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GUIDANCE FOR IMPLEMENTATION OF WORKS AND MAINTENANCE PROGRAM AND PLAN "EMERGENCY CONSOLIDATION OF THE NORTHERN WALL PORTION OF THE CASTLE OF LEZHA"

ATELIER 4
ARCHITECTURE • ENGINEERING • CONSULTING

TABELA E PËRMBAJTJES

1. INSTRUCTION FOR THE IMPLEMENTATION OF THE WORKS

1.1 PROGRAM FOR THE EXECUTION OF THE WORKS

The Contractor shall submit to the Supervisor a fully detailed program showing the order, the procedure and method by which he proposes to carry out the construction and completion of the Works.
Documents submitted other than manufacturers' literature shall be to an approved size. All documents shall be in English and any abbreviations shall be explained. Calculations and technical information shall be in units conforming to the metric system unless otherwise approved by the Supervisor. All drawing notes shall be in English.
The approval of the Supervisor of any submission shall not relieve the Contractor from his responsibilities under the Contract.

1.1.1 INFORMATION TO BE SUPPLIED TO THE SUPERVISOR

The information to be supplied to the Supervisor shall include drawings showing the general arrangement of the temporary offices and any other temporary buildings or structures which he proposes to use, together with details of the constructional plant and temporary works, and all other devices which he proposes to adopt for the construction and completion of the whole of the works and, in addition, details of the labour strength, skilled and unskilled, and supervision arrangements.

1.1.2 APPROVAL BY SUPERVISOR OF METHOD STATEMENTS

The manner and the order in which it is proposed to execute the permanent works as described in the Contractor's method statements is subject to adjustment and approval by the Supervisor, and the Contract price shall be held to include any necessary adjustment required by the Supervisor during the course of the work.

1.1.3 FAULTY WORKS

Any work, which fails to comply with these Specifications, shall be rejected and the Contractor shall, at his own expense, repair any defects, as directed by Supervisor satisfaction.

1.1.4 SUBMISSIONS TO THE SUPERVISOR

Written Authority means: "Order in writing" and shall mean any document or letter signed by the Supervisor and posted or delivered to the contractor and containing instructions, guidance or directions to the contractor for the execution of the Contract. Whenever the word approved, directed, authorized, required, permitted, ordered, instructed, designated, considered, necessary,

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prescribed, or words (including nouns, verbs, adjectives and adverbs) of like important are used, it shall be understood that the written approval, direction, authority, requirement, permission, order, instruction, designation, prescription, etc. of the Supervisor is implied unless another meaning is plainly intended.

1.1.5 ADDITIONAL WORK

The contractor should submit to the Supervisor every additional work; a detailed drawing and the work should begin only after the Supervisor's approval.

1.1.6 CONFIRMATION OF SUBMISSIONS

The contractor should sign proposals, details, sketches, accounts, information, materials, test certificate, whenever required by the Supervisor. The Supervisor will accept every submission and if appropriate will be answered to the contractor in accordance to any proper clause of contract conditions. Every submission should be done due to dates agree with the Supervisor and referring to the approved program and necessary time that the Supervisor needs to submit those works.

1.1.7 SAMPLES

The contractor should provide samples, labelled due to all fittings, accessories, and other issues might be asked from the Supervisor for inspection. The samples should be submitted to the Supervisor's office.

1.1.8 AS BUILT DRAWINGS

The drawings of implemented works and measurement book. The contractor will prepare and submit to the Supervisor 4 sets hardcopy of As-Built documentation and 2 CD with electronic version.
This material should contain the complete set of drawings of the implemented works, including any additional drawings made during work implementation approved by the Supervisor, and the measurement handbook per each work volume.

1.2 SITE PREPARATION

These works consist of excavating, transporting, removing, placing and impacting all materials encountered within the boundaries of the work, including the construction of drainage, support, and excavation for ditches and channels necessary for the construction of the work site in accordance with the purpose of the work. All excavation shall be defined as, unclassified excavation, excavation, removal of unsuitable materials, rock excavation, borrow or burial.

Removal of Unsuitable Material shall consist of removing soil and/or mixing soil with organic materials identified in the Scheduled Contract or as directed by the Engineer, which would be detrimental to the roadway or embankment if left in situ as existing. Rock excavations: Excavated rock consists of igneous, metamorphic, and sedimentary rock that cannot be excavated without blasting or using a backhoe, including all boulders or other loose rock..

Provide satisfactory soil materials for filling and refilling, free of mud, rock or stones larger than 100 mm in any dimension, litter, debris, vegetation and other harmful substances and use excavated or borrowed material sampled, tested and approved as accepted soil material. The material excavated in the borrowing pits has been selected and approved by the Engineers.

EXECUTION

Inspect the areas before excavation with the conservation architect or engineer outline the extent of excavation, limits, probable depth, and access.

EXCAVATION - consists of the removal of all materials encountered above the required grade elevations, setting aside satisfactory soil materials for reuse in backfilling (in trenches, around structures) and filling (for general grading and other purposes) and disposal of unsatisfactory and excess material. Unauthorized excavation consists of removal of materials beyond indicated elevations or lateral limits without the specific direction of the Engineer. Unauthorized excavation shall be replaced by backfilling and compacting as specified for authorized excavations unless otherwise directed by the Engineer.

When excavation has reached the required trench bottom or grade elevations, notify the Engineer for the inspection of conditions. If unsuitable bearing materials are encountered at these elevations, carry excavations deeper and replace the excavated material, as directed by the Engineer.

Slope the sides of excavation to the angle of repose of the in -situ material excavated, or provide shores, timbering, struts and sheeting, as required, and brace where sloping is not possible either because of space restrictions or is to be avoided because of the trenching requirements described later. Maintain sides slopes of excavations in a safe condition until completion of backfilling. Take prior precautions to prevent slides or cave-ins in excavation.

Prevent surface water and subsurface or ground water from flowing into excavations and flooding the work site and surrounding area. If water is encountered in excavation, it shall be removed without allowing it to accumulate, in order to prevent soil changes detrimental to the stability of subgrades. Provide and maintain pumps, well points, sumps, suction and discharge lines and other dewatering system components necessary to convey the water away from the site. Drain the water from excavations and rainwater to collecting or run-off areas. Trench excavations for utilities shall not be used as temporary drainage ditches.

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COMPACTION - Control soil compaction during construction, as to provide at least the minimum percentage of density or the minimum relative density, if applicable, specified for each area.

Soil compaction for backfill in trenches around associated structures, for subgrade below equipment bases and for fill elsewhere shall not be less than the percentages of maximum dry density given below in sub-paras (a) and (b) for soils which exhibit a well defined density, and not less than the relative densities in percent values given in the same sub-paras determined, for soils which do not exhibit a well-defined moisture- density relationship.

Where the moisture content of a layer of the subgrade or other soil must be increased before compaction, water shall be applied uniformly to its surface and in such a manner that free water is prevented from appearing on the surface during the compaction operation. Soil which is too wet to permit compaction to specified density shall either be removed and replaced, or scarified and dried. Soil material, which has been removed because it is too wet to permit compaction may be stockpiled or spread in approved locations and permitted to dry. Drying shall be assisted by harrowing or pulverizing, until the moisture content is reduced to a satisfactory value.

BACKFILLING - Provide satisfactory soil materials for backfill and fill, free of clay, rock or boulders larger than 50 mm in any direction, debris, garbage, vegetable matter, and other deleterious matter. Only such excavated or borrow material shall be used in fills and backfills, as have been sampled, tested and approved by the Engineer.

1.3 SITE CLEARING, HERBAL REMOVAL, WASTE DISPOSAL

This process includes the protection of all existing trees and terrestrial vegetation, or other necessary protective species to prevent damage to existing elements that will not be removed, and all elements on neighboring properties or adjacent to the project site. This includes the aqueduct, the surrounding wall, the spring and especially the historic olive groves or any other element that is not included within the project scope. Protect existing trees and other vegetation that will remain as it is, from cutting, breaking or rooting, bark decay, smoking of trees from accumulation of building materials or excavations within marked lines, from excessive pedestrian traffic or vehicles, or parking vehicles within the marked line. Provide temporary fences, barricades or surroundings as required, to protect trees and vegetation, to be left as is.

Removal and disposal of shrubs, their roots, grass, wild plants, surface debris, fallen organic material and rotten trees, clearing the site and preparing for further activities. This includes cleaning and removing debris and disposing of off-site or storage as directed. The work should be limited to the area shown in the drawings. All cleaning should be done with hand tools or small mechanical gasoline cutters and chainsaws.

Note: only small hand tools for mechanical cleaning are allowed. Large machines towed by tractors are not allowed. Large tree trunks should not be removed. Mechanical cutters are not allowed to be used within 2 meters of any stone wall or object.

Large shrubs should be removed from this area carefully given the archaeological nature of the site. Work to remove shrub roots can not progress beyond 0.5 m (1 / 2M) below the surface. Trees will NOT be removed and must be protected at all times. All communal installations must be protected and not damaged.

Remove all debris material from the site including all barbed wire free from old fences. Remove debris from the facility in such a way as to prevent field losses. Keep at all times the whole building and the area near the building, clean and free from mud, dirt, debris. Clean the waste generated by cleaning the facility continuously according to the progress of the works.

Caution: Waste incineration is not allowed and all material should be removed according to the orientation of the restoration architect. Avoid the accumulation of cut material near any building to eliminate the risk of fire.

1.4 SCAFFOLDING

All scaffolding shall be designed and erected in accordance with the relevant standards. Only experienced and competent scaffolding erectors shall carry out erection. The Contractor shall ensure that any necessary modifications to the scaffolding during the course of the works shall be accepted by the scaffolding erector so that scaffolds shall remain suitable for the purpose for which they are intended throughout the works. The signed approval of the scaffolding shall be made visible at each ground level access point to the scaffolding. Working on unapproved scaffolding is strictly forbidden.

Care shall be taken that the load of any debris collecting on a scaffold does not exceed the loading for the design. The maximum permissible loading of the scaffolding shall be clearly visible at all ground level access points. All measures necessary shall be taken to prevent debris from being accidentally dislodged from the platform.

Steel scaffolding of trestle type, in accordance with local standards and regulations, including the supply of supports, maintenance, assembly, anchorage, dismantling etc. 15 cm toe boards shall be provided on all levels. Weatherproof sheeting or at least protective netting shall be provided on the outside of the scaffolding.

2. BUILDING MAINTENANCE

2.1 WHAT IS MAINTENANCE?

All building materials degrade over time, due to the influence of atmospheric or anthropological factors. If these materials degrade after the salvage point, then the cost of repair exceeds the cost of reconstruction. Therefore, it is recommended to carry out continuous maintenance and inspections, which reduce the cost over the years and protect the refinishing of the object by reducing the need to perform high-level repairs.

Maintenance is the control and continuous work necessary to keep an object in good condition, which lowers costs, preserves values and increases lifespan.

This maintenance is carried out by inspecting the facilities to assess the condition in time and if any problems are seen, to carry out the necessary repairs.

"Good preservation of heritage objects is based on routine management and maintenance. Such an approach minimizes the need for major repairs or other interventions and will usually represent the most cost-effective way to maintain an asset." - Making Changes to Heritage Assets, Historic Environment: Advice Note 2016.

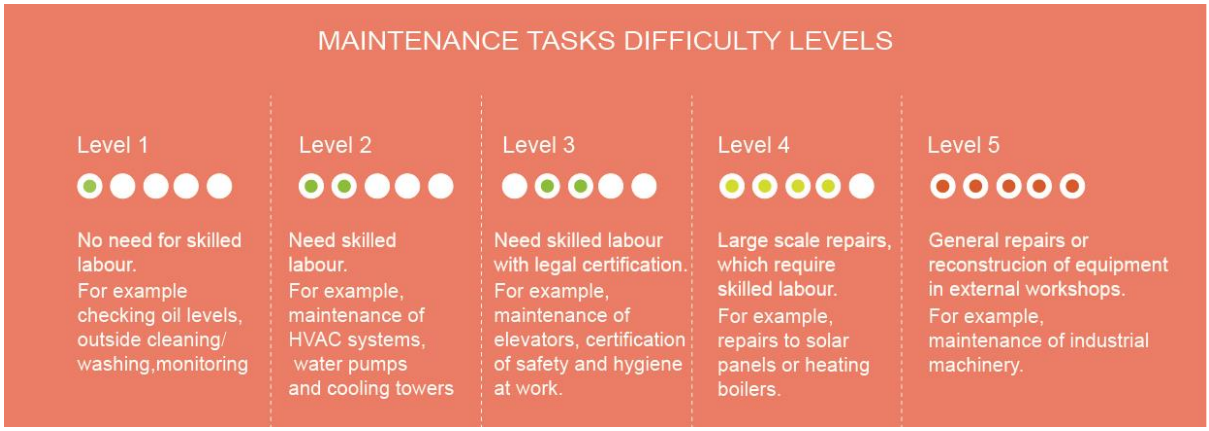
2.2 MAINTENANCE TYPES

The maintenance of facilities is of several types, where we mention:
- Corrective - the work that is performed to restore the object to an acceptable state
-Emergency - urgent work that is done to maintain health, safety or eliminate conditions that lead to rapid deterioration of the structure or clothing.
-Planned - the work that is carried out to avoid the problems that always come with the object (painting, cleaning)

In order to have a clear maintenance plan for the cultural object, we follow several steps:
As a start, a management plan is drawn up, which defines the goals and measures for the protection, conservation, use and development of the cultural heritage object, as well as provides the vision and actions that are foreseen to address the problems of the heritage object. If inspection is not the most convenient method, then specific tasks are determined which are performed according to a predetermined agenda for the maintenance of the object.

Maintaining heritage sites (repairing, cleaning or correcting defects) not only
we prevent the degradation of the original valuable materials, but increase the security in the object.

2.3 MAINTENANCE



Levels of maintenance difficulty

3. HISTORICAL REPORT OF THE STRUCTURE

3.1 EXISTING CONDITION OF THE STRUCTURE

After the earthquake of 26.11.2019, the castle suffered a partial collapse of the stone masonry and ancient blocks. There is also a loss from the verticality of the stone wall in the northern part
Its structural elements have suffered significant damage.
- The Northern Wall
This area presents the biggest structural problems. It is noted that on the northern wall near the tower circular with polygonal stones, there is a deep crack in the entire height of the wall and its inclination. This has also led to the tilting of the tower over the circular tower. This area has always been problematic, for this reason, the square tower is reinforced with metal vaults from an old intervention from the staff of the Institute of Monuments.

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Northern Wall

Current condition; Northern Wall

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Structural Wall crack

Damage to the lower part of the stone masonry

3.2 OLD AND NEW MATERIALS

Lezha Castle, which has traces of constructions from different periods coming from antiquity to the Middle Ages, with a fortification system with multiple gates is one of the most important archaeological points in the country.

The lower part of the stone masonry

The archaeological discoveries, the technique used in construction and the occasional restorations on the walls of the Castle clearly show the beginnings of civic life (4th century BC) and its continuation until the Middle Ages.

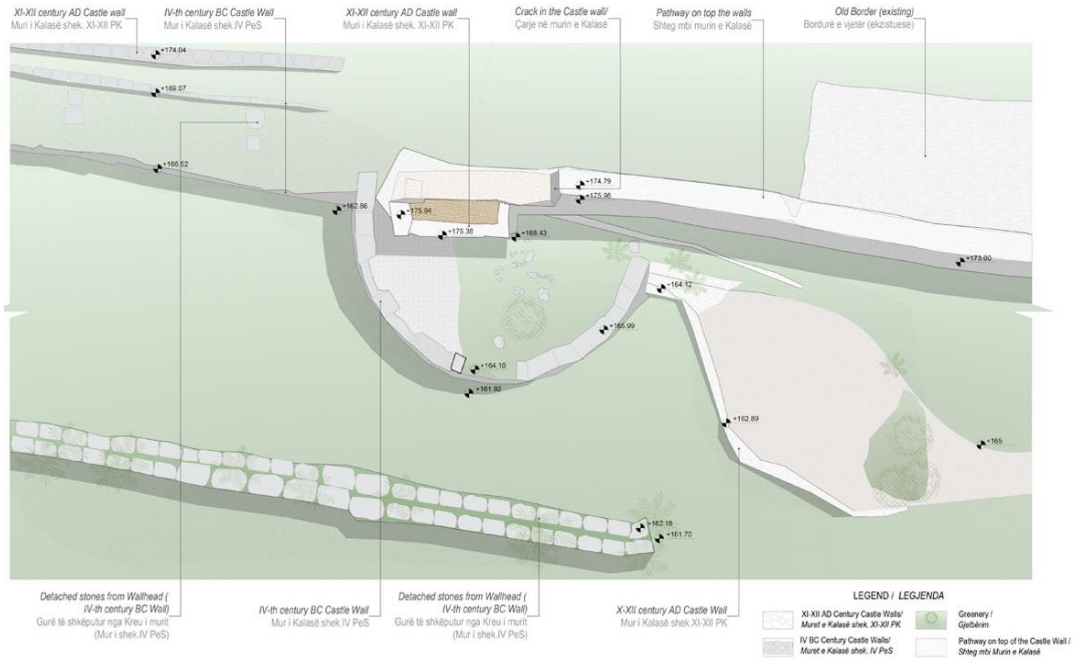
The 4th century BC is the period in which the construction of fortifications began, based on archaeological findings and making the connection with the Illyrian settlement of Akrolisi. These fortifications start as mud with concrete blocks and later in the century. BC, reconstruction works were carried out, the traces of which can be seen in the engraving of various stones of the castle.
Then during the century XI-XII the medieval castle of Lezha (Elission) is added to withstand the blows from the northern front by the Slavic populations (IX-X centuries).

1.3 IDENTIFYING THE HISTORY OF THE ELEMENTS

The structure is a masonry fortification with stone retaining walls. The masonry is from different times and different typologies. Lezha Castle, the earliest stages of construction date back to the 3rd century BC. The walls reach a maximum height of up to 8 m and a width of 2.5-4 m. Meanwhile, on top of the Hellenistic constructions, we have later phases, such as the Roman, Byzantine, Venetian and recently Ottoman ones.
The earliest construction phases have the ancient typology, with large stones built dry and placed in polygonal and trapezoidal patterns. The later phase, different from the ancient one, is the medieval one where the constructions of the Byzantine, Venetian and recently Ottoman periods are

introduced. The constructions of this period are made of well-jointed small stones and have elements such as vaults, alcoves, buttresses, cannon and gun turrets. The castle was built on the Hellenistic walls that were located in the place.

The Hellenistic walls are positioned mostly in the eastern and northern areas of the castle, in the outer part. Being retaining walls, they are always subject to destruction, as a result of ground pushing. This is best observed in the northern area, where the polygonal wall has always had problems and damages, documented from time to time in restoration projects and various inspections.



Site-plan

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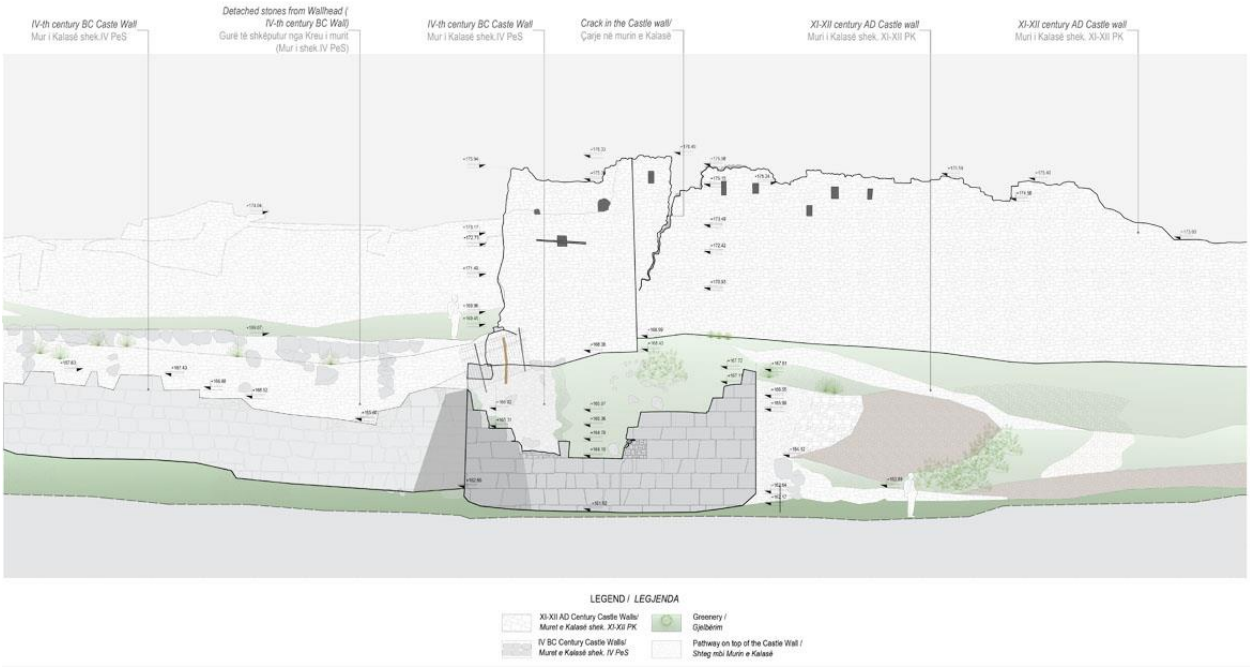
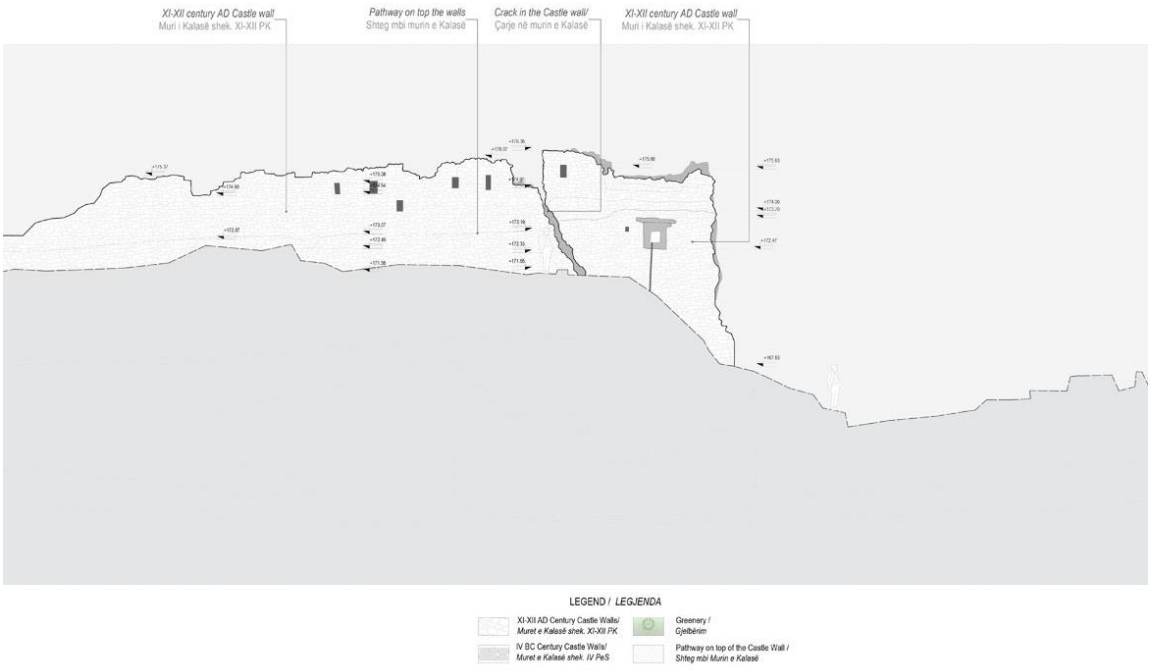


View 1



View 2

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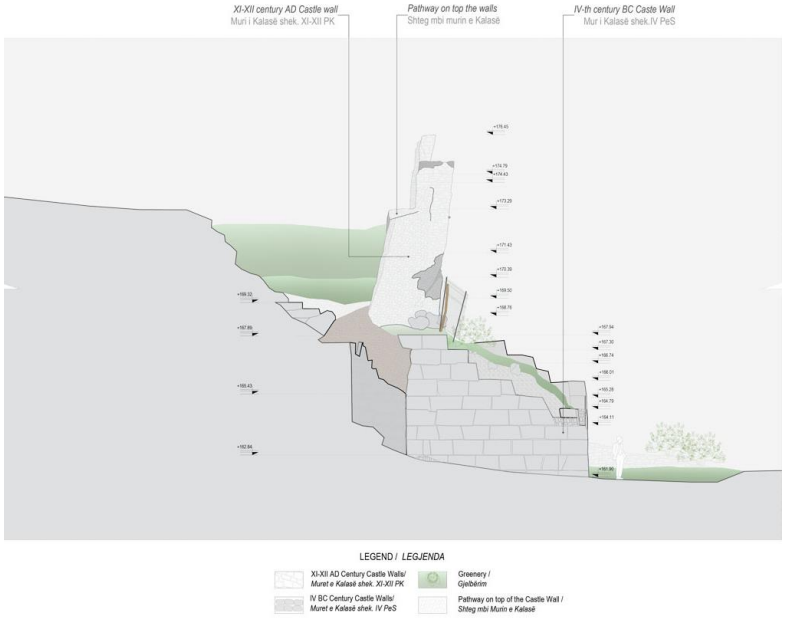
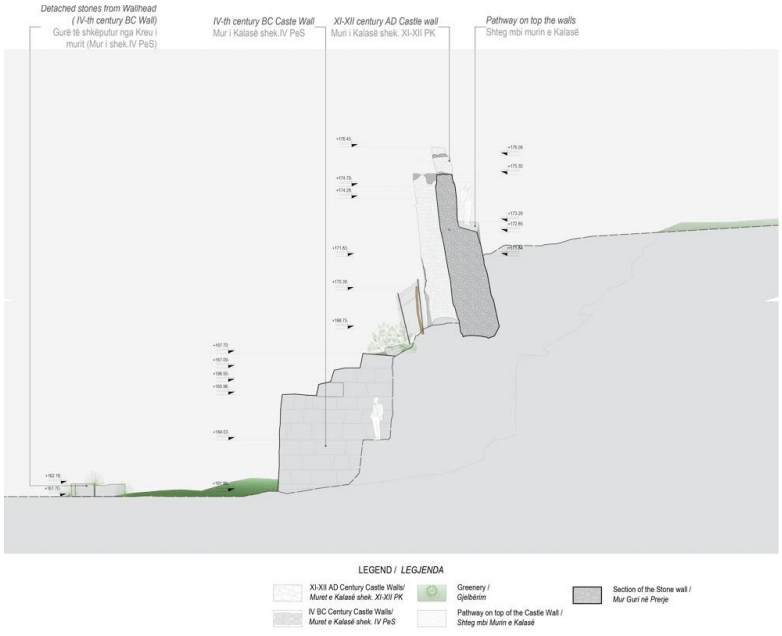

XI-XII century AD Castle wall
Muri i Kalasë shek. XI-XII PK
Pathway on top the walls
Shteg mbi murin e Kalasë
IV-th century BC Caste Wall
Mur i Kalasë shek.IV PeS
LEGEND / LEGJENDA
XI-XII AD Century Castle Walls/ Muret e Kalasë shek. XI-XII PK
Greenery / Gjelbërim
IV BC Century Castle Walls/ Muret e Kalasë shek. IV PeS
Pathway on top of the Castle Wall / Shteg mbi Murin e Kalasë

View 3


Detached stones from Wallhead (IV-th century BC Wall)
Gurë të shkëputur nga Kreu i murit (Mur i shek.IV PeS)
IV-th century BC Caste Wall
Mur i Kalasë shek.IV PeS
XI-XII century AD Castle wall
Muri i Kalasë shek. XI-XII PK
Pathway on top the walls
Shteg mbi murin e Kalasë
LEGEND / LEGJENDA
XI-XII AD Century Castle Walls/ Muret e Kalasë shek. XI-XII PK
Greenery / Gjelbërim
Section of the Stone wall / Mur Guri në Prerje
IV BC Century Castle Walls/ Muret e Kalasë shek. IV PeS
Pathway on top of the Castle Wall / Shteg mbi Murin e Kalasë

View 4

3.3 IDENTIFICATION OF PHYSICAL CONDITIONS

3.3.1 STRUCTURE

In order to have a more correct assessment of the existing structure, the structure will be classified as Retaining Wall built with stone without mortar - Gravitational Retaining Wall. EN 1998-5:2004 and Braja M.Das.
Regarding the condition of the foundation, taking into account the construction time of this wall and the site survey, it should be said that the foundation is part of the wall with the same materials (stone without mortar).
The structural problems of the northern wall of Kalasa are due to its extreme damping. For this reason, structural analyzes and calculations were carried out, from which we come to the conclusion that "...the wall urgently needs reinforcement.
The reasons that lead us to the above conclusion are because we have problems with the global bearing capacity according to the calculations that have been carried out... (refer to the structural technical report)... as well as problems with the local bearing capacity of the wall.
The problems with the global bearing capacity of the wall from the calculations consist of two points:
1. The wall presents major problems and collapses to destruction under the calculation conditions with the basic combination and the seismic one.
2. The slope that the wall has taken causes a great eccentricity of the action of the forces on the wall (outside the allowed values), causing the potential possibility of the wall collapsing as a result of the loss of its stability. The wall is presented by calculations in critical equilibrium conditions.

The problems with the local bearing capacity of the wall from the calculations consist in the fact that the wall has destroyed parts of it in the end part and they need to be repaired."

3.3.2 ENVIRINMENT

Based on the study of Eng. We quote Gjon Leka that: "From the reconnaissance carried out in the field, the documentation of the natural conditions, as well as the browsing of the archival materials of the studies carried out in this area, by the author of the study and other authors, it results that the area where the Lezha castle is located , is a mountainous hilly area formed by limestone.
The Lezha Castle construction site is in good geological and engineering conditions.
Due to its position on the ground, built on top of the hill above the city of Lezha, the geological and engineering conditions of the Castle are simple and generally good.
There are no problems caused by the impact on the foundations and we have no cracks as a result of drought or swelling, we have no leaks."

3.3.3 DRAINAGE

The drainage system aims to rehabilitate and improve the existing drainage system of the Castle in order to collect, direct, self-flow away the surface rainwater that falls on the internal territory and infiltrates into the subsoil of the part of the wall that is being restored. in the Castle of Lezha in order to remove him outside its perimeter.

In the northern wall of the Castle, its drainage system (it is assumed) was built in a similar way to all the drainage systems of other parts of the castle, which are relatively functional even today. These systems work on the basis of the principle of disciplining surface water and water that infiltrates underground, through simple systems of drainage channels outside the walls of the fortress, in the holes that can be seen in its existing undamaged walls.

3.4 HISTORIC DOCUMENTATION

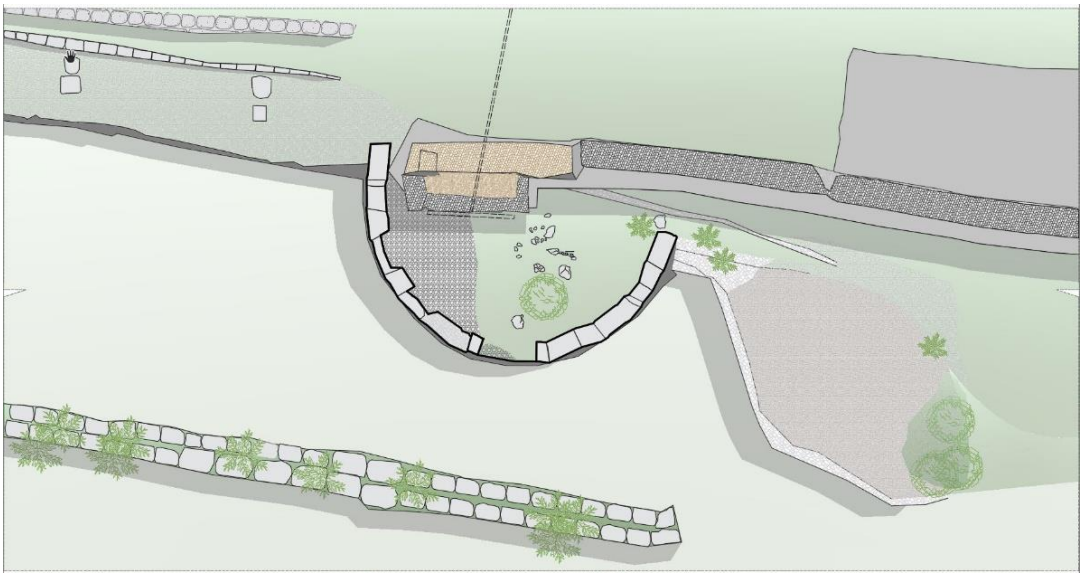
3.4.1 PHOTOGRAPHY

Lezhë 1921

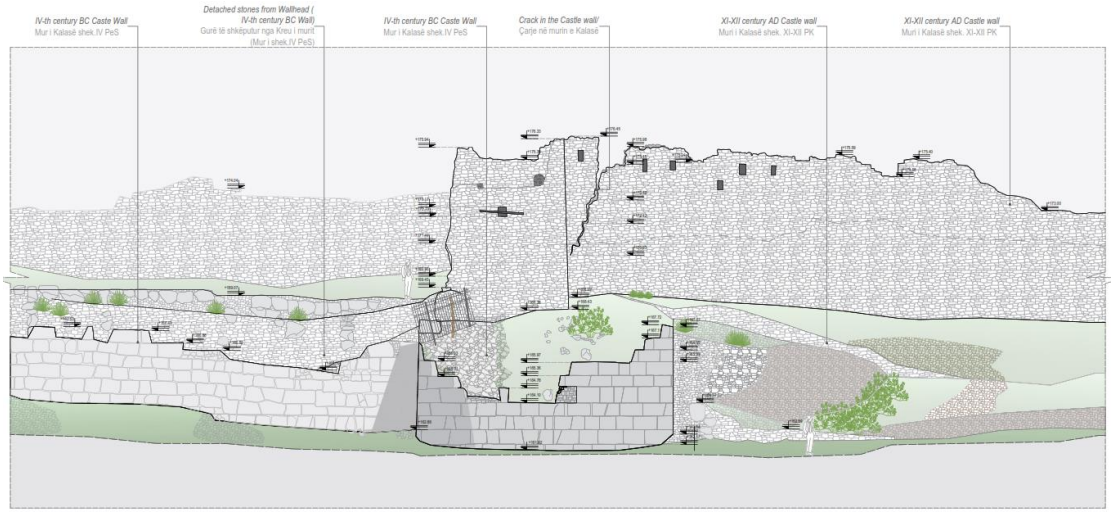
Lezhë circa 1979

Northern wall ct. XII-XIII

3.4.2 CURRENT CONDITION DRAWINGS



SITE PLAN



View 1

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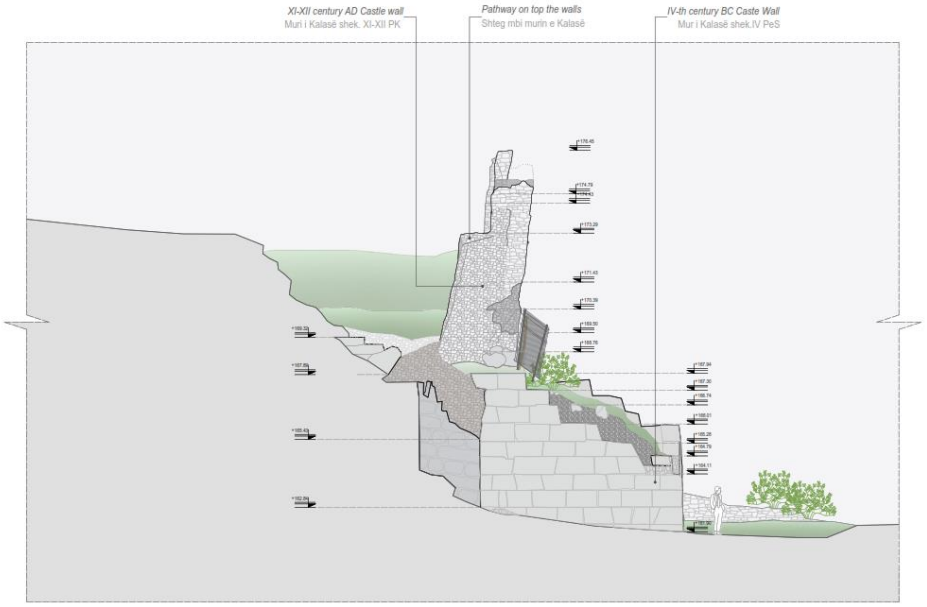
View 2



View 3

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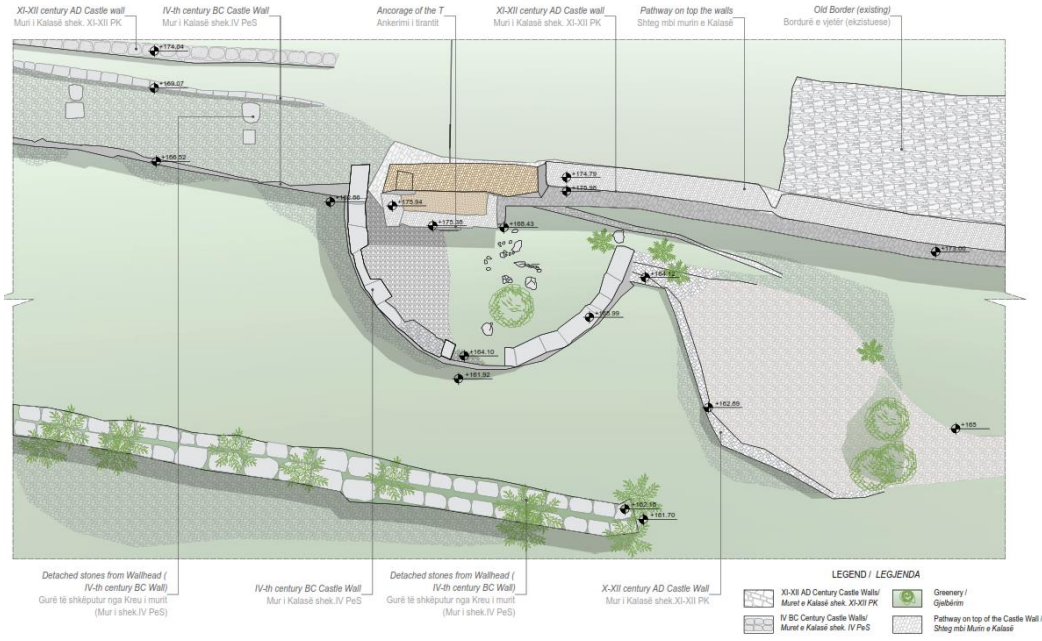
View 4

3.4.3 FINAL OUTLOOK DRAWINGS



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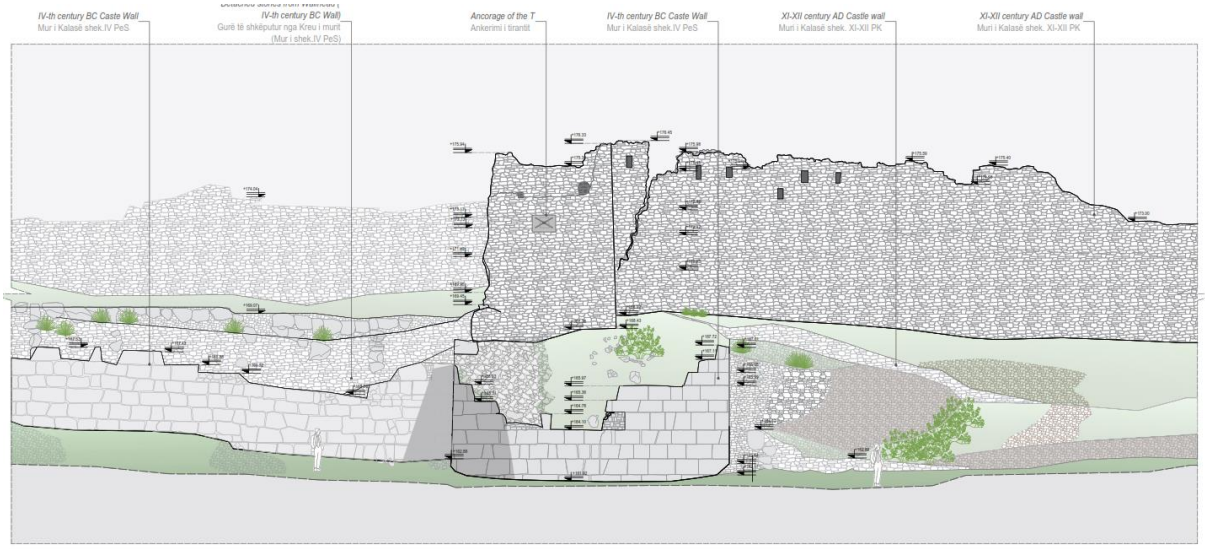

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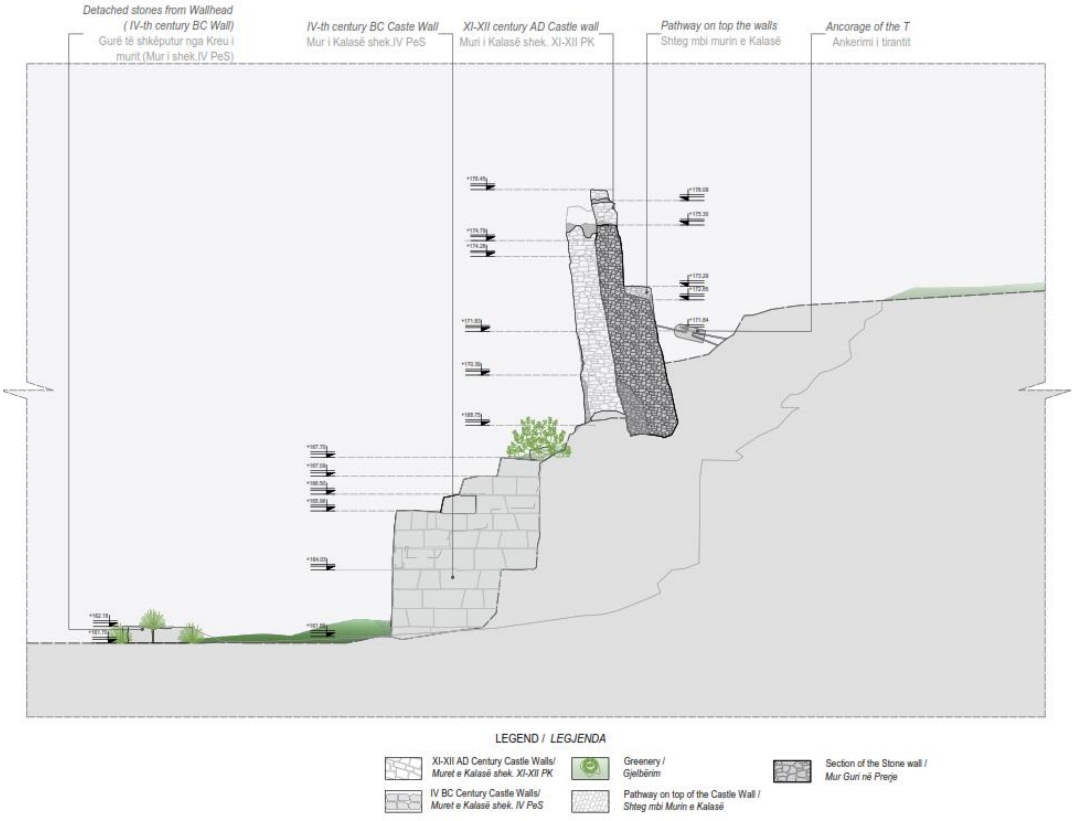

View 4

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3.5 WALL INSPECTION

After the stages of intervention foreseen in the northern wall of the Castle, an inspection plan will be carried out regarding the walls (IV century BC and XI-XII century BC). When the inspection of the condition of the walls is carried out, the areas where there is degradation should be noted and it is important to distinguish the areas that have the potential to be problematic in the future. By having this type of approach with controls at Kala, we act quickly and reduce costs in time for repairs.

The reasons why walls degrade are organic, mechanical and chemical.
Causes that are classified as organic result from the direct impact of a living organism on the wall. Mention mold, mildew or aggressive vegetation. However, this indicates that the wall holds high levels of moisture, which damage it.
Deterioration from mechanical causes can often be recognized by the breaking or crumbling of materials. The source of the problem is either one of the shocks that the wall receives or underground/surface water that forces the building materials to detach through swelling; especially during freeze/thaw cycles during the winter.
Chemical deterioration results from localized air pollution, soluble salts or moisture.

The *checklist* for the walls of the Castle should include questions related to:
1- *Organic / Chemical*
a) Have the roots of invasive plants penetrated the surface of the walls? These encourage moisture and insect penetration.
b) Is there lichen and moss on the wall? They are indicators of humidity.
c) Is there wind damage? After each storm, inspect the walls to make sure there has been no damage from objects hitting the walls and there are no tie rod problems.
d) Is there organic waste or dirt from poultry? Acids in bird droppings can severely damage the stone.
e) Do we have delamination? These rock detachments along the foundation are mainly due to weaknesses associated with the foundation, changes in wetting/drying levels, salt crystallization or frost action.

2-Mechanical
a) Cracks are the most visible expression of degradation in a stone wall. The level of concern from wall cracks depends on: the size of the crack, the location and direction of the crack, and the rate of change of the crack. It is important to closely monitor those cracks that vary in length and gap, run horizontally or through bonding materials.

b) Do we have crushing and melting? Breakdown of rock into small friable fragments, mainly due to dissolution of binding material, crystallization of salt in surface pores, or separation of minerals from the surface.
c) Is there evidence of anchor corrosion? Cracking or spalling of masonry can occur as a result of corrosion from the braced metal. Corrosion can also lead to staining through water seepage.
d) Is there evidence of degradation of the binding material?

3.6 FOUNDATION INSPECTION

For Lezha Castle, we can say that the consolidation of the foundation has taken place. However, some changes in the surrounding environment can tell a lot. Changes are often gradual and not noticeable for a short period of time. Monitoring the movement of a structure usually requires a long period of time. Some conditions that lead to foundation resurfacing include:
- Changing the amount of underground and surface water around the foundation
-New construction or excavation close to the wall
-Significant increase in the load that the foundation must bear
-Tree roots (if any) in clay soils will draw moisture, producing voids in the soil, which the foundation needs for lateral support.

Common signs of foundation subsidence
• cracks in stone walls and connecting material (where applicable)
• gaps around the gates
• cracks in the foundation (if detected during the second stage of the intervention)
• subsidence of the surrounding land.

The Castle checklist should include questions related to:
1-Movement:
a) Are any serious cracks visible?
b) Are there any signs of movement -- patchy cracks that reopen, cracks in walls, bulges
c) Are vertical postings sustainable?

2-Humidity:
a) Are there any signs of leakage? Excess moisture?
d) Is any condensation forming?

3-Exterior:
a) Is the ground properly sloped away from the building?
b) Are there trees or saplings growing near the foundation?

UN House Skanderbeg Strët, Gurten Building 3rd Floor, Tirana, Albania, www.unops.org
Rr. "E Kosovarëve", Nd.35, H. 6,Ap.4/1,Njësia Administrative Nr. 5,1019, Tiranë, Shqipëri info@atelier4.al

3.7 DRAINAGE INSPECTION

a) After the implementation phase of the contractor's project, he must ensure that the drainage process is functional.
b) The Castle checklist should include questions related to drainage:
c) a) Is it blocked with moss/inert to prevent clogging during rains?
d) b) Do we have degradation of the pipe material?
e) c) Is there visible damage to the drainage pipe such as cracks or leaks?

3.8 TOURISM INSPECTION WHICH CAUSES DAMAGE TO THE WALL

The castle has 3 important gates: Eastern, from which access is made to the interior of the castle, Western and northern. The area next to the gate near the north wall shows the detachment and fall of the Hellenistic stones, which are the basis of the masonry. Their fall has caused cracks in the entire height of the masonry connected with mortar.
Once the consolidation of the northern wall is done, it will be proposed to restrict the movement of visitors. Today, visitors are allowed to climb the passes of the Castle wall, but since the area is dangerous, a sign will be placed warning about the dangers of the passes. This is done not only for the preservation of human life, but also of the monument.
Regarding the possible impact on the cross-border environment, the project does not have such a nature.

Proposed infopanel

3.9 PERMITION

Many of the maintenance interventions do not need a Permit as these works do not affect the integrity of the facility. And in our case of the Lezha Castle, these works must be carried out with standards and materials that reduce the damage caused by the factors and preserve the architectural values of the Castle.
The foreseen interventions will be consulted with the law no. 27/2018 and with the relevant authorities to see if for these repair works, the contractor needs to be provided with a permit or not.

3.10 TESTING OF MAINTENANCE/REPAIR METHODS AND PROCEDURES

Before giving proposals for repairs and maintenance works, it is proposed to carry out inspections and carry out analyzes and tests on the site, which will support the proposals for the intervention of different disciplines.

3.11 FIRE PROTECTION

Near the north wall there is no fire hazard from man-made elements. The stones of the Castle itself are non-combustible material, but if touched by fire they may crack; break and have a total structural collapse in the event of a major fire.
The fire is expanded also by the surrounding vegetation and eventhough the tem

Greenery surrounding the wall; summertime

peratures do not damage the structure. We recommend not allowing the grass to grow to a significant height because in high temperatures during the dry season, together with human carelessness, pose a risk. We also recommend that an inspection for exposed electrical installations be carried out during the works phase; and if there is then rearrange to reduce the risk of fire.

3.12 SITE PROTECTION

In the total of the works that will be carried out for the consolidation of the northern wall, we include the anchoring of the tie rod and grouting.
These types of works include drilling and the use of different equipment to achieve the final product, so there may be dust in the air and noise for as long as the works last.
During the works, the contractor must make sure that the inerts are wetted to avoid dust. The noise level is minimal because it is far from residential areas.
During the maintenance phase, ensure the possibility of carrying out inspections with equipment and methods that do not harm the environment, the monument or the visitor. Ensure that excavations and other invasive techniques are performed only by qualified and specially authorized persons.
After the completion of the intervention phases, perform periodic checks, which monitor soil movements/slides.

3.13 HEALTH HAZARD

There are no existing materials harmful to humans or fauna in the area. The implementation of this project will not cause soil pollution as there will be no discharges. Also, this project does not envisage any kind of industrial activity, therefore there will be no air pollution even after the emergency stabilization of the wall is carried out.

3.14 MAINTENANCE PLAN PROPOSAL

MAINTENANCE PLAN_202x - 202x															
MAINTENANCE PLAN	Inspection Type	In-Charge	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sht	Oct	Nov	Dec	Notes
Drainage	Drain pipe cleaning; control for moss or impurities to prevent clogging during heavy rains														Every two months
	Inspection of the drainage pipe material for degradation / cracks / rust; replacement of parts														Every 5-7 years
Wall	Inspection of the ancorage/ wall stability														Every 6 mo. (phase1)
	Inspection of the ancorage/ wall stability														Every 2 years
	Inspektimi i çarjeve/ ndryshimi në thellësi dhe diametër														Every 1 year
	Inspektimi i mureve për materialin lidhës/ delaminim/ thërmim														Every 1 year
	Inspektimi i mureve për mbetje organike dhe pastrim prej tyre														Every 1 year
	Inspektimi i mureve për bimësi invazive/ myshk/ likene														Every 1 year
	Inspektim për dëmtime nga goditjet e objekteve të tjera dhe vandalizma														Every 6 months
Foundation	Inspektimi i çarjeve / fryrjeve pranë mureve ku është kryer grouting														Every 1 year
	Inspektimi i lagështisë / rrjedhje/ kondesimi														Every 1 year
	Inspektimi i tokës në bazamentin e murit për shenja rrëshqitjeje dhe fryrjeje														Every 1 year
	Inspektimi i bimësisë mesatare/ të lartë (nëse aplikohet) pranë murit														Every 1 year
Fire Protection	Inspektimi i bimësisë mesatare/ të ulët rreth mureve të Kalasë/ pastrim-prerje														Three times a year
	Inspektimi i pajisjeve elektrike (tela/kabuj) pranë mureve të Kalasë														Every 6 months
General upkeep	Kontroll total i murit në çdo aspekt														Every 2 years
	Inspektimi i tabelës informuese/rregulluese (riparim sipas nevojës)														Every 2 years

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