	3.00	1.20	1.20	-	0.00	
Glassing	22	-8	30	2.7	2.0	-	-	7.00	1.20	1.30	-	0.00	
Wall	22	-8	30	9.00	2.00	1	18.0	2.00	1.20	1.10	1,426	1.43	
Floor	22	5	17			1	-	0.70	1.00	1.00	-	0.00	
Sum											1,426	1.43	
FIRST FLOOR													
Doors	22	-8	30	0.9	2.1	1	1.9	3.00	1.20	1.20	245	0.24	
Glassing	22	-8	30	41.0	3.0	1	123.0	7.00	1.20	1.30	40,295	40.29	
Wall	22	-8	30	2.30	3.00	1	6.9	2.00	1.20	1.10	546	0.55	
G Block	22	-8	30	7.50	2.50	1	18.8	2.00	1.20	1.10	1,485	1.49	
Sum											42,571	42.57	
SECOND FLOOR													
Doors	22	-8	30	0.9	2.1	-	-	3.00	1.20	1.20	-	0.00	
Glassing	22	-8	30	43.0	3.0	1	129.0	7.00	1.20	1.30	42,260	42.26	
Wall	22	-8	30	2.30	3.00	1	6.9	2.00	1.20	1.10	546	0.55	
G Block	22	-8	30	7.50	2.50	1	18.8	2.00	1.20	1.10	1,485	1.49	
Sum											44,292	44.29	
THIRD FLOOR													
Doors	22	-8	30	0.9	2.1	3	5.7	3.00	1.20	1.20	735	0.73	
Window	22	-8	30	16.5	3.0	1	49.5	7.00	1.20	1.30	16,216	16.22	
Wall	22	-8	30	12.50	4.13	1	51.6	2.00	1.20	1.10	4,089	4.09	
Roof	22	-8	30								-	0.00	
Sum											21,040	21.04	
SubTotal-2, kW											238.62		
Total, heat dissipation from fasad, kW (Existing glassing)											366.87		

CHESS HOUSE - CALCULATION OF HEAT GAINS (EXISTING GLASSING)																							
Description of the building					K, w/m²*K	Correction factors		From construction			Heat gain, w.	Area, m²	Solar irradiation, w/m²	Shading coefficient K1	Heat gain, w.	Quantity	Heat gain from one, w.	correction factor	Sum, W	Lighting			Total demand cooling capacity, kW.
Protecting walling	Dimension		Area			Sites	Infiltration	Air temperature												Meas, w/m²	Area, m²	Sum, W	
	L	H	Qty	Sum				Tin	Tout	dT													
SOUTH FASADE																							
BASEMENT FLOOR (LEVEL -3,5M)																							
Doors	0.9	2.1	-	-	3.00	1.00	1.20	23	39	16	-												
Glassing	2.7	2.0	1	5.4	7.00	1.00	1.30	23	39	16	786	5.4	350	0.8	1512	0	116	1	0				
Wall	21.0	3.0	1	63.0	2.00	1.00	1.10	23	39	16	2,218					0	150	1	0				
Floor			1	-	0.70	1.00	1.00	23	39	16	-				0					10	-	0	
Sum											3.00				2				0			0.00	4.5
FIRST FLOOR																							
Doors	0.9	2.1	1	1.9	3.00	1.00	1.20	23	39	16	109												
Glassing	20.0	2.5	1	49.0	7.00	1.00	1.30	23	39	16	7,134	49.0	350	0.8	13720	0	116	1	0				
Wall	7.5	3.0	1	22.5	2.00	1.00	1.10	23	39	16	792					0	150	1	0				
Floor			1	-	0.70	1.00	1.00	23	39	16	-				0					10	-	0	
Sum											8.04				14				0			0.00	21.8
SECOND FLOOR																							
Doors	0.9	2.1	1	1.9	3.00	1.00	1.20	23	39	16	109												
Glassing	20.0	3.0	1	60.0	7.00	1.00	1.30	23	39	16	8,736	60.0	350	0.8	16800	0	116	1	0				
Wall	6.0	3.0	1	18.0	2.00	1.00	1.10	23	39	16	634					0	150	1	0				
Floor								1.00	23	39	16	-			0					10	-	0	
Sum											9.48				17				0			0.00	26.3
THIRD FLOOR																							
Doors	0.9	2.1	-	-	3.00	1.00	1.20	23	39	16	-												
Window	16.5	3.0	1	49.5	7.00	1.00	1.30	23	39	16	7,207	49.5	350	0.8	13860	0	116	1	0				
Wall	12.5	4.1	1	51.6	2.00	1.00	1.10	23	39	16	1,817												
Floor								1.00	23	39	16	-			0					10	-	0	
Roof																							
Sum											9.02				14				0			0.00	22.9
NORTH FASADE																							
BASEMENT FLOOR (LEVEL -4,3M)																							
Doors	0.9	2.1	-	-	3.00	1.20	1.20	23	39	16	-												
Glassing	21.0	1.8	1	37.8	7.00	1.20	1.30	23	39	16	5,504	37.8	100	0.8	3024	0	116	1	0				
Wall	21.0	3.0	1	63.0	2.00	1.20	1.10	23	39	16	2,218					0	150	1	0				
Floor			1	-	0.70	1.00	1.00	23	39	16	-				0					10	-	0	
Sum											7.72				3				0			0.00	10.7
FIRST FLOOR																							
Doors	0.9	2.1	1	1.9	3.00	1.20	1.20	23	39	16	109												
Glassing	26.5	1.6	1	42.4	7.00	1.20	1.30	23	39	16	6,173	42.4	100	0.8	3392	0	116	1	0				
Wall	6.0	3.0	1	18.0	2.00	1.20	1.10	23	39	16	634					0	150	1	0				
Floor			1	-	0.70	1.00	1.00	23	39	16	-				0					10	-	0	
Sum											6.92				3				0			0.00	10.3
SECOND FLOOR																							
Doors	0.9	2.1	1	1.9	3.00	1.20	1.20	23	39	16	109												
Glassing	30.0	3.0	1	90.0	7.00	1.20	1.30	23	39	16	13,104	90.0	100	0.8	7200	0	116	1	0				
Wall	0.0	3.0	1	-	2.00	1.20	1.10	23	39	16	-					0	150	1	0				
Floor								1.00	23	39	16	-			0					10	-	0	
Sum											13.21				7				0			0.00	20.4
THIRD FLOOR																							
Doors	0.9	2.1	2	3.8	3.00	1.20	1.20	23	39	16	218												
Window	0.5	2.8	1	1.4	7.00	1.20	1.30	23	39	16	204	1.4	100	0.8	112	0	116	1	0				
Wall	27.0	4.1	1	111.5	2.00	1.20	1.10	23	39	16	3,925												
Floor								1.00	23	39	16	-			0					10	-	0	
Roof																							
Sum											4.35				0				0			0.00	4.5
SubTotal, Heat Gains-2, kW																							121.36

CHESS HOUSE - CALCULATION OF HEAT GAINS (EXISTING GLASSING)																							
Description of the building					K, w/m²·K	Correction factors		From construction			Heat gain, w.	Area, m²	Solar irradiation, w/m²	Shading coefficient K1	Heat gain, w.	Quantity	Heat gain from one, w.	correction factor	Sum, W	Lighting			Total demand cooling capacity, kW.
Protecting walling	Dimension		Area			Sites	Infiltration	Air temperature												Meas, w/m²	Area, m²	Sum, W	
	L	H	Qty	Sum				Tin	Tout	dT													
EAST FASADE																							
BASEMENT FLOOR (LEVEL -3,76M)																							
Doors	1.5	2.1	2	6.3	3.00	1.20	1.20	23	39	16	362.9												
Glassing	14.0	2.0	1	28.0	7.00	1.20	1.30	23	39	16	4076.8	28.0	250	0.8	5600.0	0	116	1	0				
Wall	7.8	3.0	1	23.4	2.00	1.20	1.10	23	39	16	823.7					0	150	1	0				
G blocks	34.6	0.8	1	27.7	2.00	1.20	1.10	23	39	16	974.3					0	150	1	0				
Unknown wall	21.9	1.5	1	32.8	2.00	1.20	1.10	23	39	16	1153.7												
Floor			1	-	0.70	1.00	1.00	23	39	16	0.0				0.0					10	-	0	
Sum											7.4				5.6				0			0.00 12.99	
FIRST FLOOR (+0,25M)																							
Doors	0.9	2.1	1	1.9	3.00	1.20	1.20	23	39	16	108.9												
Glassing	46.0	2.8	1	127.4	7.00	1.20	1.30	23	39	16	18552.4	127.4	250	0.8	25484.0	0	116	1	0				
Wall	7.9	2.5	1	19.8	2.00	1.20	1.10	23	39	16	695.2					0	150	1	0				
Floor			1	-	0.70	1.00	1.00	23	39	16	0.0				0.0					10	-	0	
Sum											19.4				25.5				0			0.00 44.84	
SECOND FLOOR																							
Doors	0.9	2.1	1	1.9	3.00	1.20	1.20	23	39	16	108.9												
Window	53.0	3.2	1	167.0	7.00	1.20	1.30	23	39	16	24307.9	167.0	250	0.8	33390.0	0	116	1	0				
Wall	1.5	3.0	1	4.5	2.00	1.20	1.10	23	39	16	158.4					0	150	1	0				
Floor								1.00	23	39	16	0.0			0.0					10	-	0	
Sum											24.6				33.4				0			0.00 57.97	
THIRD FLOOR																							
Doors	0.9	2.1	3	5.7	3.00	1.20	1.20	23	39	16	326.6												
Window	16.5	3.0	#	-	7.00	1.20	1.30	23	39	16	0.0	0.0	250	0.8	0.0	0	116	1	0				
Wall	40.0	4.1	1	165.2	2.00	1.20	1.10	23	39	16	5815.0												
Floor								1.00	23	39	16	0.0			0.0					10	-	0	
Roof																							
Sum											6.1				0.0				0			0.00 6.14	
WEST FASADE																							
BASEMENT FLOOR (LEVEL -3,11M)																							
Doors	0.9	2.1	#	-	3.00	1.20	1.20	23	39	16	0.0												
Glassing	2.7	2.0	#	-	7.00	1.20	1.30	23	39	16	0.0	0.0	200	0.8	0.0	0	116	1	0				
Wall	9.0	2.0	1	18.0	2.00	1.20	1.10	23	39	16	633.6					0	150	1	0				
Floor			1	-	0.70	1.00	1.00	23	39	16	0.0				0.0					10	-	0	
Sum											0.6				0.0				0			0.00 0.63	
FIRST FLOOR																							
Doors	0.9	2.1	1	1.9	3.00	1.20	1.20	23	39	16	108.9												
Glassing	41.0	3.0	1	123.0	7.00	1.20	1.30	23	39	16	17908.8	123.0	200	0.8	19680.0	0	116	1	0				
Wall	2.3	3.0	1	6.9	2.00	1.20	1.10	23	39	16	242.9					0	150	1	0				
G Block	7.5	2.5	1	18.8	2.00	1.20	1.10	23	39	16	660.0												
Floor			1	-	0.70	1.00	1.00	23	39	16	0.0				0.0					10	-	0	
Sum											18.9				19.7				0			0.00 38.60	
SECOND FLOOR																							
Doors	0.9	2.1	#	-	3.00	1.20	1.20	23	39	16	0.0												
Glassing	43.0	3.0	1	129.0	7.00	1.20	1.30	23	39	16	18782.4	129.0	200	0.8	20640.0	0	116	1	0				
Wall	2.3	3.0	1	6.9	2.00	1.20	1.10	23	39	16	242.9					0	150	1	0				
G Block	7.5	2.5	1	18.8	2.00	1.20	1.10	23	39	16	660.0												
Floor			1	-	0.70	1.00	1.00	23	39	16	0.0				0.0					10	-	0	
Sum											19.7				20.6				0			0.00 40.33	
THIRD FLOOR																							
Doors	0.9	2.1	3	5.7	3.00	1.20	1.20	23	39	16	326.6												
Window	16.5	3.0	1	49.5	7.00	1.20	1.30	23	39	16	7207.2	49.5	200	0.8	7920.0	0	116	1	0				
Wall	12.5	4.1	1	51.6	2.00	1.20	1.10	23	39	16	1817.2												
Floor								1.00	23	39	16	0.0			0.0					10	-	0	
Roof																							
Sum											9.4				7.9				0			0.00 17.27	
SubTotal, Heat Gains-2, kW																					212.63		
TOTAL, Heat Gains, kW																					333.99		

CHESS HOUSE - CALCULATION OF HEAT DISSIPATION - MODERN GLASSING													
Description of the building												Heat dissipation	
Protecting walling	Air temperature				Dimension		Area		K _f w/m ² *K	Correction factors		Qwt	Qkw
	Tin	Tout	dT		L	H	Qty	Sum		Sites	Infiltration		
EAST FASADE													
BASEMENT FLOOR (LEVEL -3,76M)													
Doors	22	-8	30		1.5	2.1	2	6.3	3.00	1.20	1.20	816	0.82
Glassing	22	-8	30		14.0	2.0	1	28.0	1.80	1.20	1.30	2,359	2.36
Wall	22	-8	30		7.80	3.00	1	23.4	2.00	1.20	1.10	1,853	1.85
G blocks	22	-8	30		34.60	0.80	1	27.7	2.00	1.20	1.10	2,192	2.19
Unkn wall	22	-8	30		21.85	1.50	1	32.8	2.00	1.20	1.10	2,596	2.60
Floor	22	5	17				1	-	0.70	1.00	1.00	-	0.00
Sum												9,817	9.82
FIRST FLOOR (+ 0,25M)													
Doors	22	-8	30		0.9	2.1	1	1.9	3.00	1.20	1.20	245	0.24
Glassing	22	-8	30		46.0	2.8	1	127.4	1.80	1.20	1.10	9,082	9.08
Wall	22	-8	30		7.90	2.50	1	19.8	2.00	1.20	1.10	1,564	1.56
Sum												10,892	10.89
SECOND FLOOR													
Doors	22	-8	30		0.9	2.1	1	1.9	3.00	1.20	1.20	245	0.24
Window	22	-8	30		53.0	3.2	1	167.0	1.80	1.20	1.30	14,064	14.06
Wall	22	-8	30		1.50	3.00	1	4.5	2.00	1.20	1.10	356	0.36
Sum												14,665	14.67
THIRD FLOOR													
Doors	22	-8	30		0.9	2.1	3	5.7	3.00	1.20	1.20	735	0.73
Window	22	-8	30		16.5	3.0	-	-	1.80	1.20	1.30	-	0.00
Wall	22	-8	30		40.00	4.13	1	165.2	2.00	1.20	1.10	13,084	13.08
Roof	22	-8	30									-	0.00
Sum												13,819	13.82
WEST FASADE													
BASEMENT FLOOR (LEVEL -3,11M)													
Doors	22	-8	30		0.9	2.1	-	-	3.00	1.20	1.20	-	0.00
Glassing	22	-8	30		2.7	2.0	-	-	1.80	1.20	1.10	-	0.00
Wall	22	-8	30		9.00	2.00	1	18.0	2.00	1.20	1.10	1,426	1.43
Floor	22	5	17				1	-	0.70	1.00	1.00	-	0.00
Sum												1,426	1.43
FIRST FLOOR													
Doors	22	-8	30		0.9	2.1	1	1.9	3.00	1.20	1.20	245	0.24
Glassing	22	-8	30		41.0	3.0	1	123.0	1.80	1.20	1.10	8,767	8.77
Wall	22	-8	30		2.30	3.00	1	6.9	2.00	1.20	1.10	546	0.55
G Wall	22	-8	30		7.50	2.50	1	18.8	2.00	1.20	1.10	1,485	1.49
Sum												11,044	11.04
SECOND FLOOR													
Doors	22	-8	30		0.9	2.1	-	-	3.00	1.20	1.20	-	0.00
Glassing	22	-8	30		43.0	3.0	1	129.0	1.80	1.20	1.10	9,195	9.20
Wall	22	-8	30		2.30	3.00	1	6.9	2.00	1.20	1.10	546	0.55
G Block	22	-8	30		7.50	2.50	1	18.8	2.00	1.20	1.10	1,485	1.49
Floor	22	5	17				1	-	0.70	1.00	1.00	-	0.00
Sum												11,227	11.23
THIRD FLOOR													
Doors	22	-8	30		0.9	2.1	3	5.7	3.00	1.20	1.20	735	0.73
Window	22	-8	30		16.5	3.0	1	49.5	1.80	1.20	1.10	3,528	3.53
Wall	22	-8	30		12.50	4.13	1	51.6	2.00	1.20	1.10	4,089	4.09
Roof	22	-8	30									-	0.00
Sum												8,352	8.35
SubTotal-2, kW													81.24
Total, heat dissipation from fasad, kW (Modern glassing)													131.81

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CHESS HOUSE - CALCULATION OF HEAT GAINS (MODERN GLASSING)																								
Description of the building					K, w/m²•K	Correction factors		From construction			Heat gain, w.	Area, m²	Solar irradiation, w/m²	Shading coefficient K1	Heat gain, w.	Quantity	Heat gain from one, w.	correction factor	Sum, W	Lighting			Total demand cooling capacity, kW.	
Protecting walling	Dimension		Area			Sites	Infiltration	Tin	Tout	dT										Meas, w/m²	Area, m²	Sum, W		
	L	H	Qty	Sum																				
EAST FASADE																								
BASEMENT FLOOR (LEVEL -3,76M)																								
Doors	1.5	2.1	2	6.3	3.00	1.20	1.20	23	39	16	362.9													
Glassing	14.0	2.0	1	28.0	1.80	1.20	1.10	23	39	16	887.0	28.0	250	0.4	2800.0	0	116	1	0					
Wall	7.8	3.0	1	23.4	2.00	1.20	1.10	23	39	16	823.7					0	150	1	0					
Glass blocks wall	34.6	0.8	1	27.7	2.00	1.20	1.10	23	39	16	974.3					0	150	1	0					
Un wall	21.9	1.5	1	32.8	2.00	1.20	1.10	23	39	16	1153.7													
Floor			1	-	0.70	1.00	1.00	23	39	16	0.0				0.0					10	-	0		
Sum											4.2				2.8				0			0.00	7.00	
FIRST FLOOR (+0,25M)																								
Doors	0.9	2.1	1	1.9	3.00	1.20	1.20	23	39	16	108.9													
Glassing	46.0	2.8	1	127.4	1.80	1.20	1.10	23	39	16	4036.7	127.4	250	0.4	12742.0	0	116	1	0					
Wall	7.9	2.5	1	19.8	2.00	1.20	1.10	23	39	16	695.2					0	150	1	0					
Sum											4.8				12.7				0			0.00	17.58	
SECOND FLOOR																								
Doors	0.9	2.1	1	1.9	3.00	1.20	1.20	23	39	16	108.9													
Window	53.0	3.2	1	167.0	1.80	1.20	1.10	23	39	16	5289.0	167.0	250	0.4	16695.0	0	116	1	0					
Wall	1.5	3.0	1	4.5	2.00	1.20	1.10	23	39	16	158.4					0	150	1	0					
Floor							1.00	23	39	16	0.0				0.0					10	-	0		
Sum											5.6				16.7				0			0.00	22.25	
THIRD FLOOR																								
Doors	0.9	2.1	3	5.7	3.00	1.20	1.20	23	39	16	326.6													
Window	16.5	3.0	-	-	1.80	1.20	1.10	23	39	16	0.0	0.0	250	0.4	0.0	0	116	1	0					
Wall	40.0	4.1	1	165.2	2.00	1.20	1.10	23	39	16	5815.0													
Roof																								
Sum											6.1				0.0				0			0.00	6.14	
WEST FASADE																								
BASEMENT FLOOR (LEVEL -3,11M)																								
Doors	0.9	2.1	-	-	3.00	1.20	1.20	23	39	16	0.0													
Glassing	2.7	2.0	-	-	1.80	1.20	1.10	23	39	16	0.0	0.0	200	0.4	0.0	0	116	1	0					
Wall	9.0	2.0	1	18.0	2.00	1.20	1.10	23	39	16	633.6					0	150	1	0					
Floor			1	-	0.70	1.00	1.00	23	39	16	0.0				0.0					10	-	0		
Sum											0.6				0.0				0			0.00	0.63	
FIRST FLOOR																								
Doors	0.9	2.1	1	1.9	3.00	1.20	1.20	23	39	16	108.9													
Glassing	41.0	3.0	1	123.0	1.80	1.20	1.10	23	39	16	3896.6	123.0	200	0.4	9840.0	0	116	1	0					
Wall	2.3	3.0	1	6.9	2.00	1.20	1.10	23	39	16	242.9					0	150	1	0					
Glass blocks wall	7.5	2.5	1	18.8	2.00	1.20	1.10	23	39	16	660.0													
Floor			1	-	0.70	1.00	1.00	23	39	16	0.0				0.0					10	-	0		
Sum											4.9				9.8				0			0.00	14.75	
SECOND FLOOR																								
Doors	0.9	2.1	-	-	3.00	1.20	1.20	23	39	16	0.0													
Glassing	43.0	3.0	1	129.0	1.80	1.20	1.10	23	39	16	4086.7	129.0	200	0.4	10320.0	0	116	1	0					
Wall	2.3	3.0	1	6.9	2.00	1.20	1.10	23	39	16	242.9					0	150	1	0					
Glass blocks wall	7.5	2.5	1	18.8	2.00	1.20	1.10	23	39	16	660.0													
Sum											5.0				10.3				0			0.00	15.31	
THIRD FLOOR																								
Doors	0.9	2.1	3	5.7	3.00	1.20	1.20	23	39	16	326.6													
Window	16.5	3.0	1	49.5	1.80	1.20	1.10	23	39	16	1568.2	49.5	200	0.4	3960.0	0	116	1	0					
Wall	12.5	4.1	1	51.6	2.00	1.20	1.10	23	39	16	1817.2													
Roof																								
Sum											3.7				4.0				0			0.00	7.67	
SubTotal, Heat Gains-2, kW																								91.3
TOTAL, Heat Gains, kW																								152.7

2.OPTIMIZATION OF EXISTING SYSTEMS

The building is divided into several systems, the work of which is not synchronized in any way. The Main Hall has the largest capacity, where the HVAC system is currently not operating. In addition, the old system air ducts are not preserved, fans, etc. are removed from the air ducts. The ends of the air duct are open and in this way air flows out or inside the building, taking into account the wind and many other factors (doors, windows, etc.).



fig. 1



fig. 2

During the test measurements, an average speed of 0.72 m/s was observed in these air ducts



fig. 3 - display of anemometer

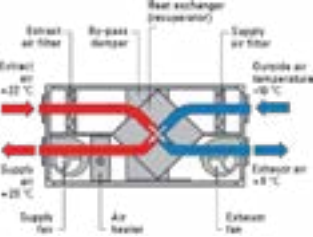


fig. 4 AHU with heat recuperation

If we calculate this parameter, per hour 725m3 of air will enter the building and be lost from the building. When calculating energy, we get only from this one such air duct: $Q_i = 0,28 \cdot G_i \cdot C \cdot (T_p - T_i) \cdot k = 4,7 \text{ kW}$ loss, which can increase 2-3 times in windy weather.

In the future, this hall can be equipped with a supply-exhaust ventilation system with a heating-cooling function (AHU), using the principle of heat recovery.



fig. 5 Air damper with an actuator

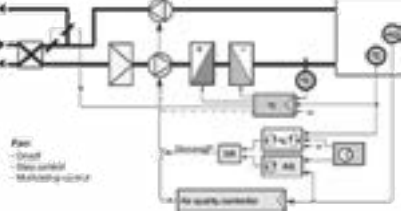


fig. 6 Demand Controlled Ventilation scheme

The dimensions of the old air ducts and the dimensions of the openings for them will be enough to build a new system, the principle will remain the same, only the energy efficiency is at least 2 times higher.

Air dampers with actuators should be installed in the air ducts of the old system, which will automatically shut off when the ventilation system is switched off, air will not flow into or out of the premises and thus save energy.

Frequency inverters must be used to regulate fan motors in existing operating systems to increase energy efficiency. The control signal for these frequency inverters must come from the CO2 or VOC sensors (Demand controlled ventilation) located in the premises. In this case, the ventilation capacity will depend on the load on the premises and will supply exactly the amount of air that is required by the sanitary norms. As world practice shows, such a method gives 20-35% energy savings. In addition, due to the fact that there is no mechanical and electrical overload of the engine during start-up, which is usually 5-7 times, the engine service life is increased by 1.5-2 times.

Energy savings using inverters can reach up to 45%. By our calculations, we get savings of up to 20%, although in practice it can be up to 40%. Thus, for a ventilation unit that has, for example, a capacity of 3 kW and operates for 10 months of the year, the amount of energy savings for 1 year will be $3,0\text{kW} \cdot 10\text{hours} \cdot 297\text{days} \cdot 0,2 = 1782\text{kWh}$ which is equal: $1782 \cdot 0,175 \text{ GEL} = 311 \text{ GEL}$ economy per year.

If we consider that the price of such an inverter is 500-600 GEL, this investment will be covered in 2 years and the following years will bring profit. In addition, the noise level is significantly reduced, which creates additional comfort for the customer.

How well this system will be assembled and programmed will depend on its efficient operation. In particular, much depends on the correct selection and distribution of sensors.

HERE ARE SOME SIMPLE RULES TO FOLLOW WHEN CHOOSING A SENSOR:

1. If a man is the main source of air pollution in space, the CO2 concentration is suitable for the controlled operation of a reference variable air treatment system requirement. The ideal program includes museums, theaters, lecture halls, cinemas, and open-plan offices.
2. Tobacco smoke can only be detected through VOC sensors.
3. If neither of these two sources is dominant, both variables should be evaluated. A sensor that measures more demand, determines outdoor air intake.
4. If the air is significantly polluted by emissions from the materials in the room, then a basic load is required, both short-term and continuous. This reduces the efficiency of the solution economy. It is therefore important to minimize this type of pollution source.

5. Room or duct sensors? In principle, the indoor air quality can be assessed either in the room itself or in the exhaust duct.

- › Room sensors allow the equipment to be turned off completely, thus saving maximum energy. They can also be positioned to directly detect major sources of pollution;
- › Duct sensors are most commonly used in VAV systems. They record either the average value of the IAQ

6. Number of sensors: For spaces of up to 400 m² in simple geometry, one sensor is generally sufficient.

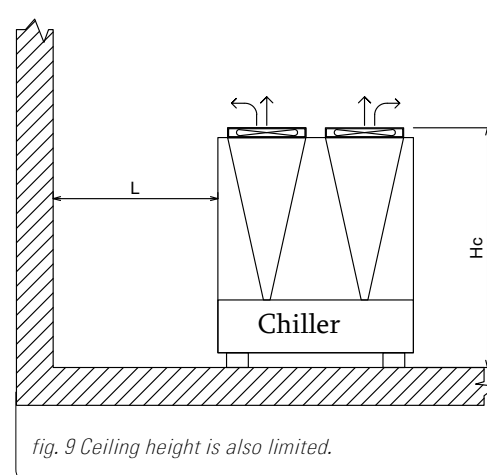
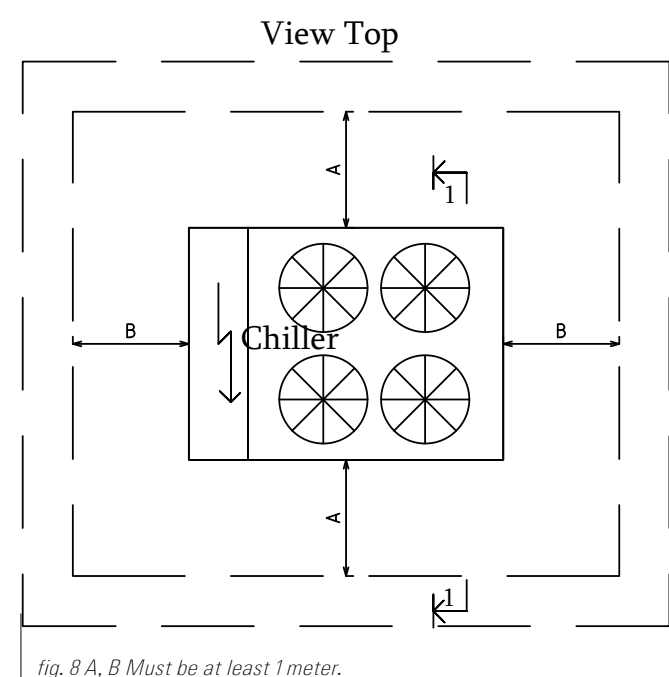
The use of sensors by saturation purpose is shown in Table # 3



Type of building / space	CO ₂	VOC (Mixed gases)
Museums, theaters, cinemas, lecture halls	X	
Restaurants, canteens	(X)	X
Shopping malls, department stores	X	(X)
Meeting rooms	X	X
Conference halls, banqueting halls	X	X
Exhibition halls, sport halls, reception areas	X	X

fig. 7 Types of sensors

Only one central air conditioning system is installed in the billiard room in the northern half of the building. It is assembled according to the classic scheme: chiller + heating boiler + central ventilation unit + cassette type fan coils.



Much depends on the correct installation of the chiller for smooth and efficient operation. In particular, since the principle of operation of the existing chiller is to exchange excess energy with the external space, the exchange must take place without interruption, for this, all manufacturers specify the minimum distance to walls, ceilings, etc. in the installation instructions.

Both of these restrictions were violated during the installation of the existing system. As a result, the energy efficiency of the chiller is lower than that invested by the manufacturer and the output power of this unit cannot be used properly.

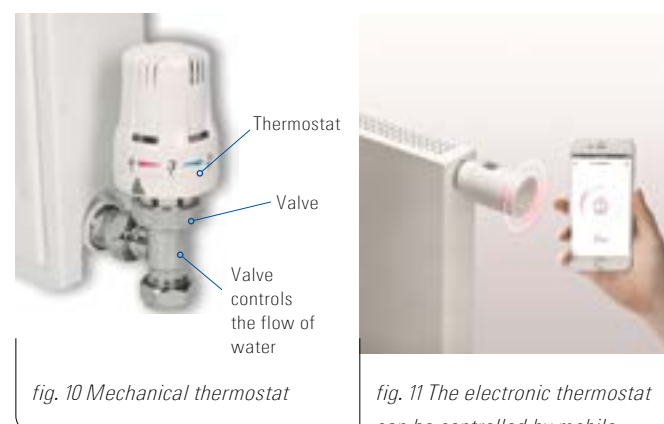
In addition, due to working in the wrong mode, there is a high probability of damage to the unit.

3-way valves can be used to control fan coil units for energy efficiency.

In existing systems, heating panel radiators are connected to the heating network without regulating elements.

Installing thermostats on radiators can achieve significant energy savings.

Using electronic thermostats can achieve even more energy efficiency. In this case, the adjustment is done remotely and the heating system can be switched to night mode centrally.



To control it with a mobile phone, you only need to download the application of the relevant manufacturer to the mobile phone. Such a management and control system is justified in medium and large systems, and where cabinets and offices are private and locked in the absence of the owner.

Most of the storage in the building is cooled by split air conditioners. The split air conditioner is a mini-heat pump that works in both modes: On cooling and heating. In these modes, it has a different efficiency coefficient. In general, the efficiency of cooling mode is EER=2,5 (Energy Efficiency Rating), the efficiency of heating mode (Coefficient Of Performance) COP=2,2. These odds are average and manufacturers fix the maximum odds for marketing purposes. However, in reality, this coefficient is achievable under ideal conditions - in particular, the ideal conditions when working in cooling mode are: air temperature 25-28°C, the outer block is at least 15 cm away from the wall and not in direct sunlight, ventilation is carried out without external barriers (no branches forward, Wall, etc.), the radiators of the outdoor and indoor blocks are clean.

The ideal conditions for heating are air temperature 8°C, humidity 40-50%. It should be noted that as the temperature decreases, efficiency decreases and occurs at a minimum of -15-20°C during frost.

Using a split air conditioner and a conventional electric heater during this period (-10-20°C) equals energy efficiency. High humidity close to 0°C causes the outer unit of the air conditioner

to be covered with ice, the air conditioner automatically switches to the defrost mode and so on for 4-5 minutes, then returns to the heating mode again.

Consequently, the real energy reserve will be reduced in this case as well. And like cooling, heat exchangers must be turned on.

The energy efficiency of the air conditioner largely depends on the latter condition. 5 basic rules for proper operation of AC split systems:

- The thermostat must be programmed correctly, the thermostat can force the system to turn on and off frequently, which negatively affects the temperature of the house.
- Maximize the airflow around the outdoor unit. Plants, tree branches, and anything that obstructs the flow of air should be at least 2 meters away from the outdoor unit. For maximum efficiency, the airflow should be nominal.
- Maximum airflow means maximum efficiency, so a dirty filter can not only worsen indoor air quality but also reduce airflow and increase the load on the air conditioner.
- Set the thermostat to a reasonable temperature. A thermostat set at a low temperature does not mean it cools down faster. Your air conditioner will just operate longer - which means an increase in utility bills.
- Seasonal service work should be carried out at least twice a year. During service, the Freon pressure in the system should be checked, the outdoor unit must be washed, the filter of the indoor unit should be cleaned.

3. LIGHTING

One more way to increase the energy efficiency of the building is the installation of modern lighting systems by gradually replacing technically obsolete lamps, arranging modern lighting management and monitoring systems. Experience of already implemented energy-saving programs, which include energy saving in buildings using LED lamps, shows significant results.

For example, the energy efficiency of LED lamps is twice that of fluorescent lamps and 10 times that of incandescent lamps. Also, LED lamps are characterized by a long service life of up to 50 thousand hours.

Due to the high reliability, LED lamps can be used to significantly reduce the operating costs of the building and save a drastic reduction in labor costs for the replacement of lighting elements, especially this applies to the Main Hall, where it is difficult to change the lights and requires a special high folding ladder. Listed below are the features of LEDs that make them the most economical light source:

- High rate of illumination (100-150 lm/w);
- Low power consumption (unit watts);
- High-efficiency parameters of lighting devices and use of all luminous flow in lighting installations;

- Small dimensions;
- High durability (continuous operation for more than 10 years);
- No pulsation of light flux;
- Ability to obtain radiation of different spectral composition;
- Ability to reduce the safety factors of lighting installations due to the stability of the features and the high level of service;
- Possibility to use for objects (works of art, printing products, textile production) without heating effect;
- High resistance to external influences (temperature, vibration, humidity);
- Electrical safety and explosion safety;
- Ability to dramatically reduce the size of production of lighting equipment, material consumption and labor intensity;
- Ability to create maintenance devices;
- High degree of control (possibility of building multi-level lighting control systems);
- High capacity for mass production;
- Low cost of packaging and transportation.
- In order to save electricity in the given building, the old type of lamps should be gradually replaced with LED lamps, motion detectors should be installed in the corridors and the lighting should be controlled by these sensors. In addition, rooms can be fitted with special human detection sensors that turn off the lights if there is no movement in the space for 20-30 minutes.

APPENDIX 7. BEST TERMS OF USE OF THE BUILDING

Author: IDEA CITY

Tbilisi 2019

TABLE OF CONTENTS

- Ideology
- Concept
- #CHESSTALKS
- Cafe
- Boulderling Hall
- Outdoor climbing wall
- Solar Panels
- Final Product

1. IDEOLOGY

Maintaining the original appearance of the building is just as equally important, as preserving the historical value of its architecture. Whilst, the architectural value is what attracts the public and provides an opportunity to utilize the building for economic purposes, along with the architectural values of the building, its historical value – the symbol of victories and triumph, should also be preserved. The entire space should accommodate the effective functioning of the Chess Federation and Alpine Club. While receiving financial gain, it is important that they are directed towards the conservation and development of historical functions of the heritage.

Some parts of the building have lost the functions that were initially designated for the operation of the Alpine Club and Chess Palace. Those spaces should be used for such purposes that are conceptually compatible with the intellectual nature of those two sports and at the same time should bring financial profit to the palace.

Apart from the conservation and utilization of the building with initial functions, one of the biggest challenges is to elicit touristic potential of the building, which will provide financial stability to the monument.

2. CONCEPT

Along with preserving the historical function of the building and by considering its ideology, it would be appropriate to add following new functions:

- #CHESSTALKS;
- Thematic café-museum;
- Boulderling hall;
- Outdoor climbing wall;
- Solar panels;

3. #CHESSTALKS

Since the Main Hall of the building has lost its function recently, it has been mostly vacant. Therefore, it is recommended that this space adopts a new conceptual function that will not impede the historical identity of the building.

The new function of the Main Hall is desirable to be consistent with the intrinsic concept of this space, which relates to victories in sports and intellectual activities. Restoring the original presentation of the Main Hall will make it unique and will

grant a competitive advantage over the similar spaces in that neighborhood of the city.

It is suggested that the Main Hall is utilized for the activities of such organizations as TEDx, that aim at sharing knowledge, experience, and motivation through public speaking events. This will attract an intellectual society and will bring financial profits. Additionally, such events will emphasize the original function of the building, which is an educational and intellectual space.

4. ADAPTATION AND USES OF THE MAIN HALL

- **Preserving the Historical Function:** The Main Hall should preferably be hosting chess tournaments of international importance.
- **Commercial Opportunity:** Adding a new function to the Main Hall will create additional financial sources for the users of the building. This will also significantly increase the number of visitors.
- **Raising Public Awareness:** Considering the concept of this new function, it will highlight and promote the intellectual character of the space. Public speaking sessions will require appropriate equipment.

5. THEMATIC CAFÉ-MUSEUM

Chess Palace and Alpine Club is desirable to become a gathering place for foreign and local visitors. The café can be set up in that very space, where it was originally designed and it can comprise additional functions such as:

- **Specialized Literature**
The café will offer the visitors thematic literature about chess and alpinism that will be provided in the sitting area.
- **Museum Space**
The museum space will be arranged in a separate room and it will present all the materials of historical value that are in the ownership of the chess palace and alpine club: including awards photos, audio, and video recordings, etc.
- **Shopping Area**
In the museum space, the shopping area can be arranged, where the visitors will have an opportunity to purchase

souvenirs and special equipment and items for chess and alpinism, such as chess boards, mountaineering equipment;

- **Catering Service**
With the new function of the Main Hall, it is important that space also offers catering services to the visitors. This will attract even more customers and visitors to the Main Hall;
- **Thematic Video Screenings**
Thematic video screenings in the Alpine Club and Chess Federation will raise public awareness about the space and will create environment for more communication with the customers;
- **Visitors Center**
The visitors center will provide visitors with important information regarding the hiking routes and opportunities, mountain guides, etc.

6. BOULDERING HALL

When initially the plan of the building was being designed, by that time, bouldering as one of the sport disciplines was not yet popular in Georgia, therefore it was not considered in the original plan. In order to develop the functionality of the Alpine Club, it is advised that the existing bouldering hall is expanded.

The current condition of the bouldering hall does not meet the requirements of the consumer. For activating the space, it is required to remodel the safety systems, equipment, and infrastructure.

The Goals and Functions of the Boulderling Hall:

- **Fundraising**
Boulderling hall, together with the outdoor climbing wall will create a sustainable source of income for the Alpine Club.
- **Enhancing the Function of the Building**
Boulderling hall will increase public awareness regarding Alpine Club and will enhance the historical function of the building.

7. OUTDOOR CLIMBING WALL

The idea is to construct a climbing wall in Vera Park, close to the Chess Palace, with IFSC (The International Federation of Sport Climbing) standards from low to higher levels of difficulty. The design of the construction may resemble the chess figure of the queen, which is one of the main elements of the décor in the building and symbolizes the victories of Nona Gaprindashvili.

The climbing wall can be a temporary construction, that will not contravene the Vera Parks status of cultural heritage.

The Goal and Function of the Outdoor Climbing Wall:

- Increasing Public Awareness – The thematic design of the climbing wall, as well as the Chess Palace and Alpine Club, is unique in the world. This can become a point of interest for international media and for the public interested in this sport discipline. It will also attract foreign visitors and will contribute to the economic sustainability of the building.
- IFSC—standards – Outdoor climbing wall should comply with IFSC standards, which will enable local sportsmen to train

8.SOLAR PANELS

There is a possibility to create a new source of income for the building, without interfering with the original architectural appearance of the building. This idea is to install black and white solar panels on the roof of the building in the form of a chessboard, which will increase the energy efficiency of the building.

9.FINAL PRODUCT

Rehabilitation and Adding New Functions to the Building will Result Into:

- Functional Late Soviet Modernist monument;
- With new function of the Main Hall, the historical values of the building will be preserved and at the same time it will create new economic opportunities;
- Chess queen shaped outdoor climbing wall create unique ambiance and will attract international interest towards historical connection between Georgian chess and Alpine Clubs;

- for international competitions and to host international tournaments. All these will increase the publicity of the country and Chess Palace.
- Landmark – The height of the climbing wall should be 16–18 meters. (as per IFSC standards). The height and the design of the wall will create a symbolic marker to highlight Vera Garden and Chess Palace. During the night this function may be maintained by illuminations. As a result, the public interest in the Alpine Club and Chess Palace will increase, which will attract more visitors to the café and the bouldering hall.

The Goals and Functions of the Solar Panels:

- Energy Efficiency – This will serve as an additional income for the building that will save the building up to 25 000 GEL per year.
- Implementation of the Café project will return the historical function to the part of the building and will create a gathering place for chess lovers and for the members of the Alpine Club;
- Renovation and expansion of the Bouldering hall will create new economic opportunities and will strengthen the function of the Alpine Club within the building.

APPENDIX 8. ARCHITECTURAL DRAWINGS

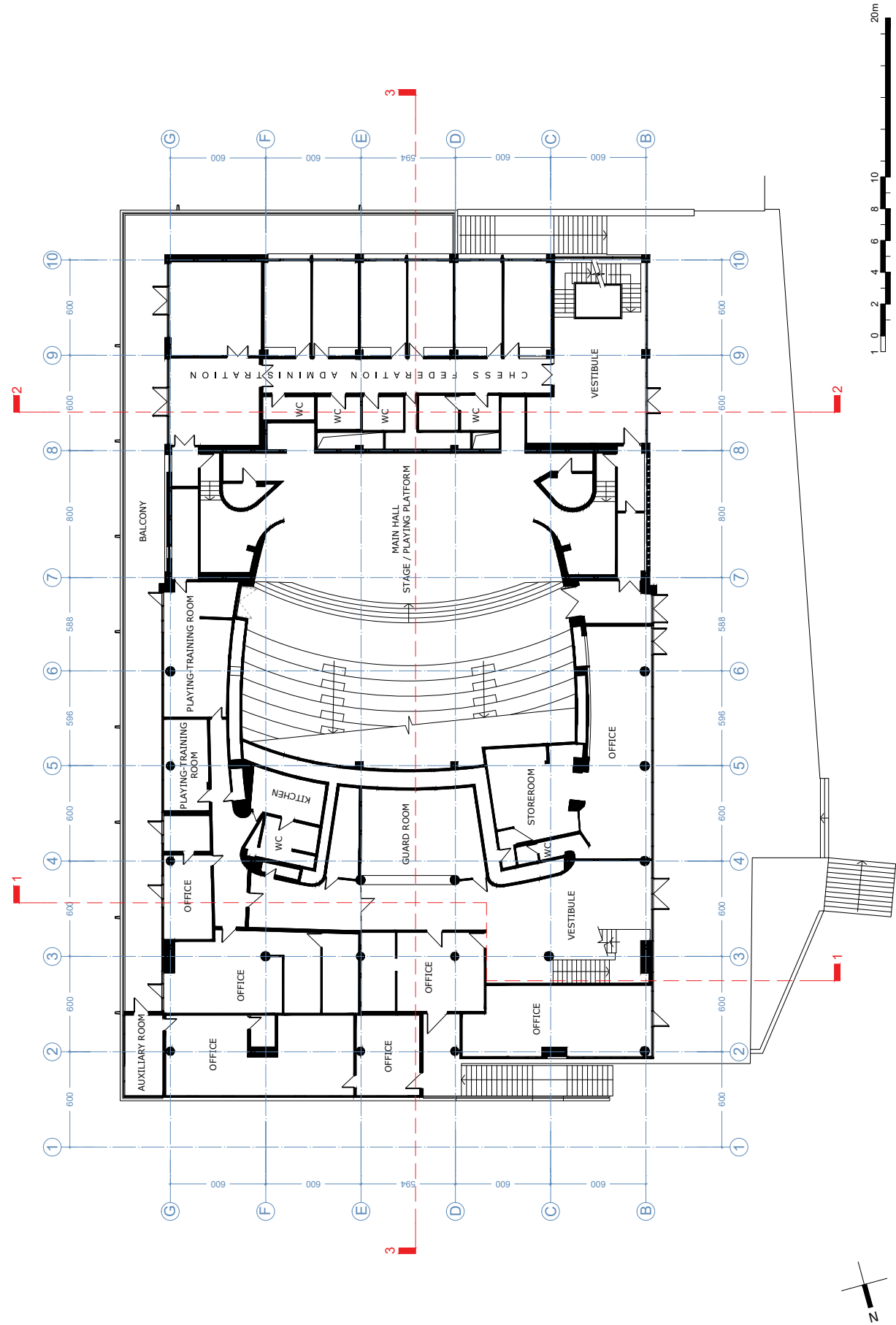
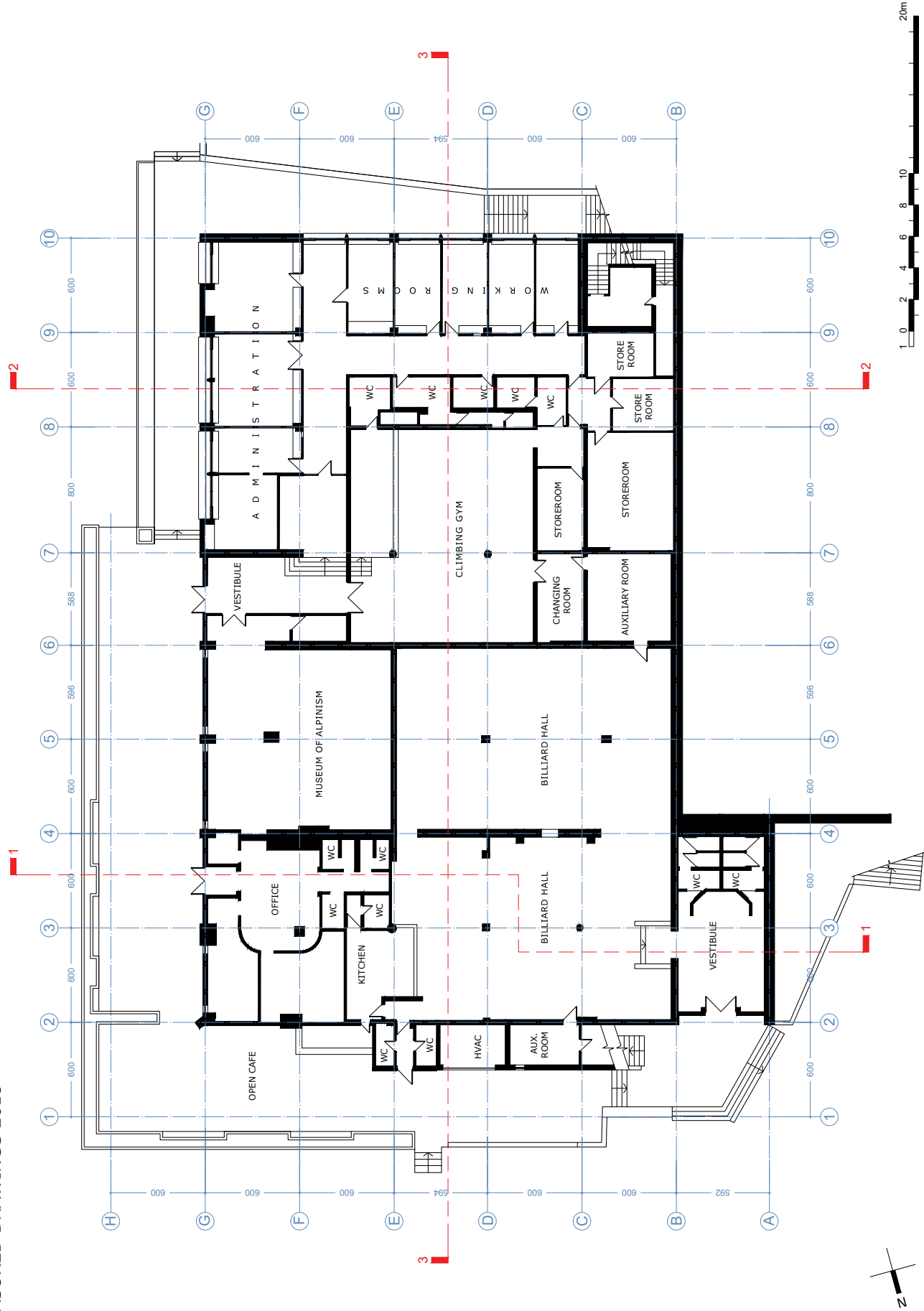
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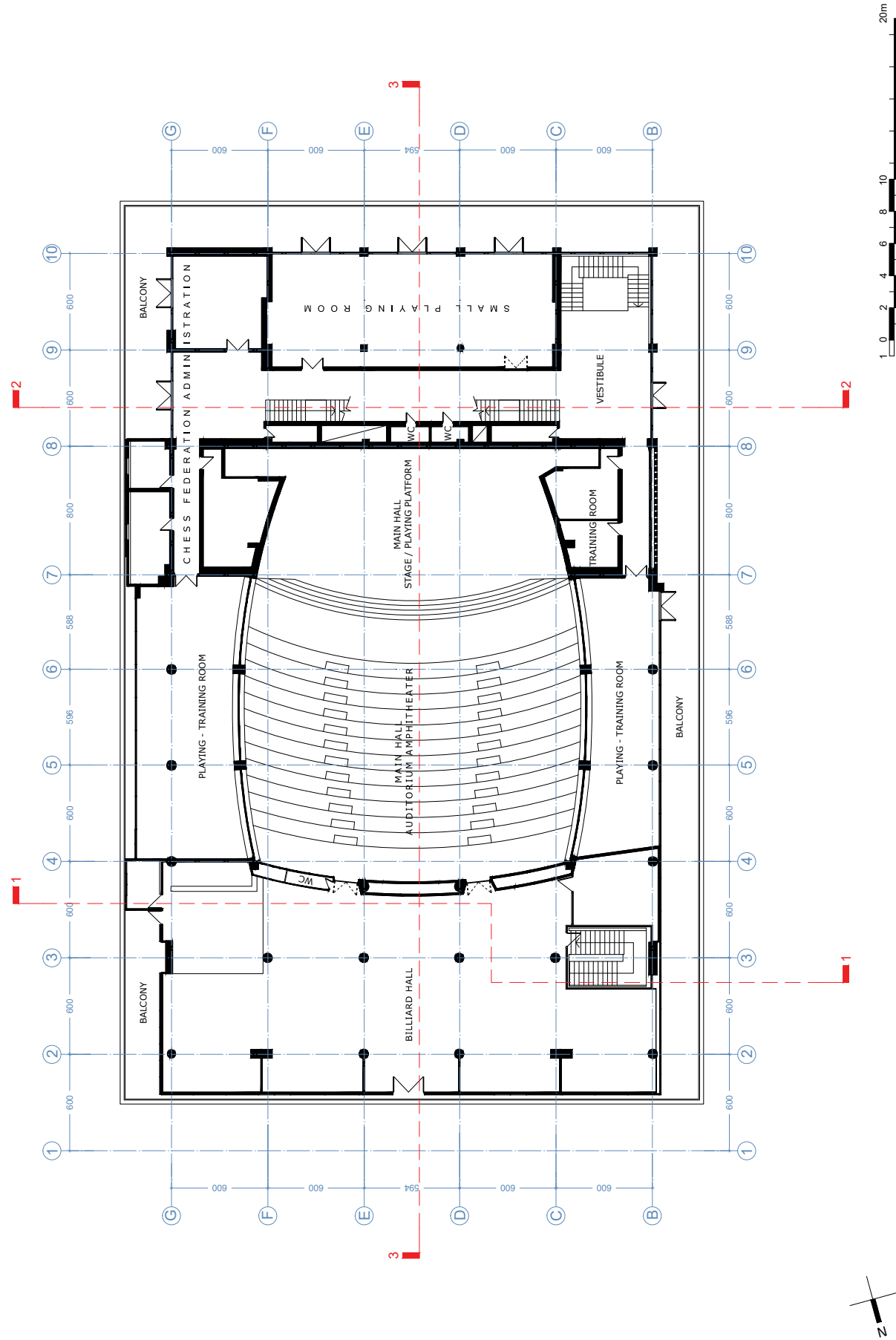
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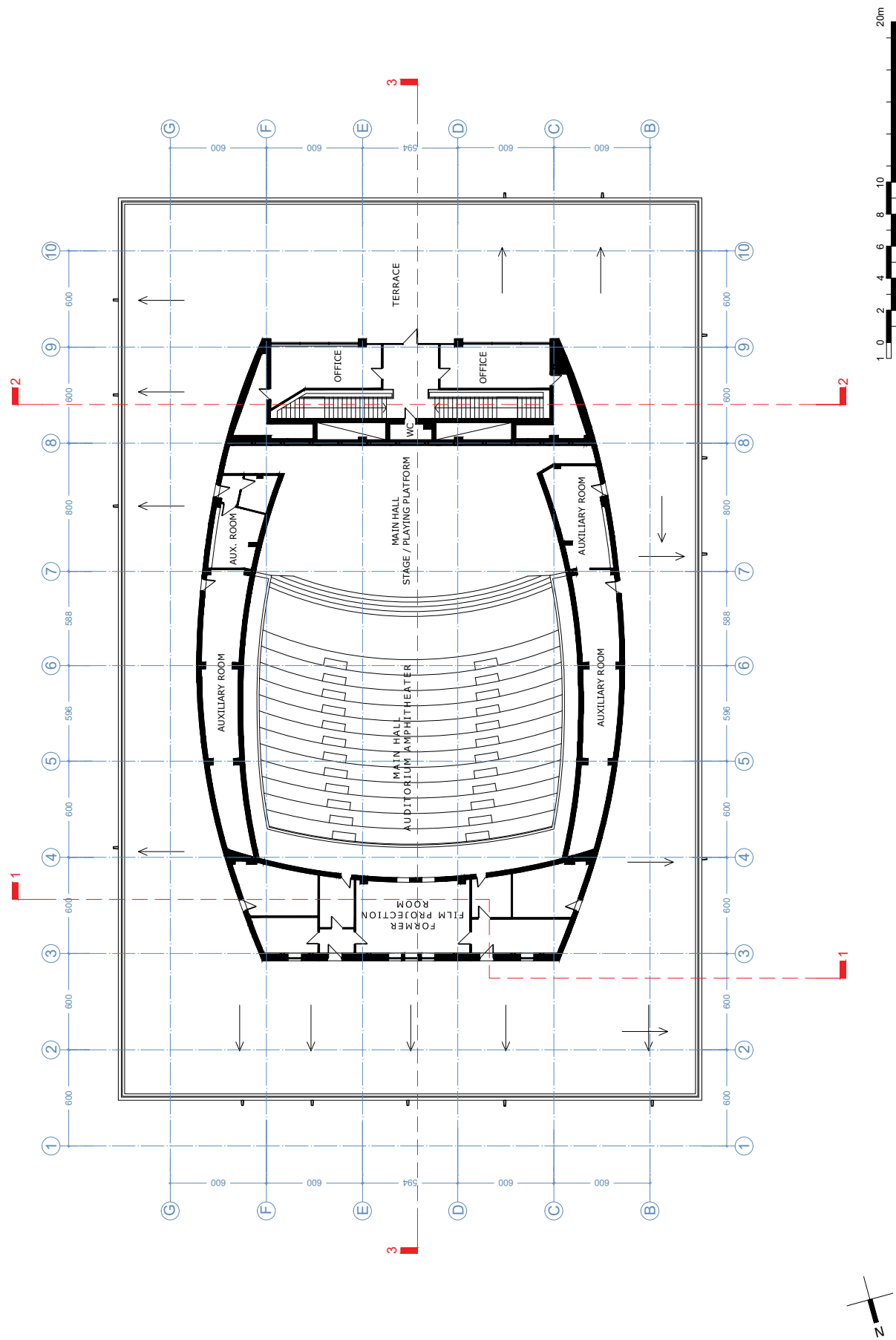
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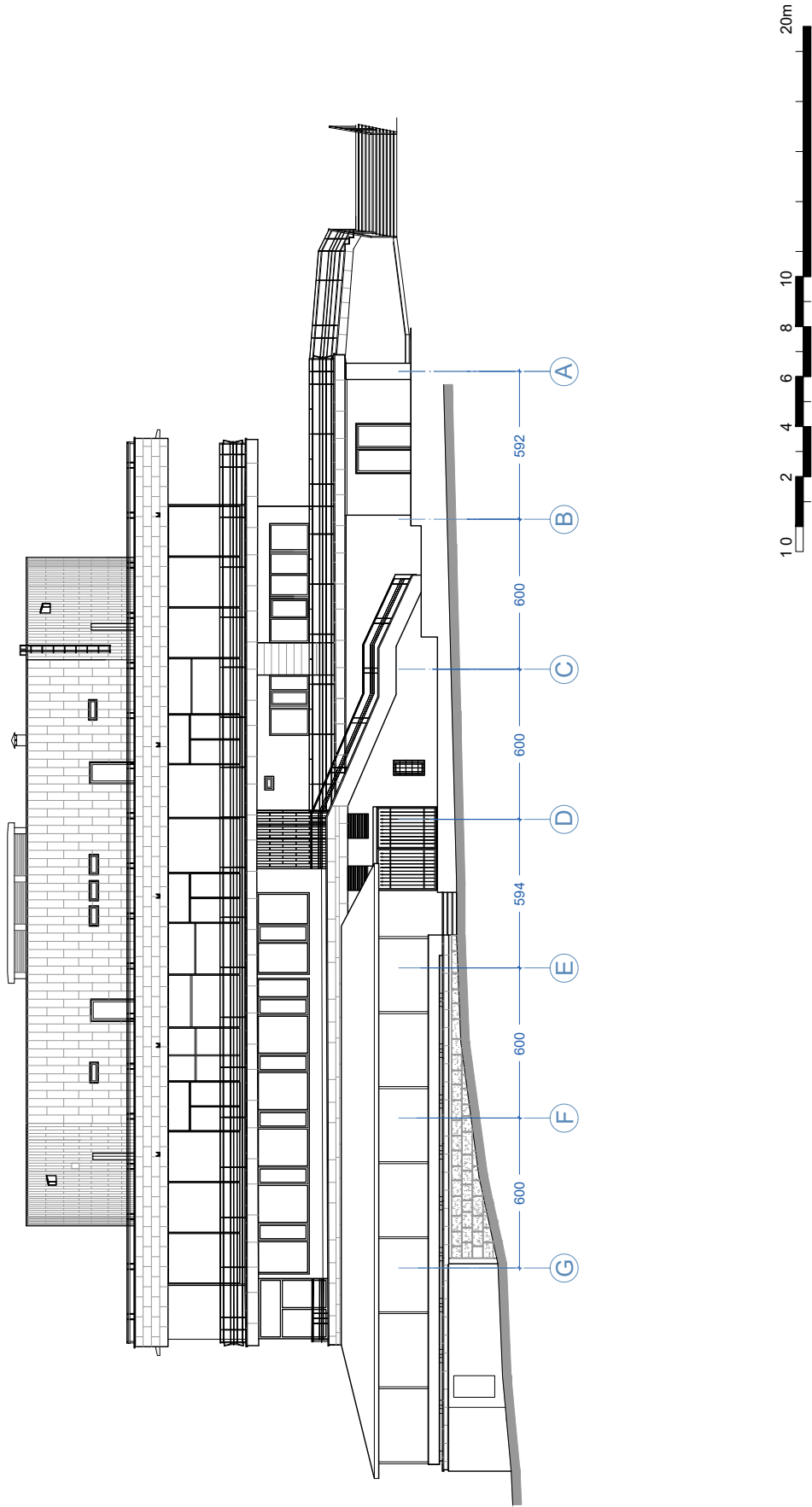
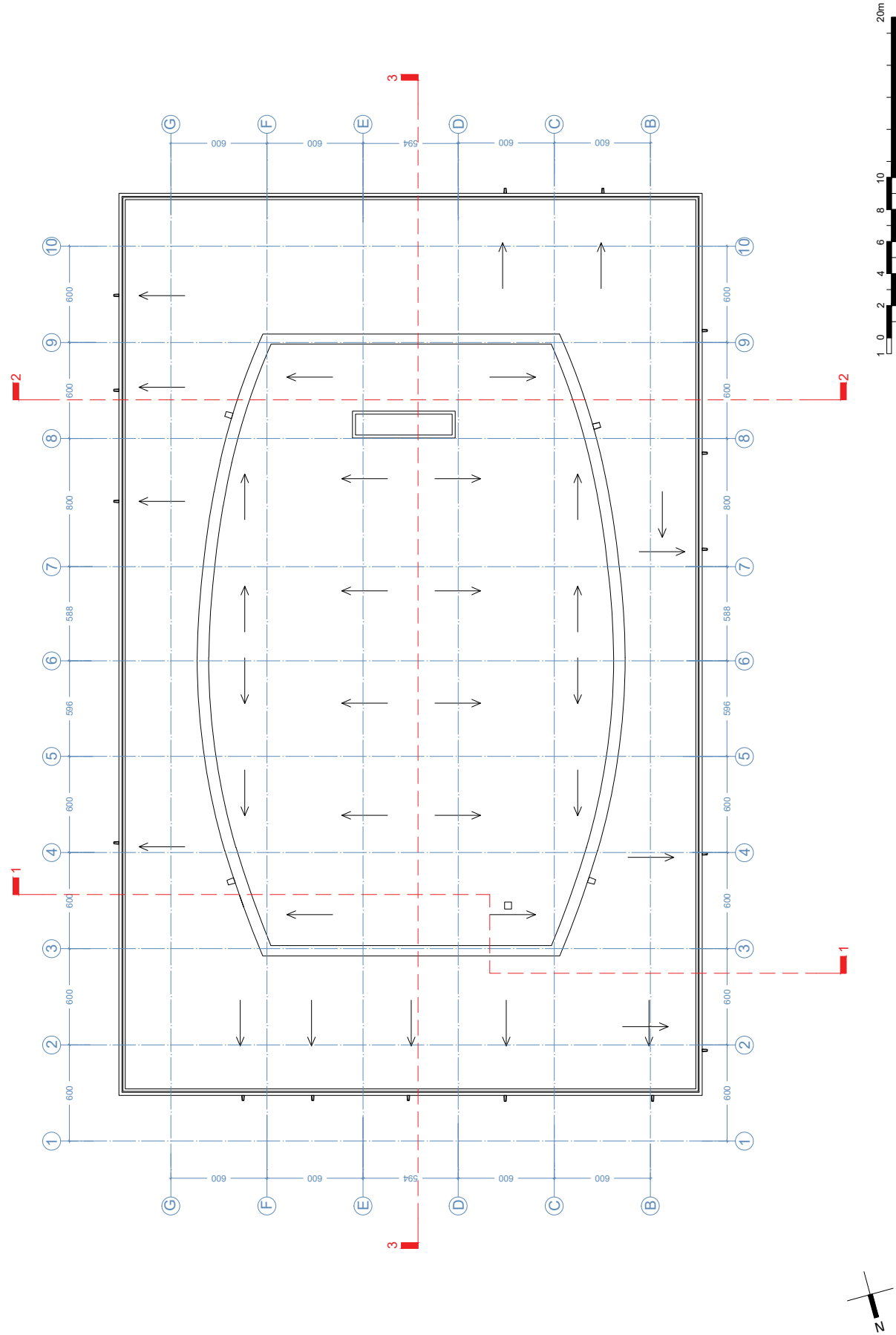
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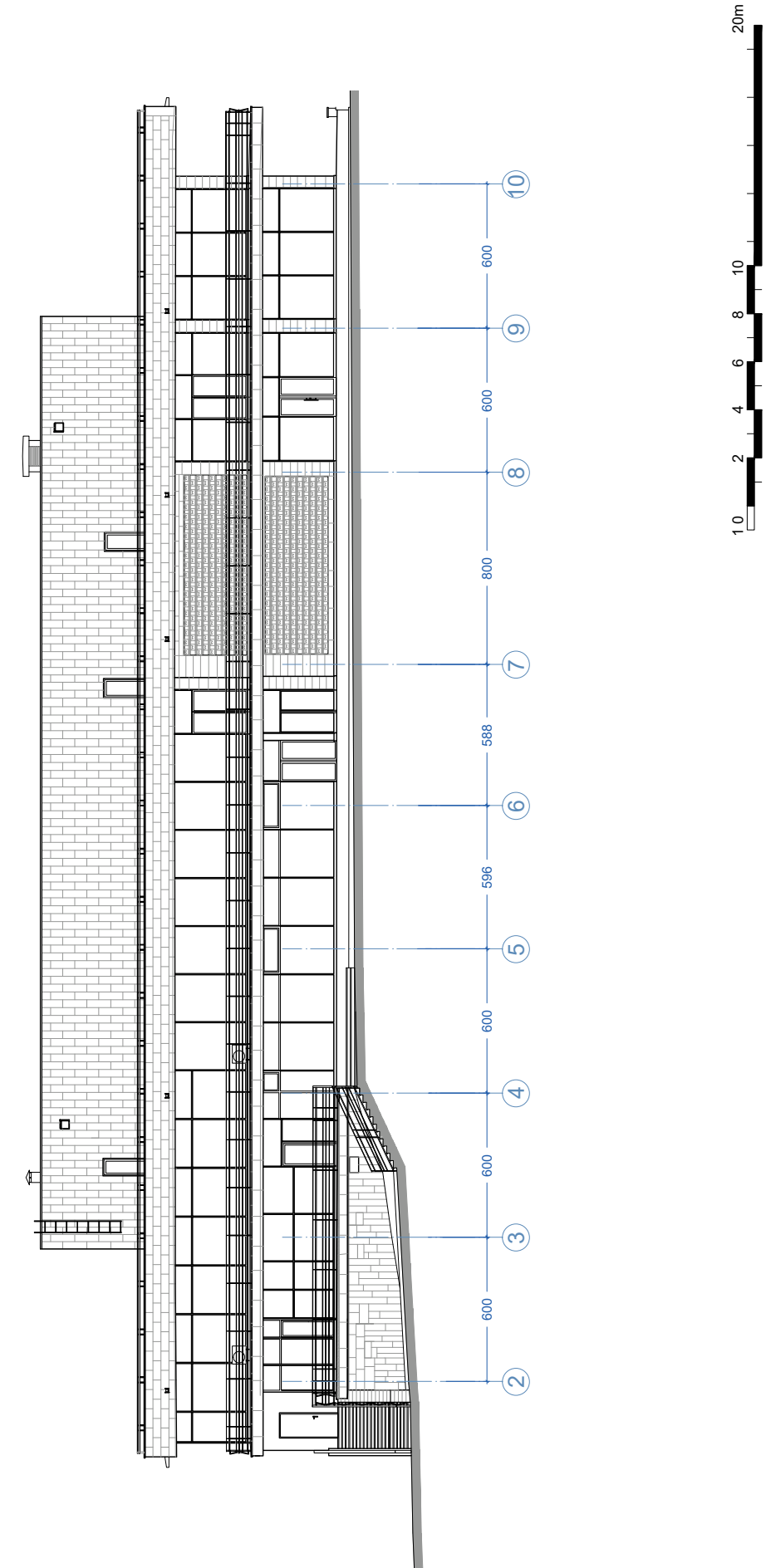
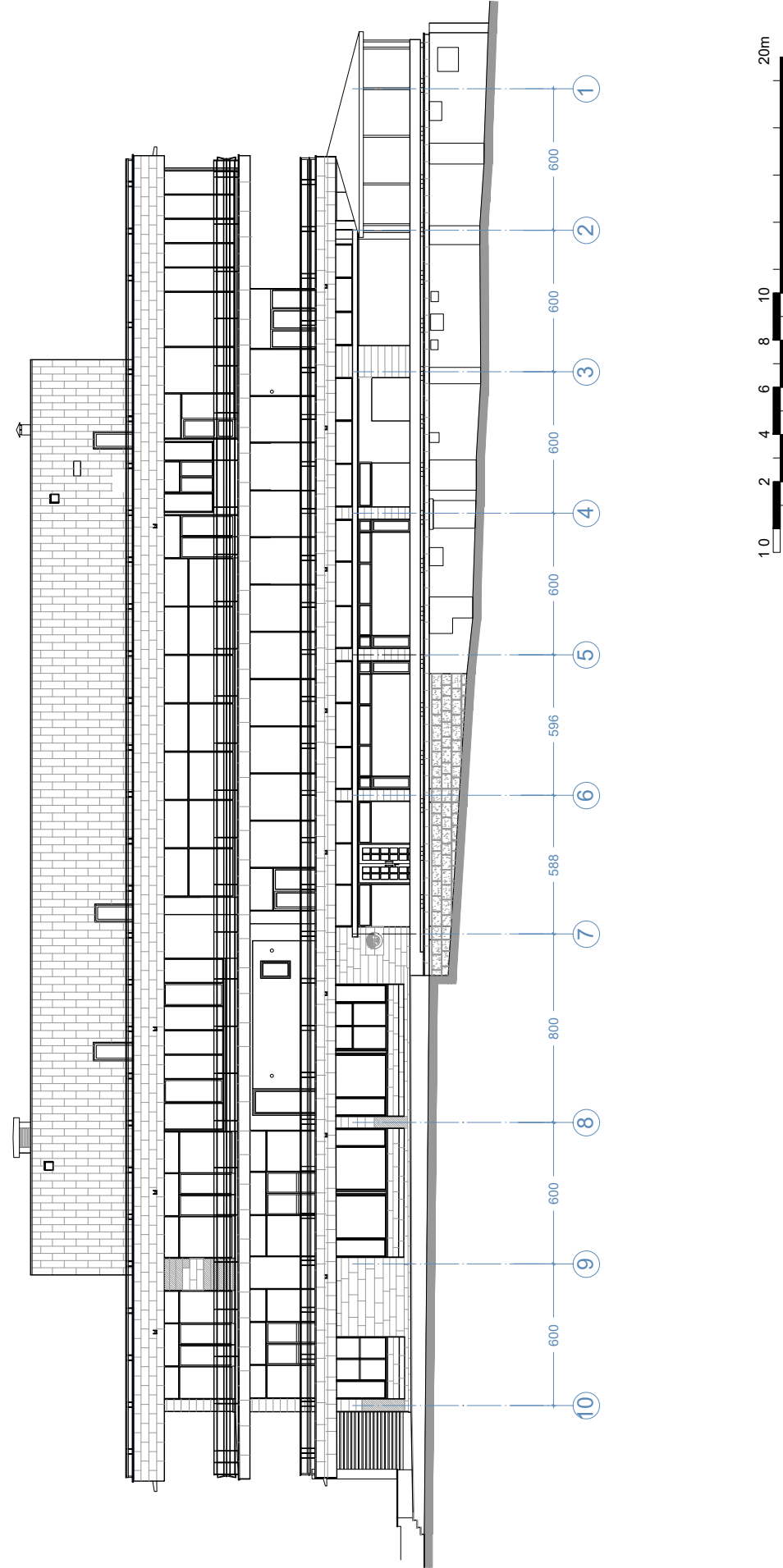


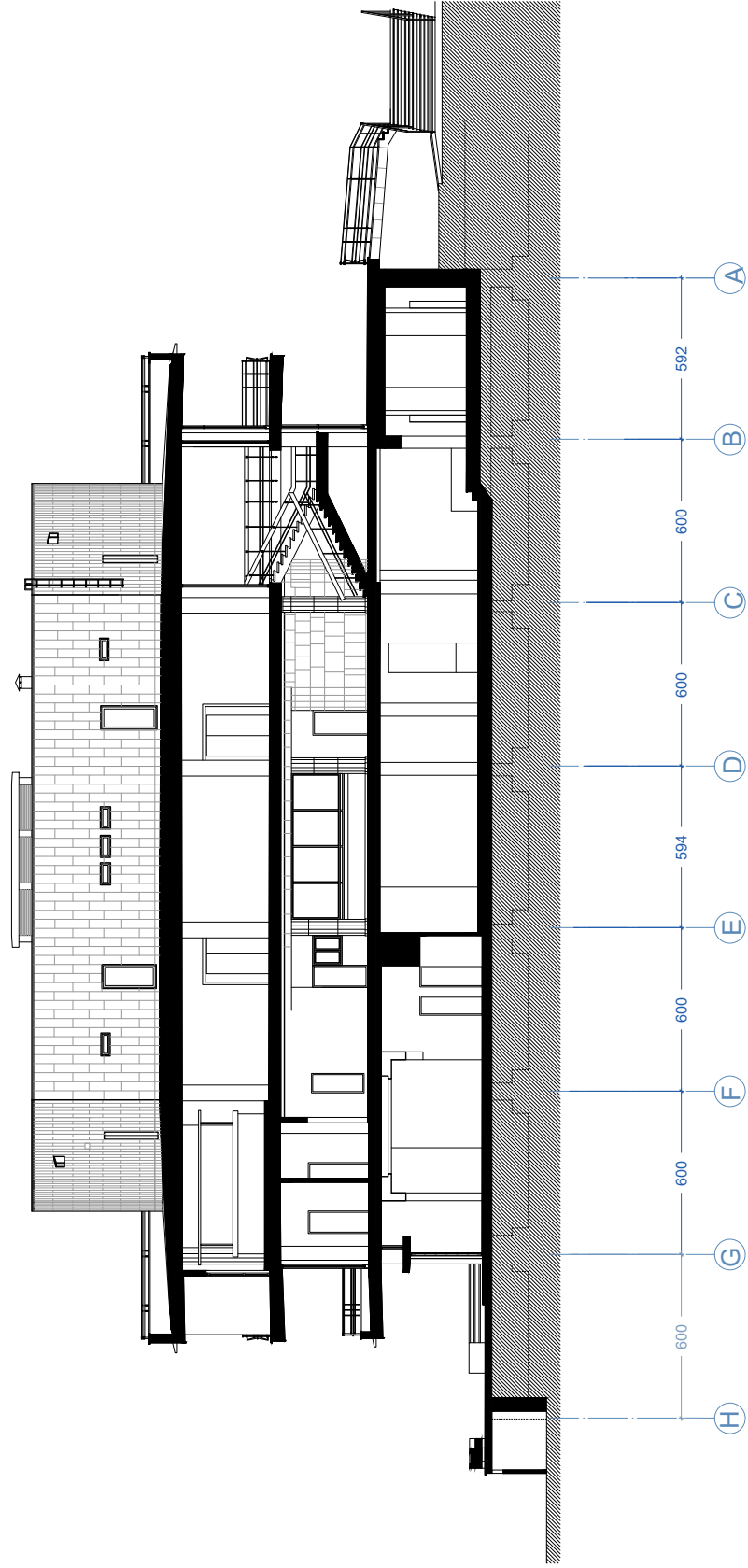
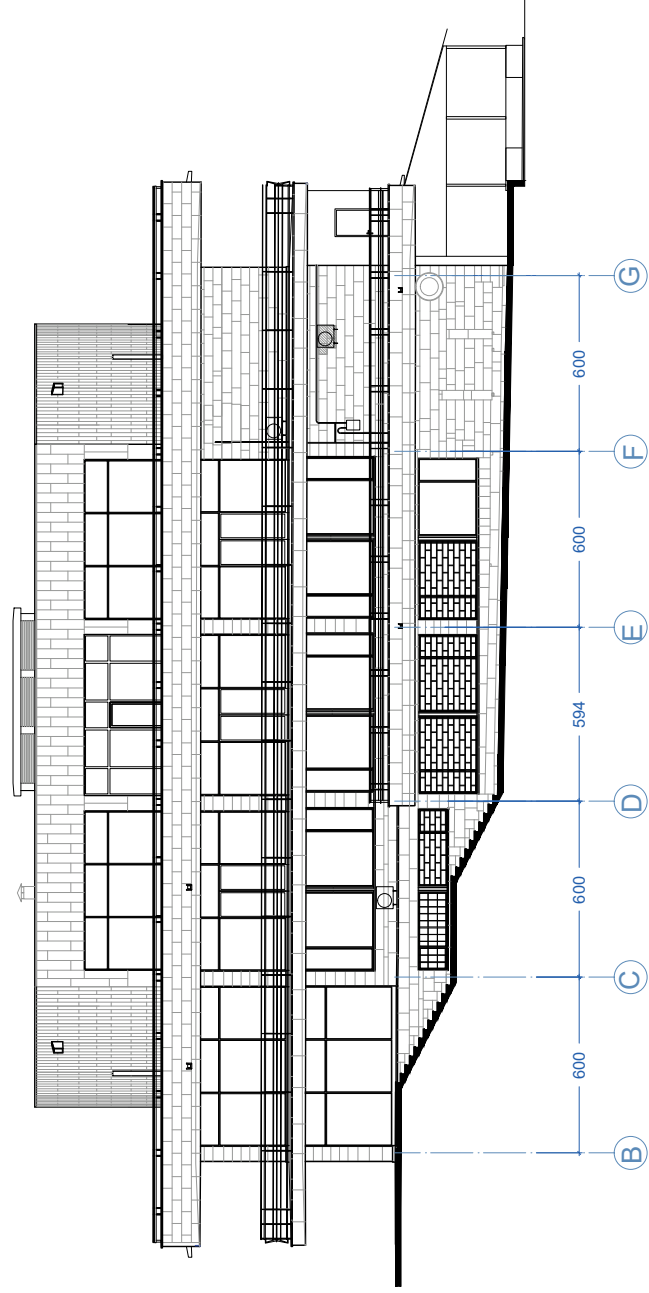
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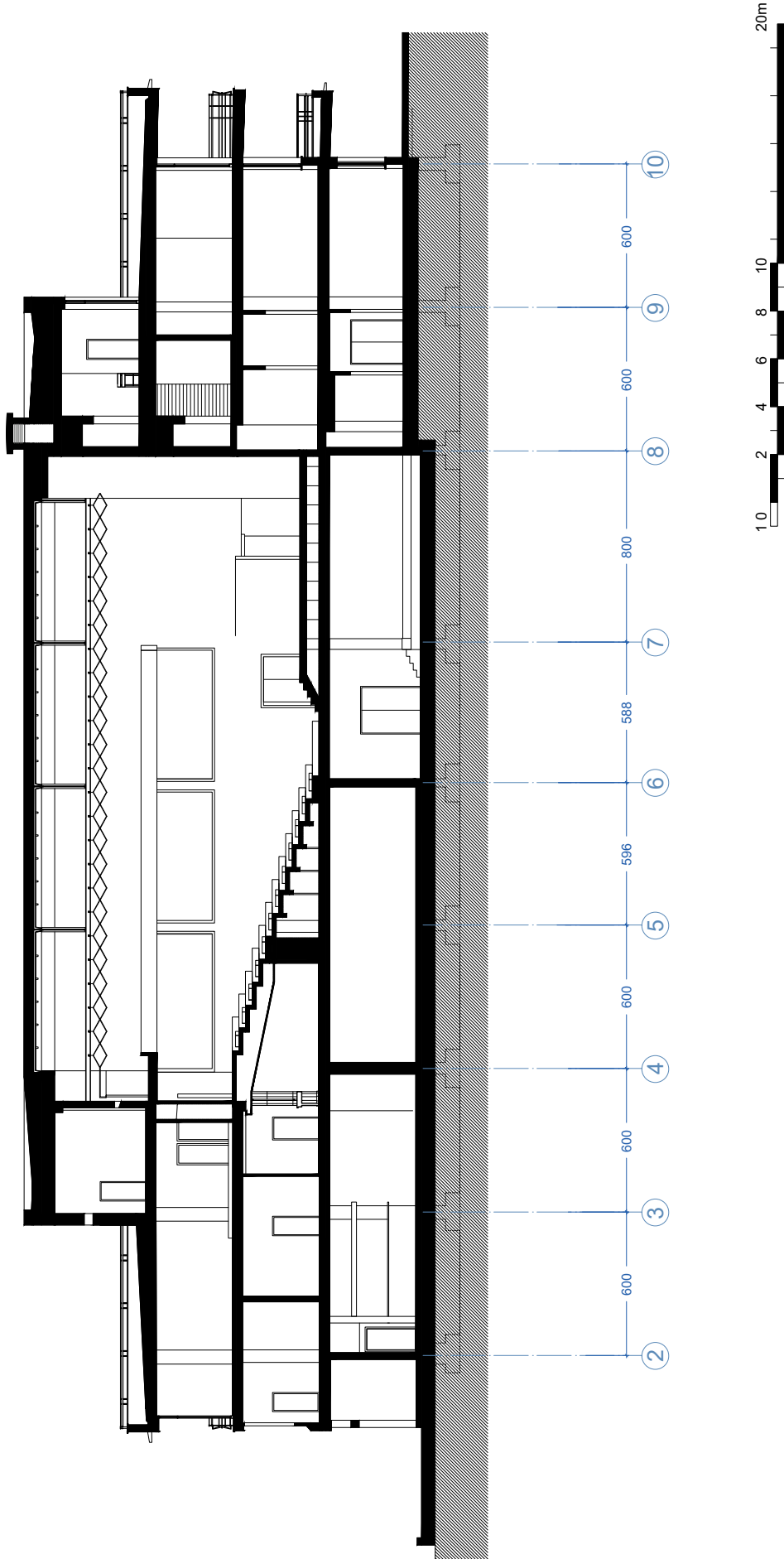
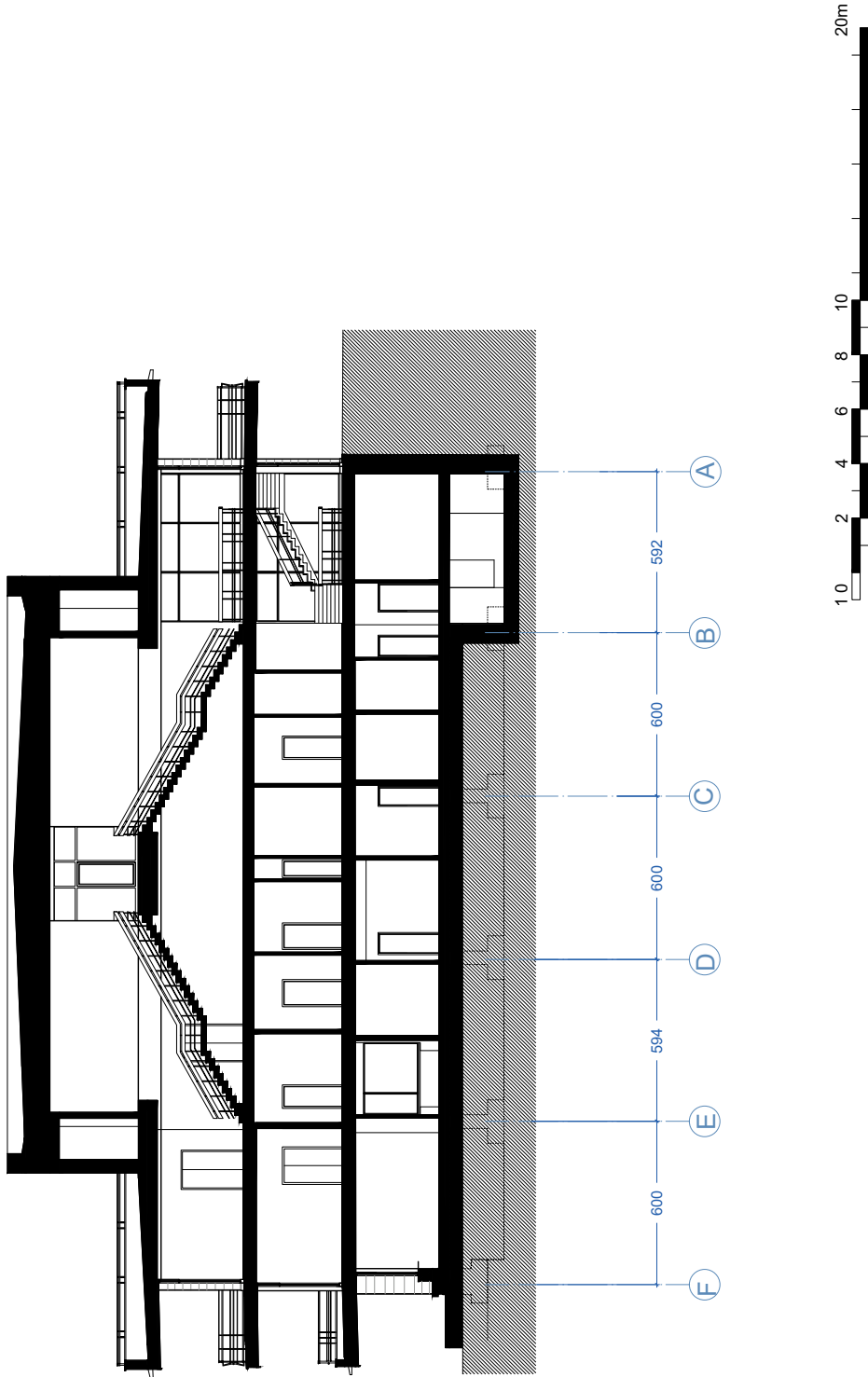
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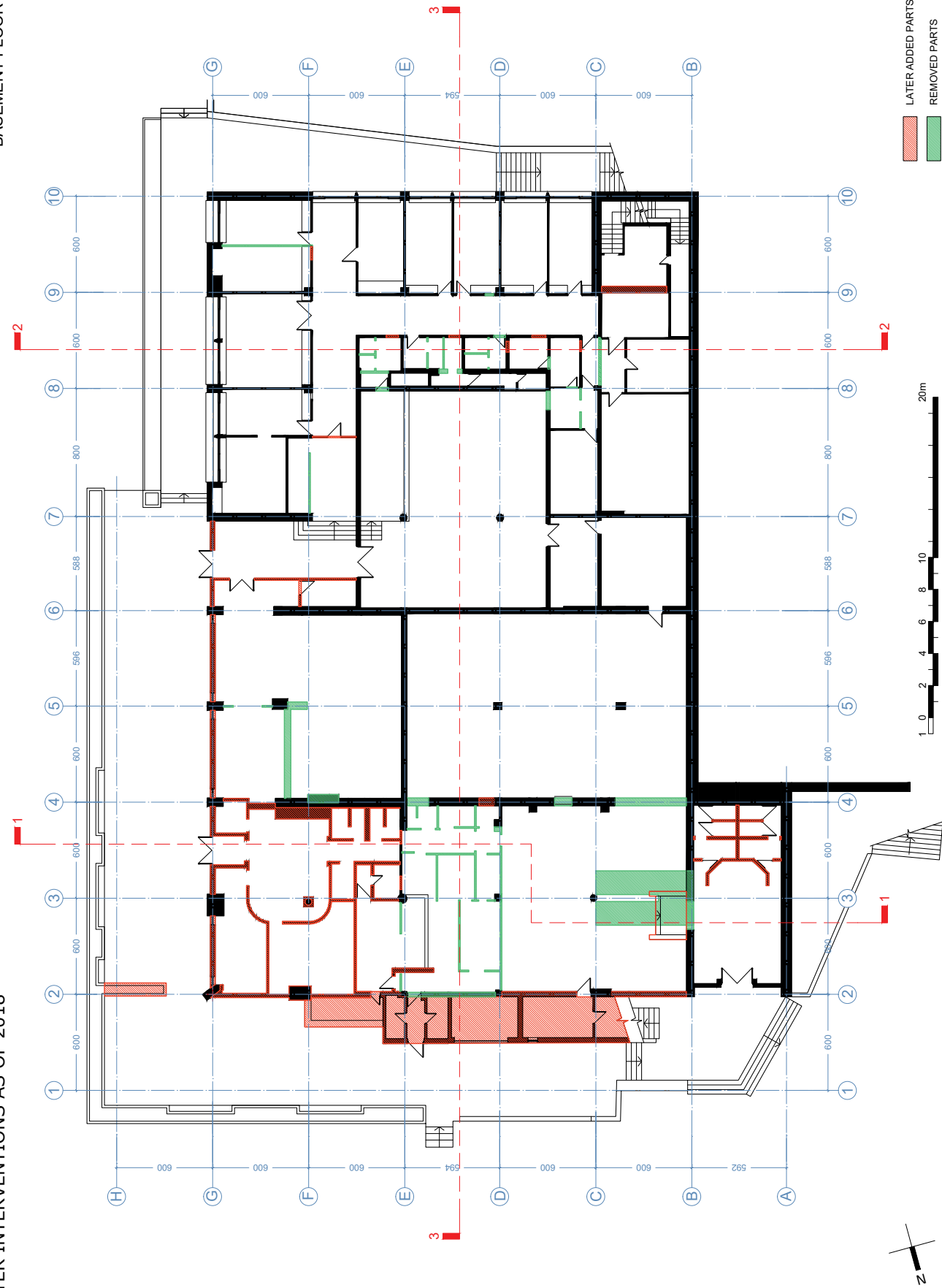






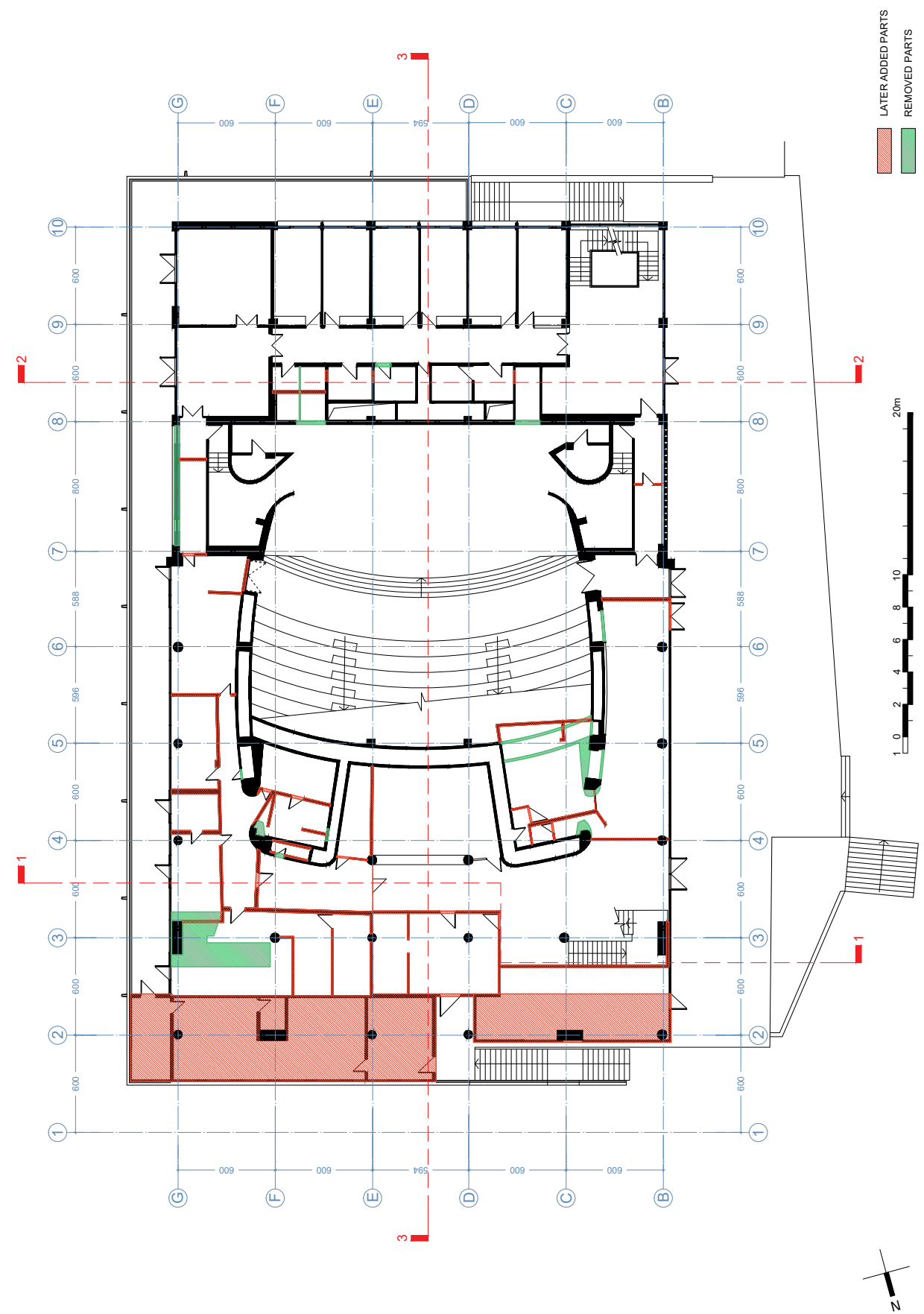
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LATER INTERVENTIONS AS OF 2018



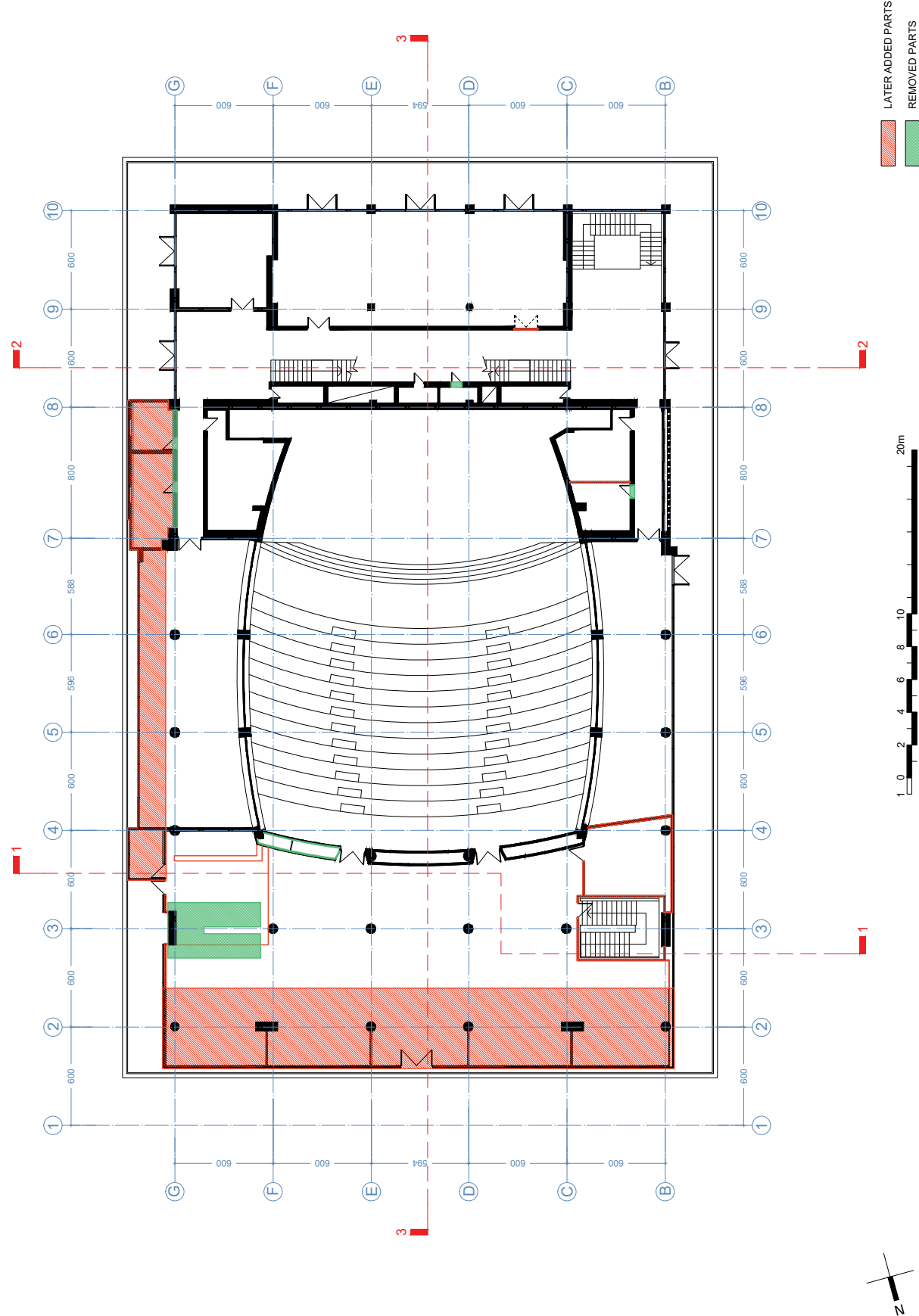
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LATER INTERVENTIONS AS OF 2018



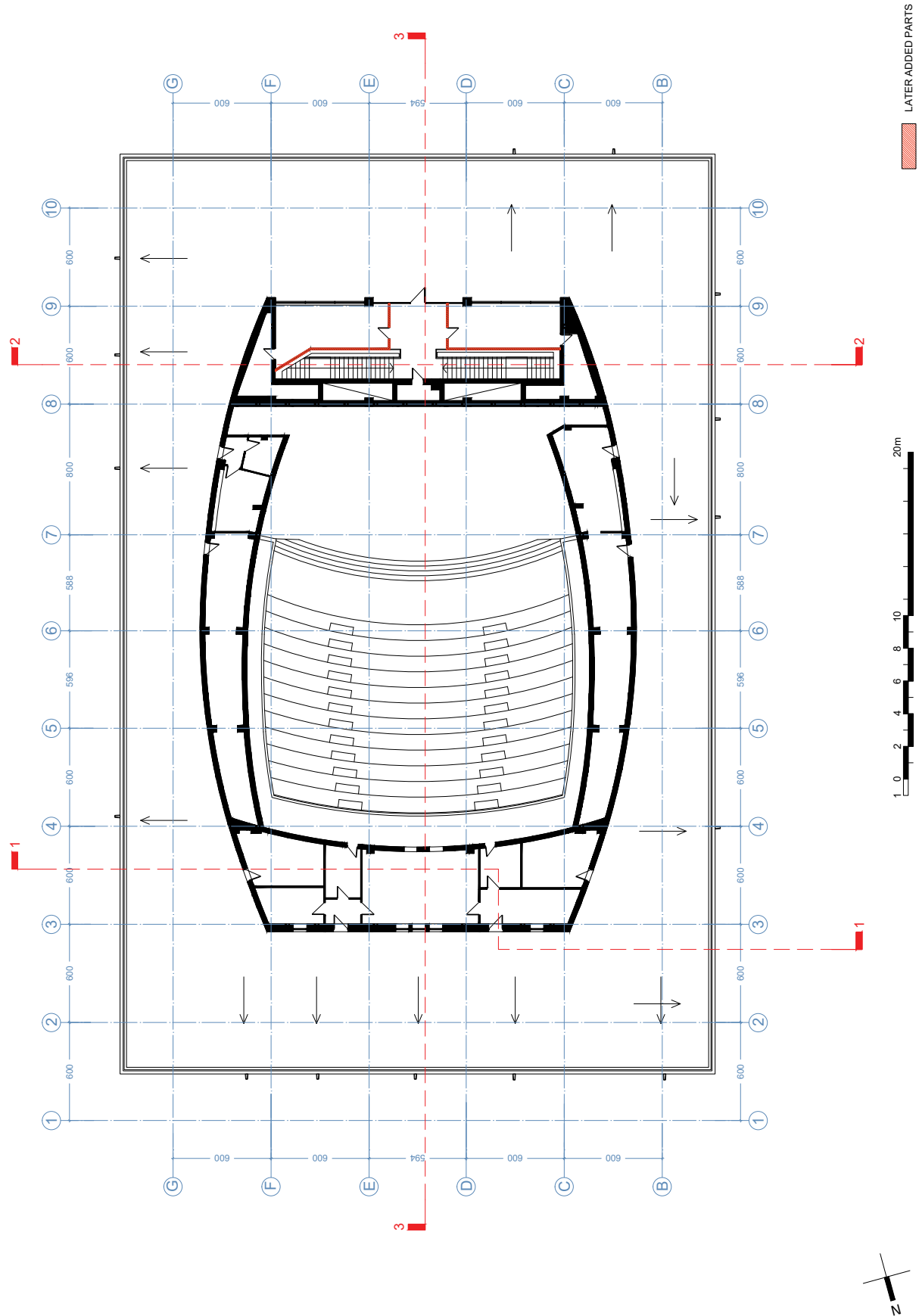
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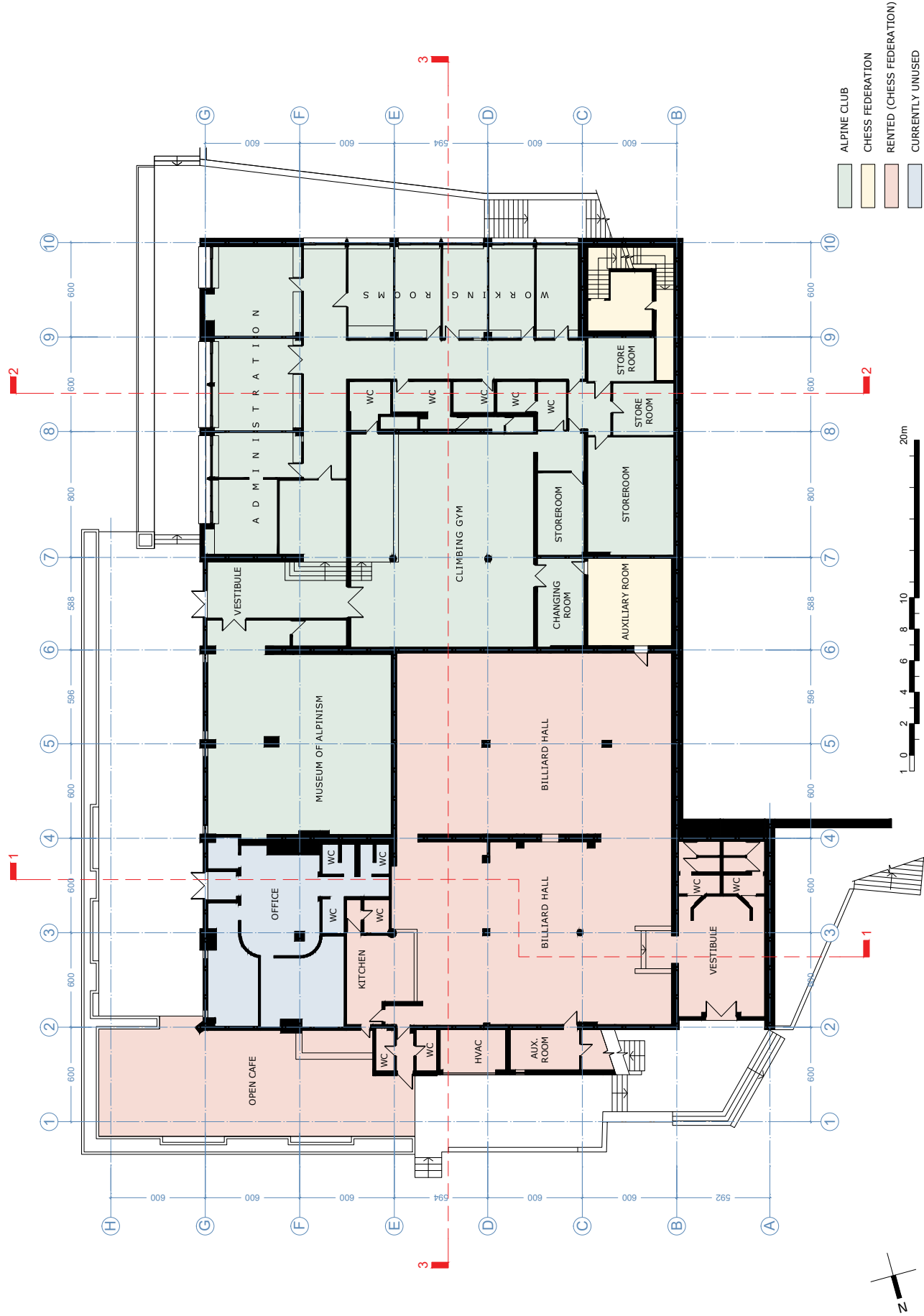
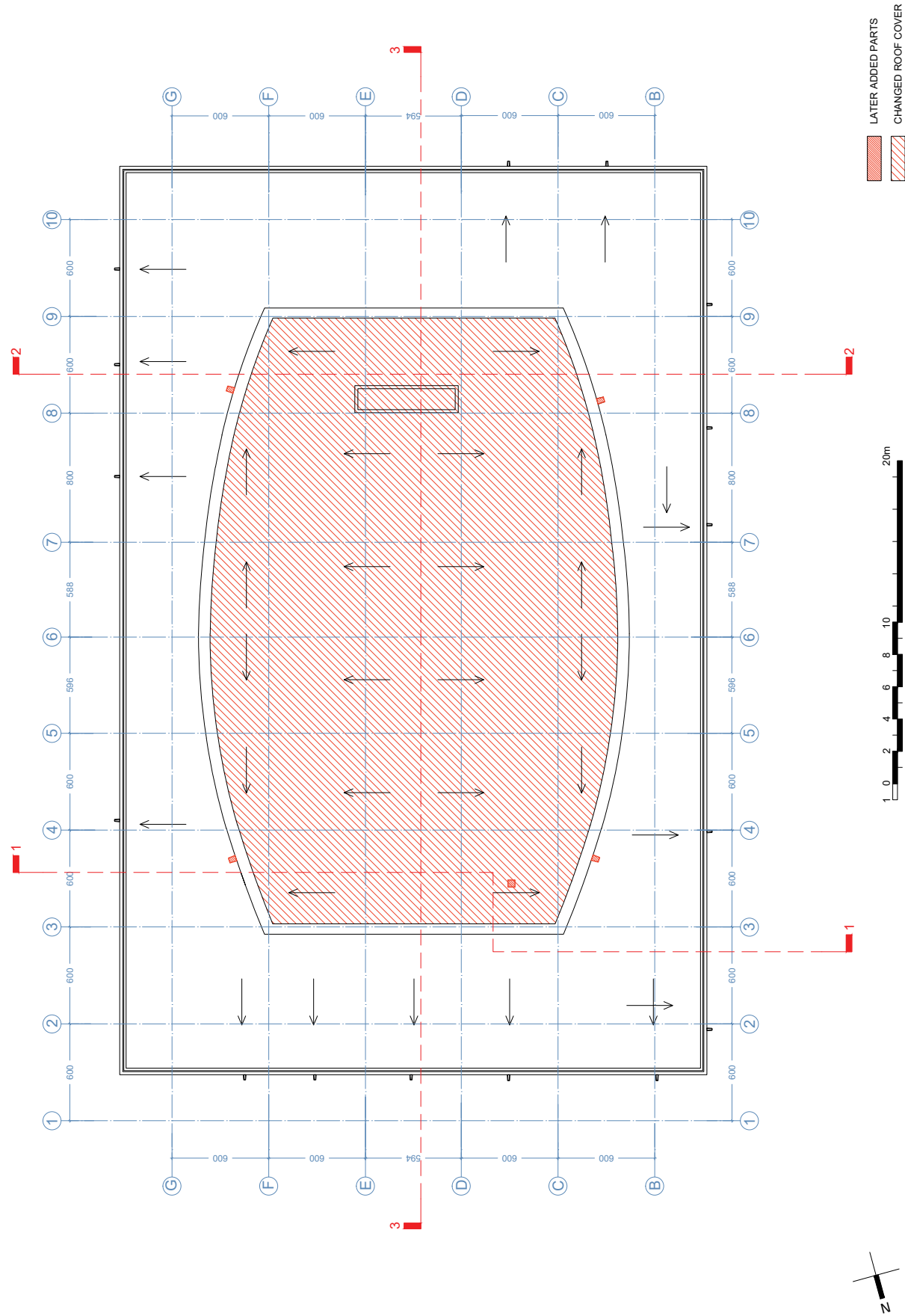
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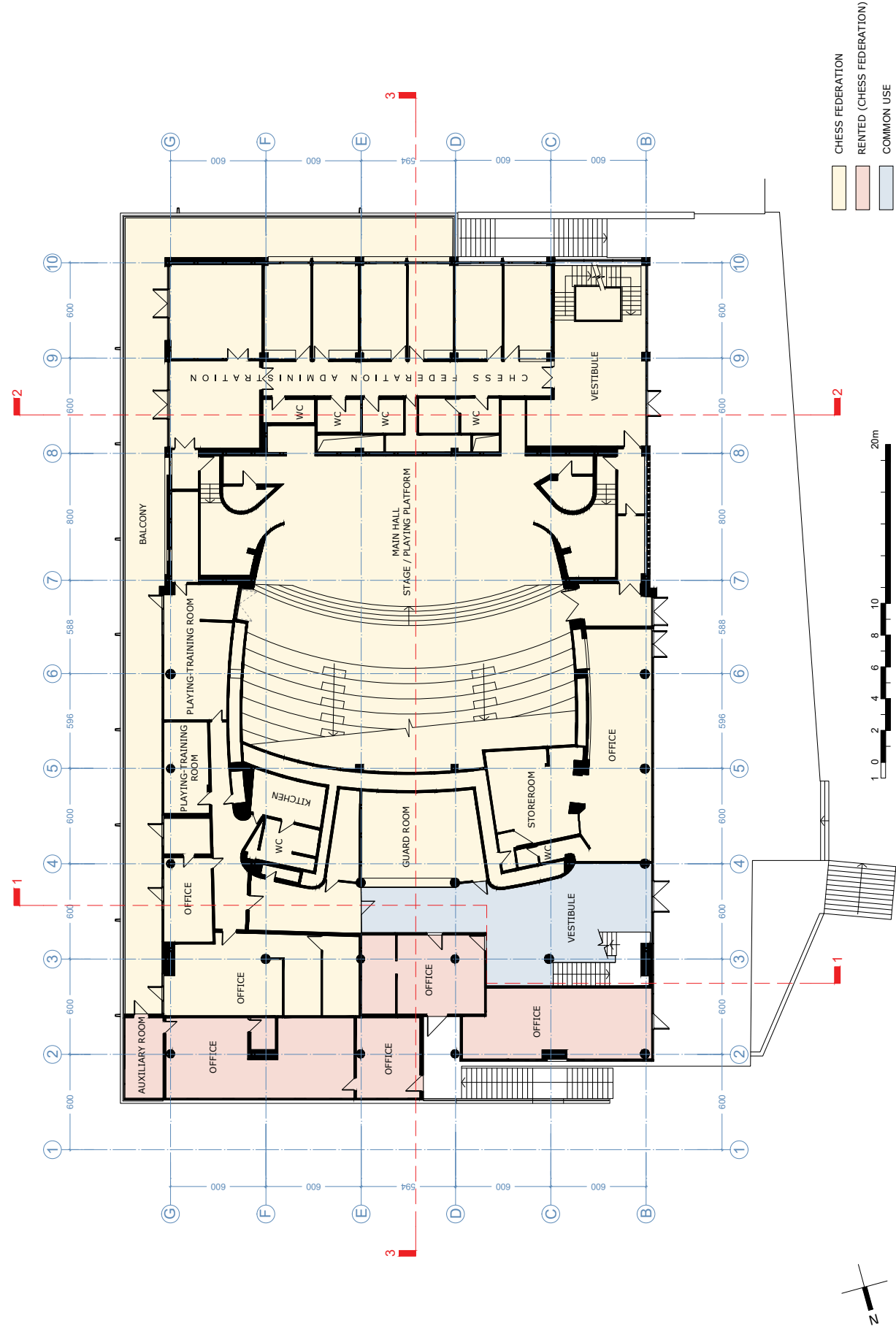
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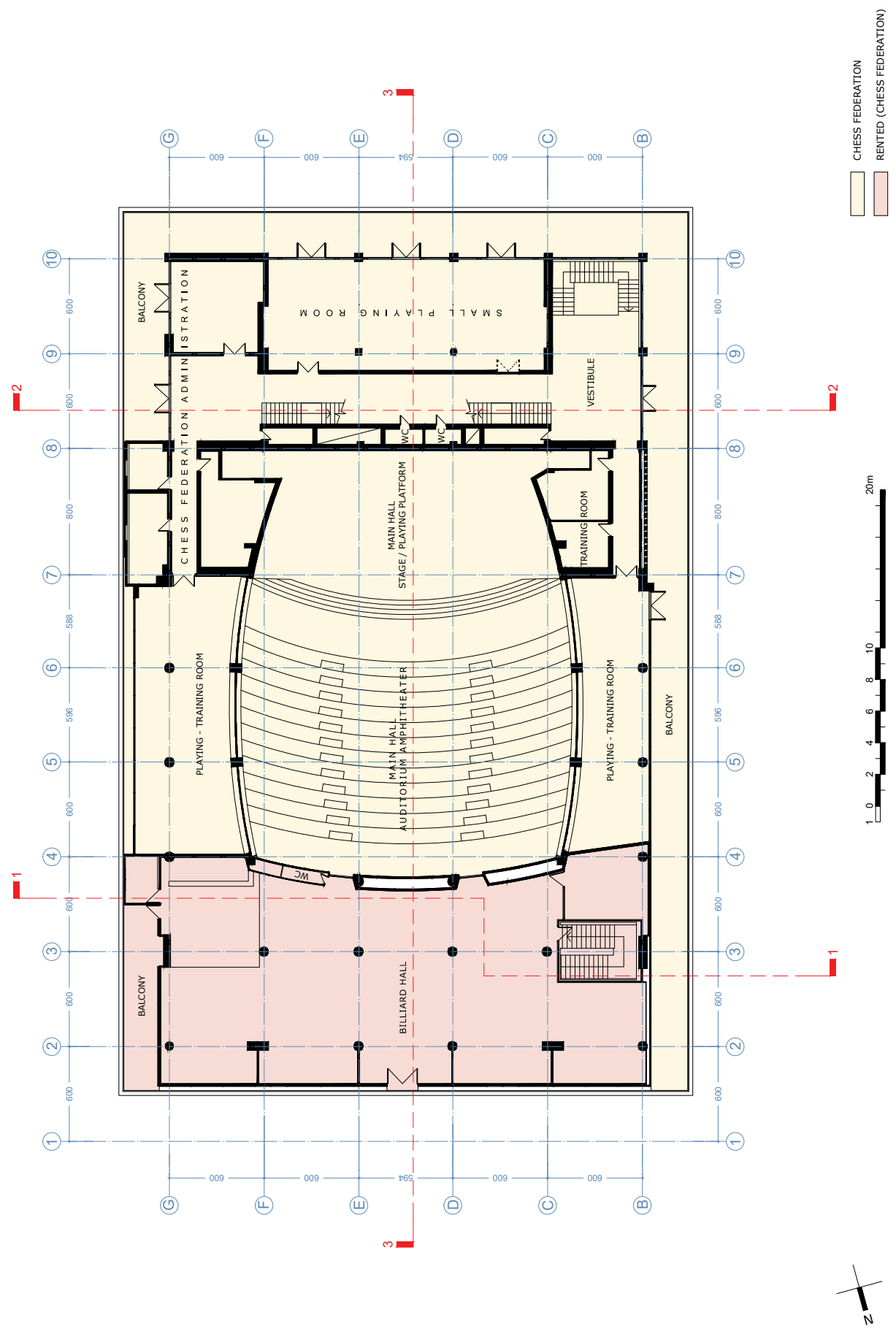
DISTRIBUTION OF SPACES AMONG USERS

FIRST FLOOR PLAN



DISTRIBUTION OF SPACES AMONG USERS

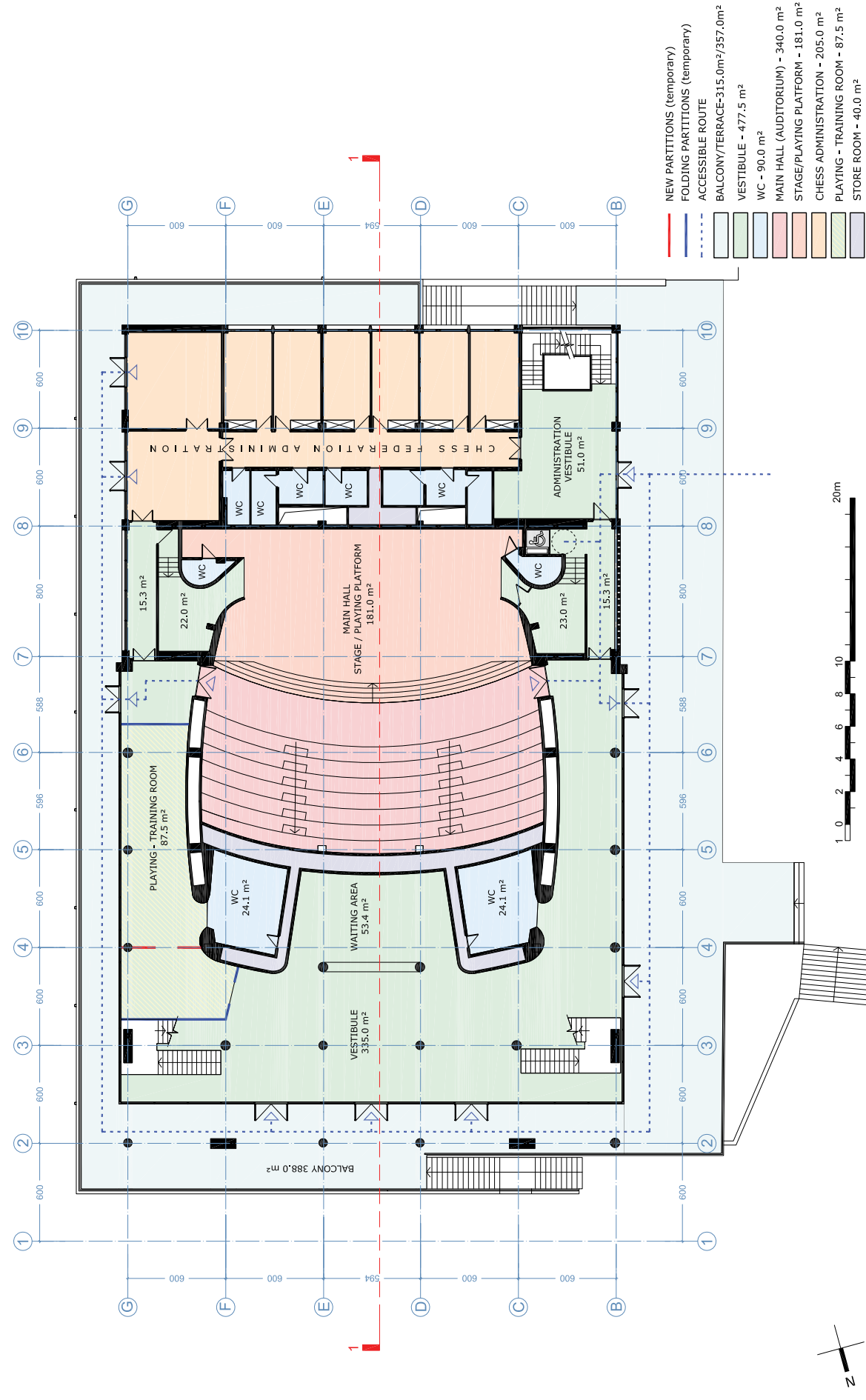
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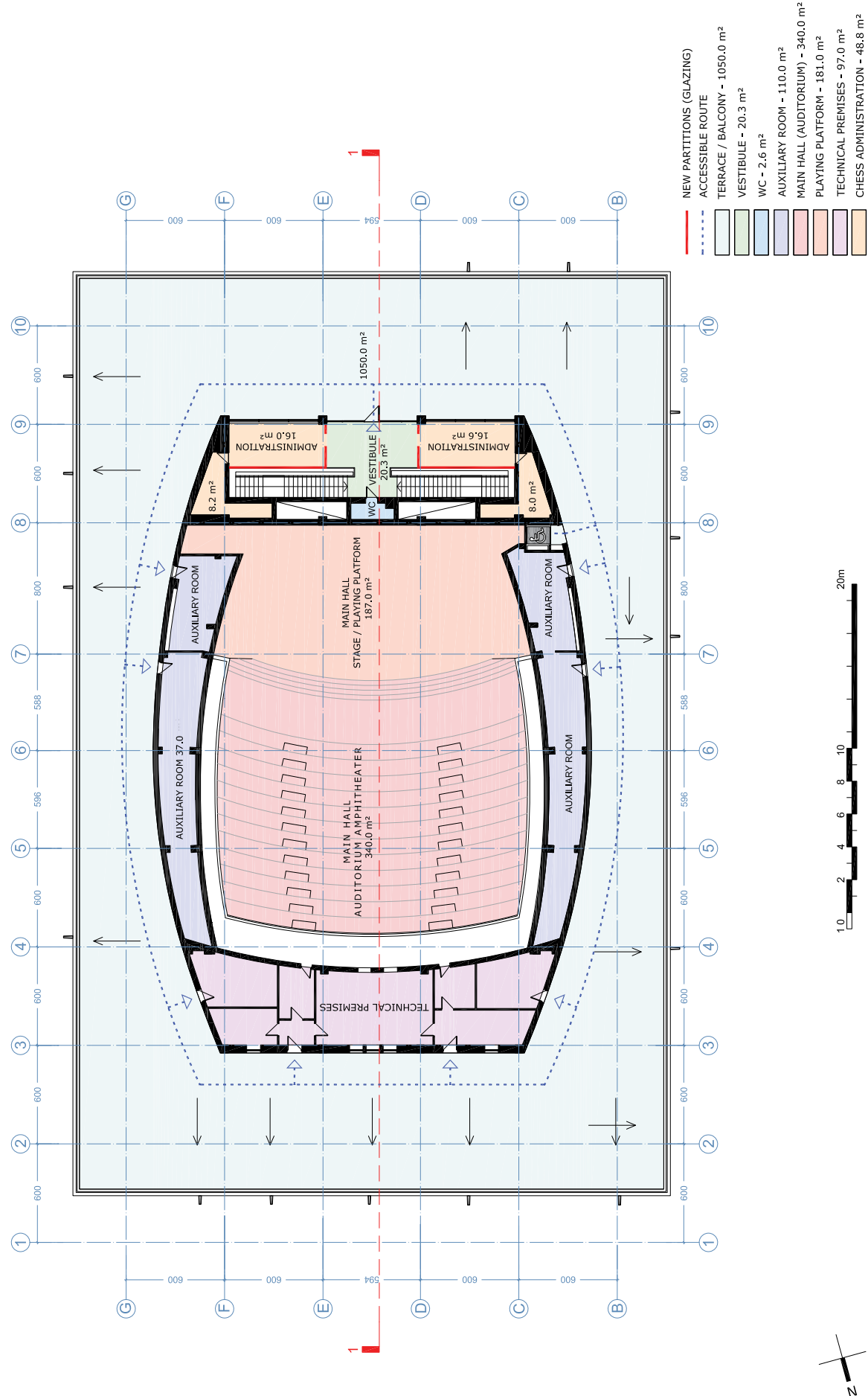
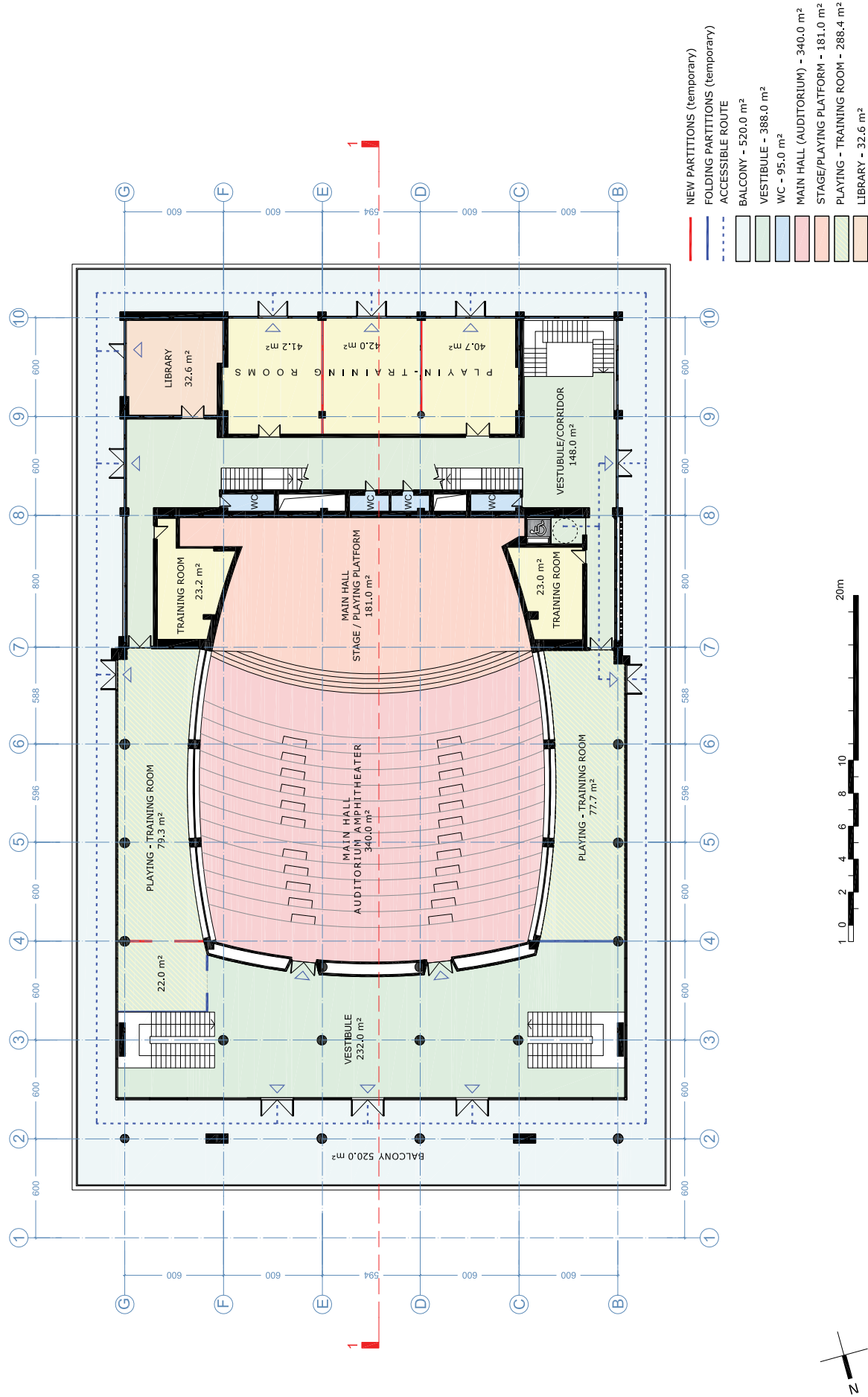




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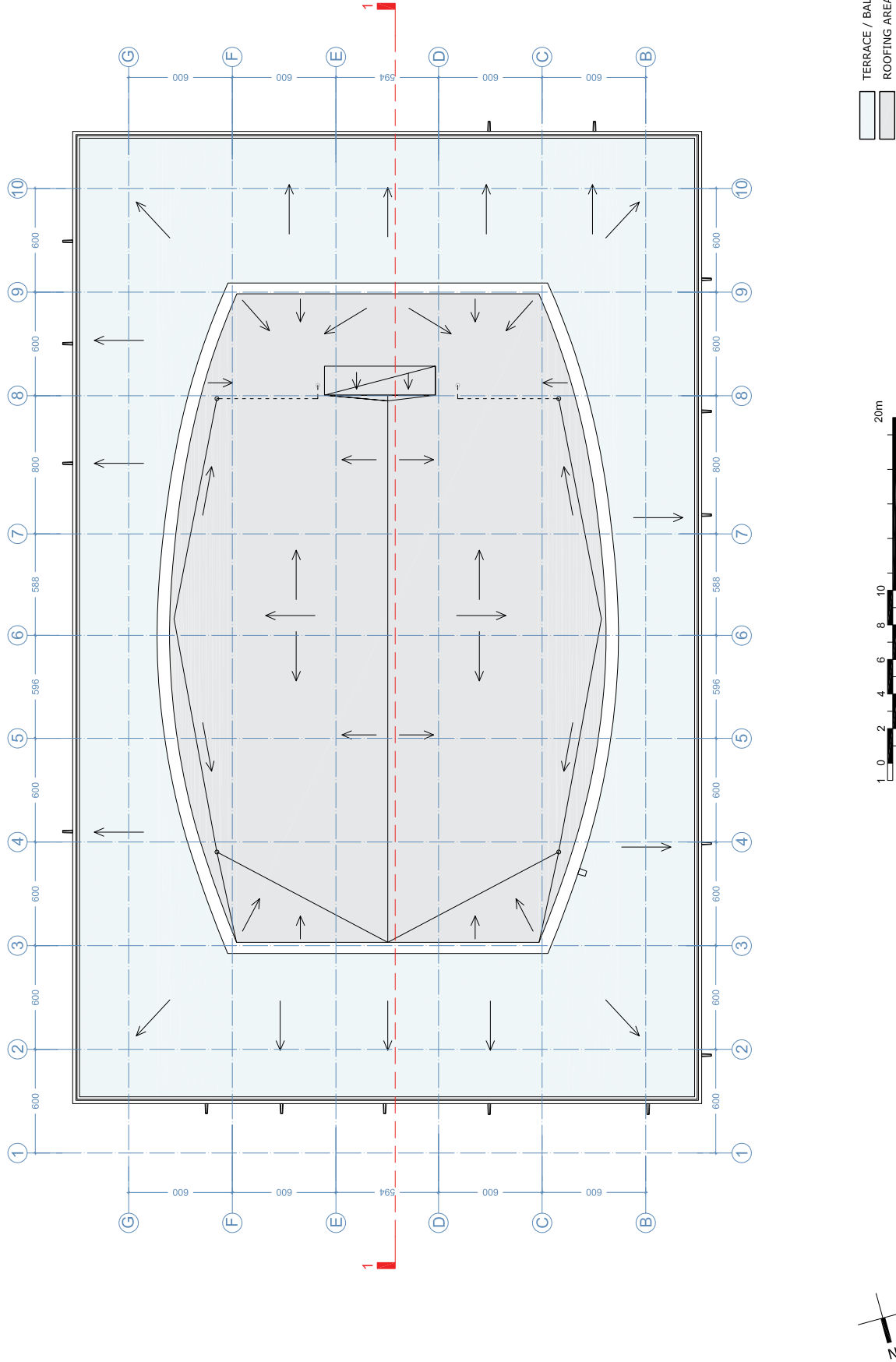






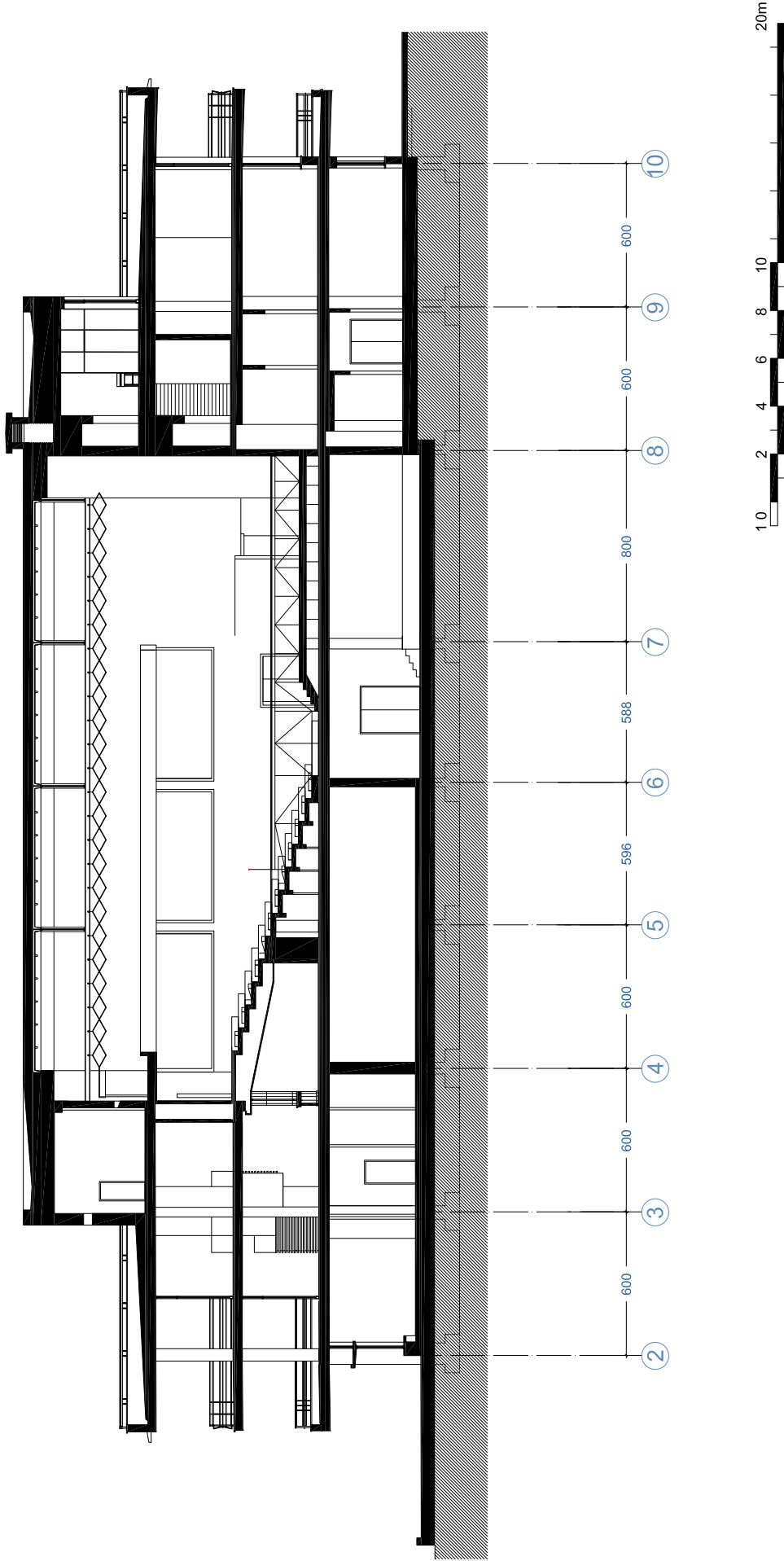
CONSERVATION AND ADAPTATION
PROPOSAL DESIGN

ROOF PLAN



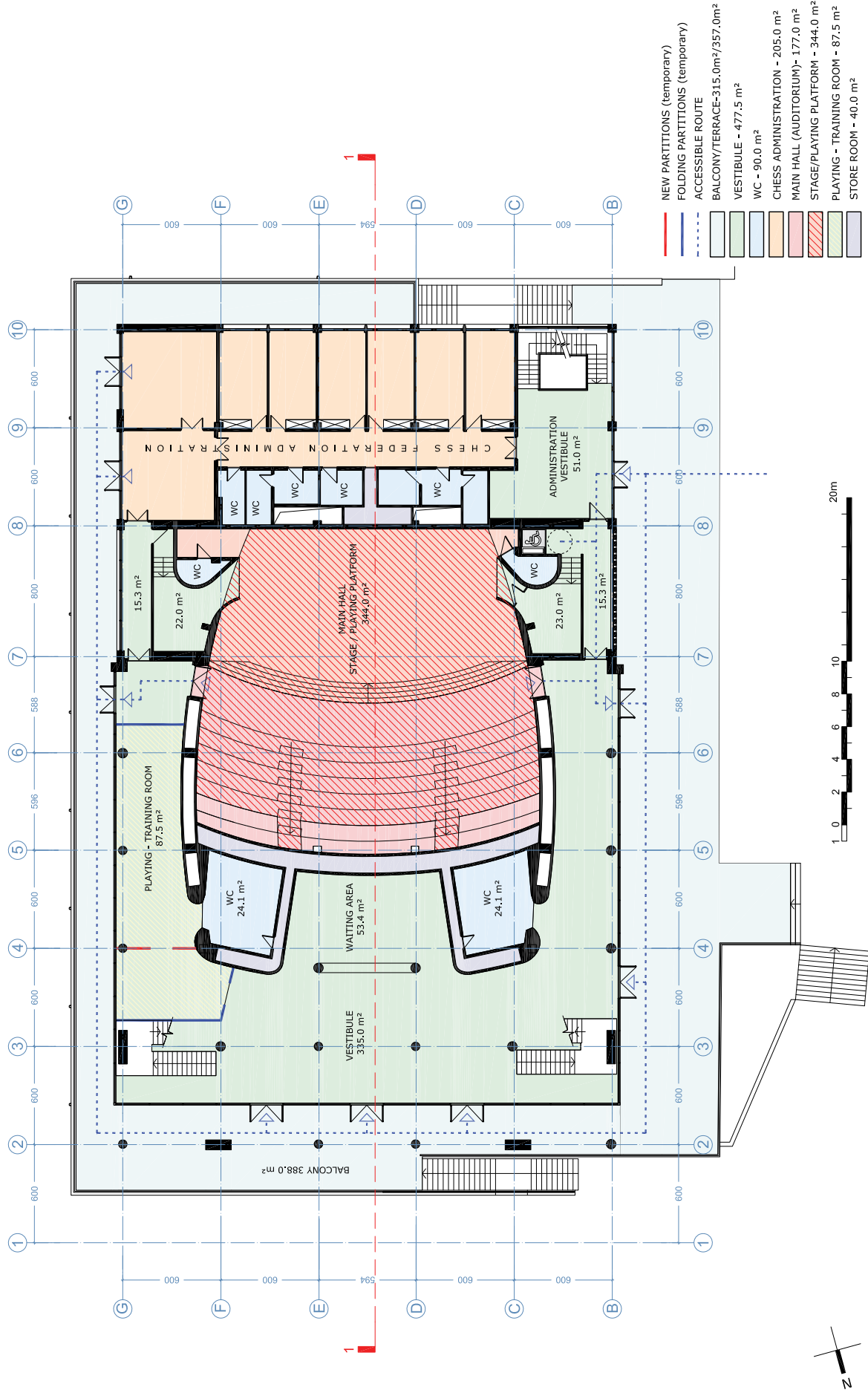
CONSERVATION AND ADAPTATION
PROPOSAL DESIGN
(WITH EXPANDED STAGE/PLATFORM)

SECTION 1-1



FIRST FLOOR PLAN

CONSERVATION AND ADAPTATION
PROPOSAL DESIGN
(WITH EXPANDED STAGE/PLATFORM)



SECOND FLOOR PLAN

CONSERVATION AND ADAPTATION
PROPOSAL DESIGN
(WITH EXPANDED STAGE/PLATFORM)

