საქართველოს კულტურული მემკვიდრეობის დაცვის ეროვნული სააგენტო
Georgian National Agency for Cultural Heritage Preservation

№ 08/13/165 "29" 01 2016

To: Ms. Mechtild Rössler,
Director
World Heritage Centre

7, Place de Fontenoy
75352, Paris 07 SP

Dear Ms. Rössler,

In conformity with the decisions 39 COM 7A.41 and 39 COM 7A.40 of the 39th session of the World Heritage Committee I would like to present you the State of Conservation for the Historical Monuments of Mtskheta and Bagrati Cathedral and Gelati Monastery World Heritage Sites with the following documentation on the implemented works in 2015.

We are open to provide further information on any issues related to the mentioned World Heritage Sites.

Please, Madam, accept the assurance of my highest consideration,

Annex 1: State of Conservation Report, Historical Monuments of Mtskheta
Annex 2: State of Conservation Report, Bagrati Cathedral and Gelati Monastery

Nikoloz Antidze
Director General

177 -> EUR
Dir WHC
rec'd 1/02/16

0105. ქ.თბილისი. თაბუკაშვილის ქ. №5, ტელ. (+995 32) 93 24 11, 93 23 94
5 Tabukashvili str. Tbilisi 0105. Tel.(+995 32) 93 24 11, 93 23 94

United Nations Educational, Scientific and Cultural Organization

World Heritage Convention

FORMAT FOR THE SUBMISSION OF STATE OF CONSERVATION REPORTS BY THE STATES PARTIES

(in compliance with Paragraph 169 of the *Operational Guidelines*)

Name of World Heritage property (State(s) Party(ies)) (Identification number)

Bagrati Cathedral and Gelati Monastery (Georgia) (710)

Date inscribed: 1994
Criteria: (iv)
City of Kutaisi, Region of Imereti
N42 15 43.992 E42 42 59.004

Executive Summary of the report

In 2015 the State Party completed the elaboration of the Management Plan for Gelati Monastery and officially submitted to the WHC. The Tourism Development Program and Visitor Management Program are integrated into the MP.

The elaboration of the Code on Cultural Heritage is now underway. The Heritage Code includes special Chapter on World Heritage, was prepared with the assistance of the Italian experts, provided in the framework of the EU funded TWINNING program The Document will be finalized in 2016 and submitted to the Georgian Parliament for its consideration and approval. The Chapter on World Heritage will serve as a basis for the state approval of the Management Plan.

The Design project on the arrangement of roofing for the archaeological materials discovered in the vicinity of the Gelati monastery Academy as well as relevant update of the Conservation Master Plan to reflect new realities and meet the current and future needs of the monastery complex was prepared. Archaeologically sensitive areas in Gelati monastery complex were identified and 5-year action plan for the archaeological study was prepared.

Gelati monastery Conservation Master Plan remains the guiding document for implementing and planning rehabilitation and conservation of the property. In 2015 the following conservation/rehabilitation projects were implemented: a) Restoration of Architectural Structure of the Church of the Virgin at Gelati Monastery; b) Emergency Conservation Works on Mural painting in the Dome of the Church of the Virgin; c) The rehabilitation of the roofing of the Church of the Virgin with glazed tiles.

Works on the reinforcement of the the base of the drum of the dome of Gelati monastery, elaborated in accordance with the recommendations of the joint ICOMOS/World Bank advisory mission (21-25 January, 2015) started in 2015 and is expected to be completed in 2016.

61 objects of cultural heritage located in the extended buffer zone of Gelati Monastery WHS were identified. The objects were put on the map by the working team of Gelati MP.

The Memorandum of Understanding and the Contract was signed between the NACHPG and ICCROM on the establishment of the training platform in the field of cultural heritage in Georgia.

Presentation on the “Protection of Heritage Sites and Historic Towns” (translated into Georgian by ICOMOS in 2014) held for Gelati monastery buffer zone villages school teachers and children for its its further integration in local education program.

Based on the comprehensive archaeological studies the book „the Archaeology of Kutaisi“ was published.

1. Response to the Decision of the World Heritage Committee

[Note: The State(s) Party(ies) is/are requested to address the most recent Decision of the World Heritage Committee for this property, paragraph by paragraph.]

Decision: 39 COM 7A.40

The World Heritage Committee,

1. Having examined Document WHC-15/39.COM/7A,
2. Recalling Decision **38 COM 7A.16**, adopted at its 38th session (Doha, 2014),
3. Welcomes the progress made in the implementation of the conservation programme plan for Gelati Monastery;
4. *Notes the information provided by the State Party inter alia on the implementation of the recommendations of the ICOMOS Advisory mission and the revision of Management Plan for Gelati Monastery, which will be presented to the 40th session of the World Heritage Committee in 2016 in the framework of the significant boundary modification;*

The State Party received positive evaluation from ICOMOS on the proposal for reinforcing the base of the drum of the dome of Gelati monastery, elaborated in accordance with the recommendations of the joint ICOMOS/World Bank advisory mission (21-25 January, 2015) and submitted to the WHC on 20th July, 2015. The project implementation will be completed in 2016 with the World Bank funding through the Imereti regional Development Project.

The Management Plan for Gelati Monastery, elaborated by the G.Chubinashvili National Research Centre for Georgian Art History and Monuments Protection, was completed in May, 2015 and officially submitted to the WHC. The project included the formal meetings of the working team with different stakeholders at local, national and international level with the aim to enhance cooperation and dialogue among them, as well as to monitor the progress of the team's work.

The following stakeholders were involved in the coordination meetings:

- Ministry of Culture and Monuments Protection of Georgia
- Ministry of Economy and Sustainable Development of Georgia
- Ministry of Environment and natural resources Protection
- Patriarchate of Georgia
- World Bank
- Municipal Development Fund of Georgia
- National Tourism Administration of Georgia
- Agency of Protected Areas
- National Forestry Agency
- National Agency of Public Registry
- ICOMOS Georgia
- Ap. Kutateladze Tbilisi Sate Academy of Fine Arts
- Georgian Arts and Culture Centre
- Chubinashvili National Research Centre for Georgian Art History and Monuments Protection

- Imereti region Governor's office
- Tkibuli Municipality
- Association of Entrepreneurship and Tourism Development in Tkibuli Municipality "New Okriba"
- Eptisa Engineering Services,
- Dmark Architectural Company
- Biological Farming Association "Elkana"
- Agriculturism Development Centre "Korena"

In 2015, the State Party developed the draft of the Code on Cultural Heritage. Gaps identification in the current Georgian legislation, as well as analysis of the international agreements and Conventions in the field of cultural heritage have been implemented within the scope of the initiative. On the basis of the comprehensive analysis carried out by the working team, the NACHPG is currently finalizing the draft document. The Code on Cultural Heritage will incorporate the special chapter dedicated to the protection and management of the World Heritage in Georgia. the EU funded Twinning project "Support to the Institutional Development of the National Agency for Cultural Heritage Preservation of Georgia" (ended in April, 2015) gave considerable inputs in the process of elaboration of the Code on Cultural Heritage, with the particular emphasis on the issues of World Heritage of Georgia. After the document is finalized, it will be submitted before the Georgian Parliament for its consideration and approval at its spring sessions in 2016.

The Chapter on World Heritage integrated in the Heritage Code will serve as a basis for the official approval of the Management Plan for Gelati Monastery and for its effective implementation with the involvement of all the stakeholders.

5. Also requests the State Party to submit to the World Heritage Centre, by **1 February 2016**, an updated report, including a 1-page executive summary, on the state of conservation of the property and the implementation of the above, for examination by the World Heritage Committee at its 40th session in 2016;
6. **Decides to retain Bagrati Cathedral and Gelati Monastery (Georgia) on the List of World Heritage in Danger.**

Other issues:

- In 2015 with the NACHPG funding the Design project of the arrangement of roofing for the archaeological materials revealed in the vicinity of the Academy and relevant update of the Conservation Master Plan to reflect new realities and meet the current and future needs of the monastery complex was prepared. The project documentation was completed at the end of 2015. The documentation will be submitted to the WHC as soon as the translation into English is completed.
- Archaeologically sensitive areas in Gelati monastery complex were identified and 5-year action plan for the archaeological study was prepared.
- The rehabilitation of the roofing of the Church of the Virgin with glazed tiles was completed.
- In the framework of the Imereti regional Development Project., the 1st phase of the project on infrastructure arrangement outside Gelati monastery was completed in 2015. The further works are expected to be continued in 2016.
- In the process of the Management Plan elaboration for Gelati Monastery 61 objects of cultural heritage located in the extended buffer zone of Gelati Monastery WHS were identified. The objects were put on the map by the working team of Gelati MP. The further inventory and register of the objects is expected to continue in 2016.
- Gelati monastery Conservation Master Plan remains the guiding document for implementing and planning rehabilitation and conservation of the property. In 2015 the Georgian Arts and Culture Centre and Tbilisi Sate Academy of Fine Arts continued the three year project (2014-2016), funded by the US Ambassadors Fund for Cultural Preservation. The following activities have been implemented in scopes of the project "***Emergency Conservation Works on Mural painting in the Dome of the Church of the Virgin"***. In the scope of the project number of studies were carried out, in particular:

- Art historian study;
- Study of the painting techniques;
- Study of the painting damages;
- Analyses of previous restoration works ;
- Laboratory analysis of the painting samples ;
- Mineralogical - petrographic analysis of the plaster ;
- Biological study ;
- Study of the salts.

On conducted analyses the working team elaborated the methodology of conservation works. As a result of the project, the conservation of frescos of the dome of the church of the Virgin at Gelati monastery was completed. Besides, the measures to avoid further damages caused by the birds were addressed by the special constructions.

- The Georgian Arts and Culture Centre continued the implementation of ***the Restoration of Architectural Structure of the Church of the Virgin at Gelati Monastery*** in 2015. The project is run within the scope of the Imereti Regional Development Program and is expected to continue in *2016 (see Annex 1).*

The above stated activities are in conformity with the recommendations of the Conservation Master Plan and are being closely monitored by the NACHPG to ensure the highest quality of interventions.

- The NACHPG in close collaboration with ICCROM - *being the priority partner in training for cultural heritage (Operational Guidelines for the Convention, paragraph 33.)* - launched in 2015 the long-term (2015-2017) project on establishment of the training platform in the field of cultural heritage in Georgia. Based on the Memorandum of Understanding (dated 21.05.2015) and the Contract N3/417 (dated 23.12.2015) signed between the NACHPG and ICCROM, the project aims at establishment of the multidisciplinary platform for the development of professional opportunities through improvement of the education and professional system and policies in the field of conservation and management of cultural heritage in Georgia, with the special focus on World Heritage. The project implies the implementation of the feasibility analysis of the professional opportunities, assessments of Georgian educational system in the field, development of the capacity concept paper and curriculum models, and at the last stage setting up of the pilot training program.

- The ICCROM Manual for School teachers and introduction course for school children "Protection of Heritage Sites and Historic Towns" was translated and published in 2014 by ICOMOS Georgia in scopes of the EU funded regional project (RCHDD). In 2015 the presentation of the manuel was held for teachers and school children from the villages located in Gelati monastery buffer zone at the Kutaisi Historical-Archaeological Museum-Reserve aimed at its further integration in local education program. *(http://www.rcchd.icomos.org.ge/?l=G&m=3&id=145).*
- Based on the comprehensive study of the archaeological data, the NACHPG published the book „the Archaeology of Kutaisi".

2. If the property is inscribed on the List of World Heritage in Danger
   Please also provide detailed information on the following:

   a) Progress achieved in implementing the corrective measures adopted by the World Heritage Committee

      [Note: please address each corrective measure individually, providing factual information, including exact dates, figures, etc.]

      If needed, please describe the success factors or difficulties in implementing each of the corrective measures identified

   b) Is the timeframe for implementing the corrective measures suitable? If not, please propose an alternative timeframe and an explanation why this alternative timeframe is required.

   c) Progress achieved towards the Desired state of conservation for the removal of the property from the List of World Heritage in Danger (DSOCR)

Decision: 34 COM 7B.88

The World Heritage Committee,

1. Having examined Document WHC-10/34.COM/7B.Add,

2. Recalling Decision **33 COM 7B.103**, adopted at its 33rd session (Seville, 2009),

3. Acknowledges the information provided by the State Party on the "Bagrati Cathedral preliminary rehabilitation project", the general report on the studies conducted within the framework of this project and the "report on Bagrati Cathedral rehabilitation works";

4. Notes the recommendations of the joint World Heritage Centre/ICOMOS/ICCROM advisory mission to the property;
5. Expresses its serious concern about irreversible interventions carried out by the State Party as part of the preparations for the Bagrati Cathedral reconstruction project prior to any review or approval of the project and its impact on the Outstanding Universal Value, integrity and authenticity of the property;
6. Urges the State Party to halt immediately all interventions at Bagrati Cathedral, which threaten the Outstanding Universal Value, integrity and authenticity of the property;
7. Also urges the State Party to immediately adopt all necessary measures aiming to ensure the safeguarding of the Outstanding Universal Value, integrity and authenticity of the property, monitoring and survey of the state of conservation of the property, preparation, adoption **and implementation of a Management Plan** (including a tourism strategy and guidelines for the use of historic buildings and monuments, an Urban Master Plan and a Conservation Master Plan for the monuments);
8. Invites the State Party to organize a consultation with international conservation engineers and architectural conservators in order to consider how the interventions already carried out might be reversed entirely or in part and to consider the overall consolidation of the Bagrati Cathedral ruins;
9. Requests the State Party, in consultation with the World Heritage Centre and the Advisory Bodies, to develop a draft Statement of Outstanding Universal Value of the property, for examination by the World Heritage Committee at its 35th session in 2011.
10. Considers that the State Party has not complied with all the requests expressed by the Committee in Decision **33 COM 7B.103**, and that therefore the property is in danger in conformity with Chapter IV.B of the *Operational Guidelines* and **decides to inscribe the Bagrati Cathedral and Gelati Monastery (Georgia) on the List of World Heritage in Danger**;
11. Adopts the following Desired State of Conservation for the property based on its Outstanding Universal Value, in view of its future removal from the List of World Heritage in Danger:
a) The reconstruction of the Bagrati Cathedral halted,
b) Interventions already carried out at the Bagrati Cathedral reversed (entirely or in part),
c) The overall consolidation project of the Bagrati Cathedral ruins, elaborated in consultation with international conservation engineers and architectural conservators, implemented,
d) The boundaries and buffer zone of all component parts of the World Heritage property precisely clarified,
e) A comprehensive management system including an integrated management plan with tourism strategy and guidelines for the use of historic buildings and monuments, conservation master plan for all components of the World Heritage property and its buffer zone and urban master plan including land-use regulations approved and implemented,
f) Long-term consolidation and conservation of the historical monuments of the Bagrati Cathedral and Gelati Monastery ensured;
12. Also adopts the following corrective measures and the timeframe for their implementation:
a) Changes to be carried out immediately:
- The reconstruction of the Bagrati Cathedral halted and a consultation organized with international conservation engineers and architectural conservators in order to consider how the interventions

already carried out might be reversed (entirely or in part) and how the overall consolidation of the Bagrati Cathedral ruins might be achieved,

b) Changes to be carried out within one to two years:

- Interventions already carried out at the Bagrati Cathedral reversed entirely or in part (taking into consideration the underground reinforced concrete ring around the foundations of the building),
- An overall consolidation project of the Bagrati Cathedral ruins elaborated in consultation with international conservation engineers and architectural conservators,
- Monitoring regimes for the physical conservation of all components of the property to ensure the long-term conservation, consolidation and protection of the property developed,
- A clear institutional coordination mechanism, ensuring that the conservation of the property receives priority consideration within relevant governmental decision-making processes, established,

c) Changes to be carried out within two to three years:

- Legislation adopted that assures the protection and maintenance of all the component parts of the property in order to sustain its Outstanding Universal Value,
- A comprehensive management system adopted that includes an Integrated Management Plan with tourism strategy and guidelines for the use of historic buildings and monuments, Conservation Master Plan for all components of the property and its buffer zone and an Urban Master Plan including land-use regulations,

d) Changes to be carried out within five years (after possible removal from the List of World Heritage in Danger in 2 to 3 years):

- Documentation and recording of all historical monuments as a digitized information database for management, conservation and planning purposes completed,
- A full inventory of paintings including digitalization and reference system for all historical monuments of the property established,
- Agreed upon restoration of all monuments, including paintings carried out,
- **A complex programme for the structural conservation and restoration of the churches, in Gelati Monastery to be carried out,**
- **A complex programme for the systematic cleaning, conservation and restoration of the interior wall-paintings and mosaics in Gelati Monastery churches, with the involvement and collaboration of international specialists in this domain, to be carried out;**

13. Also requests the State Party to submit to the World Heritage Centre, by **1 February 2011**, a report on the state of conservation of the property and on the steps taken to implement the World Heritage Committee's decision, including three printed and electronic copies of the draft management plan, for examination by the World Heritage Committee at its 35th session in 2011, considering that, if further reconstruction works are carried out on Bagrati Cathedral, **the property might be considered, in conformity with Chapter IV.C of the *Operational Guidelines*, for deletion from the World Heritage List.**

Implemented measures:

- **World Heritage Property Boundaries and the Buffer Zone**

2012- 2014 - The State Party submitted to the WHC the Significant Boundary Modification for the property to allow Gelati monastery to justify the criterion on its own.
The extended buffer zone of Gelati Monastery WHS prepared and legally adopted (The decree of the Minister of Culture and Monuments Protection on 09.01.2014). The documentation submitted to the WHC together with the Significant Boundary Modification.

- **Management Plan**

2015 – Elaboration of the Management Plan completed and submitted to the WHC. The Management Plan. The Master Plan envisages Action Programs to address high priority issues, including Sustainable Tourism Development Program and Visitor Management Program.
The Management Plan will be presented to the 40th session of the World Heritage Committee in 2016 in the framework of the Significant Boundary Modification. (Decision: 39 COM 7A.40).
Construction of the visitor centre outside the Monastery as agreed with the WHC and AD in 2012 started in 2015. The visitor centre will operate under the Kutaisi Historical-Architectural Museum–Reserve.

- **Conservation and Restoration**

The Gelati monastery Conservation Master Plan, submitted to the WHC in 2010, remains the guiding document for implementing and planning the long term rehabilitation and conservation of the property. In 2015 the Conservation Master Plan was updated to reflect new realities and meet the current and future needs of the monastery complex.

2010-2015 – The State Party implemented step by step rehabilitation of the Gelati monastery complex based on the comprehensive studies in cooperation with different international institutions and donors in conformity with the Conservation master Plan. Following activities were carried out:

- Conservation of the wall paintings of the St. George church;
- Rehabilitation of the St. George church;
- Rehabilitation of the bell tower;
- Rehabilitation of the South entrance gate (the gate of the David the builder);
- the Restoration of Architectural Structure of the Church of the Virgin;
- Emergency Conservation Works on Mural painting in the Dome of the Church of the Virgin.

3. <u>Other current conservation issues identified by the State(s) Party(ies) which may have an impact on the property's Outstanding Universal Value</u>

[Note: this includes conservation issues which are not mentioned in the Decision of the World Heritage Committee or in any information request from the World Heritage Centre]

No urgent conservation issues at stake.

4. In conformity with Paragraph 172 of the *Operational Guidelines*, describe any potential major restorations, alterations and/or new construction(s) intended within the property, the buffer zone(s) and/or corridors or other areas, where such developments may affect the Outstanding Universal Value of the property, including authenticity and integrity.

   In accordance with the Georgian legislation, after the extension of the buffer zone of Gelati Monastery (adopted by the decree of the Minister of Culture and Monuments Protection on 09.01.2014) all the projects of new constructions within the visual protection area of Gelati Monastery require the approval of the Cultural Heritage Council – Section for Cultural Heritage Protected Zones – of the NACHPG, after their submission from the Tkibuli Municipality. Though the new constructions activities are very low in the area, the Agency is in full control of the process and is able to monitor and properly plan the development processes.

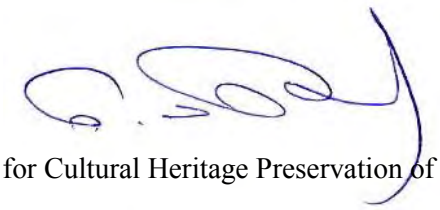
5. Public access to the state of conservation report

   [Note: this report will be uploaded for public access on the World Heritage Centre's State of conservation Information System (http://whc.unesco.org/en/soc). Should your State Party request that the full report should not be uploaded, only the 1-page executive summary provided in point (1.) above will be uploaded for public access].

   The State Party gives its consent to upload the present SOC Report for public access.

6. Signature of the Authority

   Nikoloz Antidze
   Director General
   National Agency for Cultural Heritage Preservation of Georgia



Georgian Arts and Culture Center
7, Niko Nikoladze str.,
0108, Tbilisi, Georgia

Parma, 10 agosto 2015.

PROJECT FOR CONSERVATION INTERVENTION OFTHE DOME DRUM OF THE MAIN CHURCH IN GELATI, GEORGIA.

1. STATE OF CONSERVATION

Stones of the dome drum present a great variety of forms of decay.

A profuse green/brownish-blackish layer of biological growth, clinging into the stone alveoli and spreading also inside cracks and fissures, can be observed over the surfaces (mostly foliose and crustose lichens and algae; sometimes weeds like *Parietaria*): microflora causes not only aesthetic decay but also physical/chemical deterioration of stone substratum, connected to growth and metabolism of vegetation (development of roots over the surfaces and inside the micro-fissures, mechanical stress, excretion of acid substance over the substratum which leads to chemical degradation of stone surface, etc)
This form of biodeterioration is particularly evident in areas facing north (more stable favorable microclimate)

An example of biological patina over the stone surface
.

Weeds rooted in joints lacking bedding mortar.

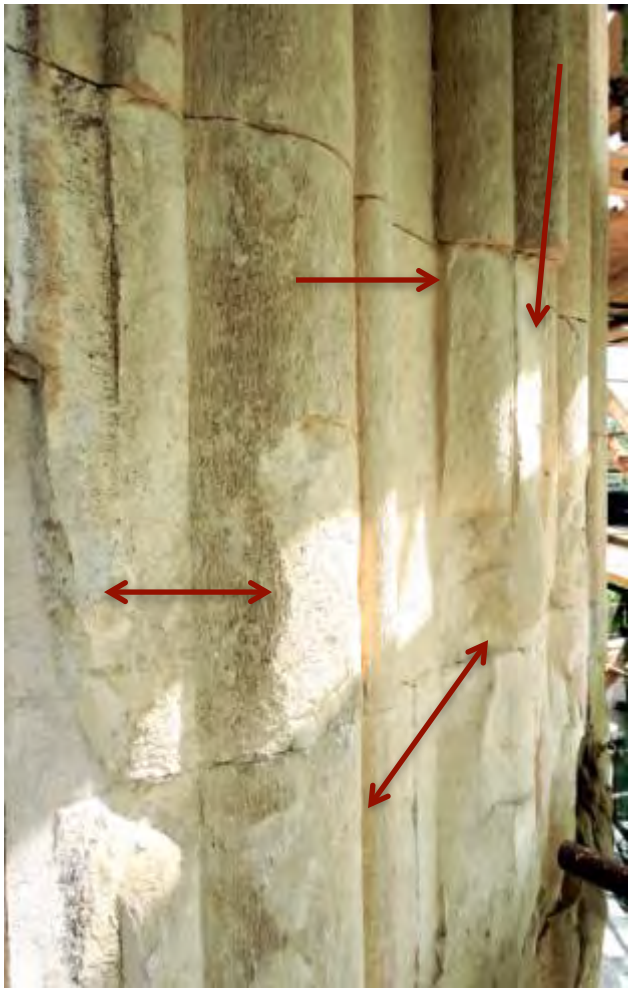
A general reduction and/or total lack of bedding mortar among the stones can be observed: this facilitates the formation of preferential ways for seepage of rain water, causes washing away and formation of physical decay (for instance the disruptive action of water in seasonal cycles of frost and thaw) and chemical deterioration caused by natural and artificial "pollutants" carried by water…but this is not is not the only problem!

The phenomenon is particularly severe due to the construction technique of the walls.

Among the ashlars there is a very thin joint; usually each ashlar shows a regular contact line towards the corners on the front side while it is slightly concave inside to contain the right amount of bedding mortar.

The partial or total loss of this bedding mortar, occurring over the centuries, puts the surfaces of the overlapping ashlars into direct contact; the mortar is no more there to absorb the compression and bending forces; the stress concentrated in points of contact causes crackles, cracks and fissures that fracture the stone, then causing detachment and fall of stone parts.

Crackles and fissures caused by contact among ashlars. .



Loss of large stone parts

Many areas of the dome drum are affected by this pathology and are characterized by a typical web of crackles and fissures, by parts still *in situ* though unsafe and by a diffuse loss of original material either in wall surfaces or in decorated parts (typical lacunas at the corners of ashlars and delaminations of the modillion mouldings can be seen, etc.).

The alarming structural damages in the upper part of the dome drum (for instance crackles and fissures in the middle of the window arches), caused by static problems of the dome, have been structurally restored recently by hooping the dome, thus decreasing inappropriate thrusts and loads on the fractured parts.
The lower part of the dome drum, just above the roofs of the lower building, shows a severe decay, likely caused by a specific event that affected this architectural part in the past centuries (fire of shelters?): for the time being no archive documents have been found. Stone surfaces are widely covered by a concrete mortar; under this layer the stone is cracked and fragmented, sometimes lacking cohesion.

The concrete mortar, laid in the past with the aim to preserve the decayed ashlars, contributed, on the contrary, to worsen conservation: the migration of soluble salts contained in concrete and its elastic modulus which differs from the original stone, greatly increased disintegration over and beneath the surface and fragmentation of ashlars.

Via Serra, 22 – 43123 Parma – Tel. 0039 3463520680 – stefanovolta1961@libero.it-
Partita I.V.A.02589750344 – C.F. VLTSFN61P18G337V

Two specific problems connected with the recent placing of oak frames can be observed. Due to the lack of a framework in the wooden frames a deleterious disjointing between wood and stone allows seepage of rain water. Moreover, since the time in which the window frames were put in place, one year ag, the insufficiently seasoned wood caused a very widespread leakage of tannin over the stone surfaces.

Some windows were in-filled in ancient times (inner wall paintings) with bricks covered by a layer of mortar. Plaster shows decay: biological growth, crackles and fissures, lack of adhesion to the wall, detachments, loss of material and lacunas. The visible bricks show weak cohesion, pulverization, erosion and loss of material.

Via Serra, 22 – 43123 Parma – Tel. 0039 3463520680 – stefanovolta1961@libero.it-
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2. PROPOSAL FOR INTERVENTION

The various operations, which will be related to an accurate conservation intervention, are described in brief.
- To treat microflora, a specific biocide (4% solution of Benzalkonium Chloride in demineralized water) will be sprayed over the surfaces. After 20 days, the time needed to complete the biocide action, devitalized vegetation will be removed by a delicate washing of the surface with the aid of soft nylon and/or sorghum brushes. Treated surfaces should not be washed away by rain for at least three days after application of biocide; in case of rain the application should be repeated.
- Devitalization of weeds (such as *Parietara*) by a specific glifosate based herbicide (such as "Rodeo Gold" Monsanto). After 20 days, the time needed to complete the biocide action, devitalized weeds will be removed.
- Reassembling of detached and/or removable small parts (up to approximately 500 grams) by means of a high concentration solution of reversible acrylic adhesive (Paraloid B72 50 % in Ethylacetate).
- Reassembling of detached and/or removable medium size/large parts (heavier than 500 grams), with specific low elastic modulus epoxy resin ("Epo155" CTS).
If needed, insertion of a mechanic anchorage (stainless steel reinforcement micro-pivot, Ø mm 4) after drilling a slot with a rotating drill (never a hammer drill) .
- Refurbishment of lacks of adhesion, de-laminations and detached parts by injections of natural hydraulic lime grout (NHL5 + ventilated hydraulic aggregates such as cocciopesto or pozzolana). Should the space to be filled too thin to allow penetration and flow of grout detachments, injections of nanosilica will be carried out with or without ventilated aggregates.
- Detached parts thicker than 3-4 cm will be anchored, after injection of grout, with a pretensioned reinforcement fiberglass micro-pivot (Fibrenet .) and reversible acrylic adhesive resin (Paraloid B72 40 % in Ethylacetate + ventilated aggregates).
- Mechanical removal of concrete fillings which are not suitable for an appropriate conservation.
- Refurbishment of lack of cohesion of stone (lower part of the dome drum) and of bricks by an inorganic consolidant (Ethylsilicate Wacker OH 100), injected with a syringe into all crackles, cracks and fissures and applied with a brush until saturation of the stone. Thirty days are needed to Ethylsilicate to complete consolidation; it is also important to avoid that, during the first 15 days after application, the surfaces are exposed to rain and control that the temperature are within 15° and 30 ° Celsius.

- Refurbishment of lack of adhesion between plaster and bricks by injections of natural hydraulic lime with aggregates (NHL5 + ventilated aggregates, water and alcohol 1: 1)
- In places where ashlars are in direct contact, separation, by means of a thin diamond disk, between two elements to create a suitable mortar joint (it is important to get a suitable space into the joints without altering the building technique) 2 mm.
- Replacement of bedding lime mortar with suitable color and granulometry mortar (lime putty, river sand, suitable aggregates, 1: 3) after deep injection of natural hydraulic lime grout NHL5 + ventilated aggregates, such as cocciopesto or pozzolana 1: 1)

This operation allows to fill every void into the deep joints among ashlars, thus contributing to their stabilization. The injections should be carried out keeping fillings into account, that is bedding mortar should adhere to the injected grout when it is still not completely dry.

- Filling of fissures, fractures, plaster borders of in-filled windows, lacunas, with a suitable color and granulometry mortar (lime putty, river sand, suitable aggregates, 1: 3)

Should the crackles to be filled too thin to allow appropriate adhesion, nanosilica with suitably colored ventilated aggregates will be used.

A very precise filling is crucial for a proper conservation of stone, because it gives to the surface a smoothness that allows a suitable flow of rain water avoiding infiltrations and dangerous pooling. It is also important to carry out fillings with a right inclination where cornices or jutting parts show a wrong inclination.

- Reconstruction in reinforced mortar of parts where ashlars that are fundamental for wall stability are missing (for instance if they are a support for the upper ashlar)

In the corners or in the parts to be reconstructed a sort of reinforced support with a fiberglass net G.F.R.P. ("FIBMESH 33x33t96ar" Fibre Net) will be anchored with stainless reinforced steel micro-pivots (4 mm), to support mortar.

The mortar used for reconstruction should have a mechanical resistance similar to the stone (in this case a "bastard" mortar should be used, that is 30% of binder made of white cement and 70% natural hydraulic lime NHL5)

- Sealing the gap between stone and window frames 5 mm below the stone level with "Sikaflex 11FC" Sika, to allow space for a mimetic filling with lime mortar.
- Cleaning. A specific cleaning is not necessary. The grey layer over the stone is due to microflora and deposit of particulate matter; its removal will restore a clean appearance, maintaining the historical patina connected to a physiological aging of materials.

The only areas that need to be cleaned are those stained by tannin leaks. Preliminary tests of cleaning will be carried out with suitable supports (cellulose paste Arbocel 1000 and/or ventilated sepiolite) and suitable buffered solvents and/or surfactants (Ammonium Carbonate, contrad 2000, Hydrogen Peroxide).

Stefano Volta

Via Serra, 22 – 43123 Parma – Tel. 0039 3463520680 – stefanovolta1961@libero.it-
Partita I.V.A.02589750344 – C.F. VLTSFN61P18G337V

Georgian Arts and Culture Center
7, Niko Nikoladze str., Tbilisi, Georgia
Tel: 995-32-2931335; e-mail: gacc@gaccgeorgia.org

Project title:

Preservation Measures for Gelati Monastery Cultural Heritage Site

Restoration of Architectural Structure of the Church of the Virgin at Gelati Monastery

Contracts #: IDA/RDPII/CW/DC/11-2015

Monthly Progress Report #1
Reporting Period: May 29, 2015 - July 20, 2015

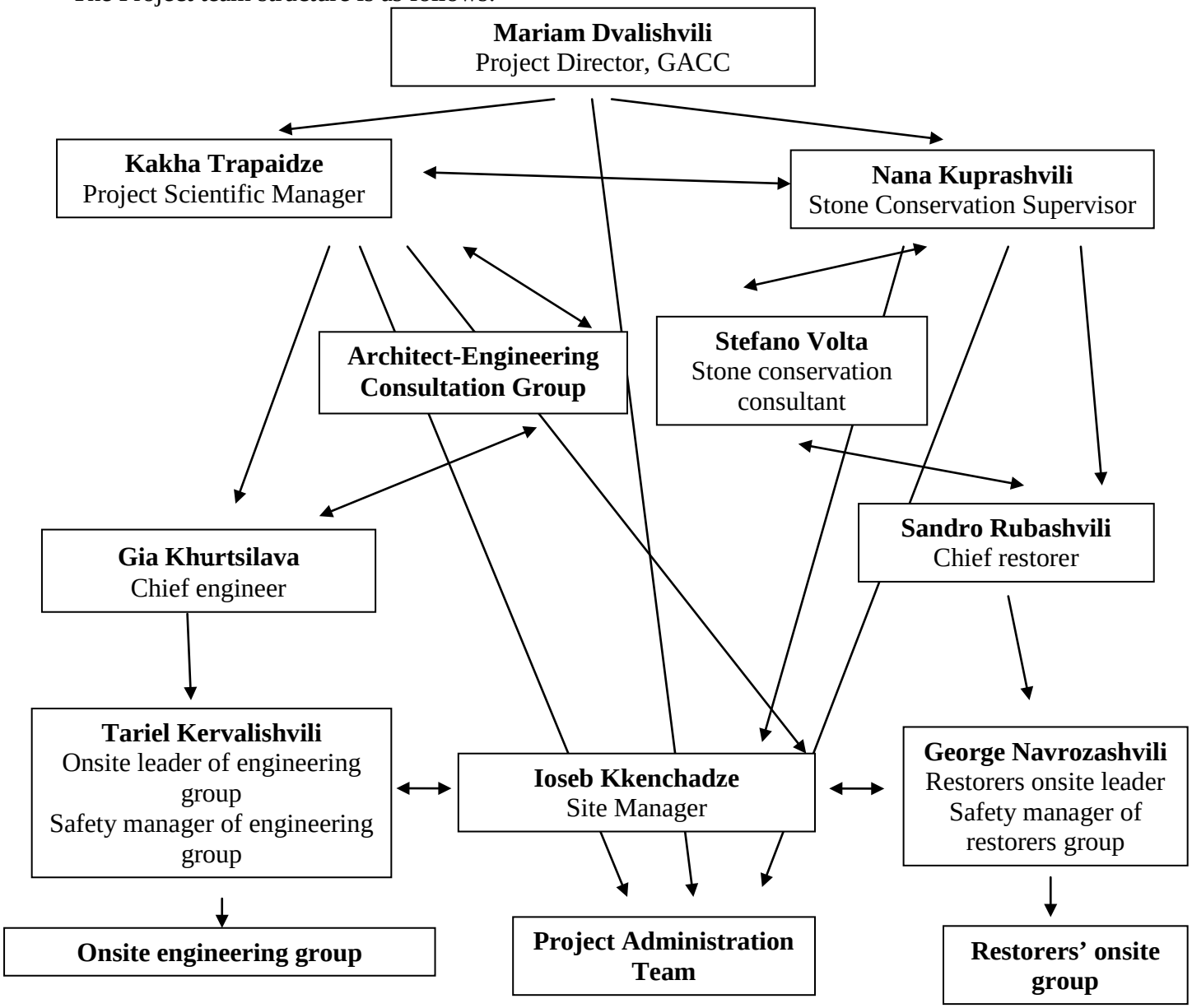
Date: July 24, 2015

Table of Contents:

1. Introduction and Background Information

Contract IDA/RDPII/CW/DC/11-2015 for Preservation Measures for Gelati Monastery Cultural Heritage Site total cost is 985209.75 (Nine Hundred Eighty Five Thousand Two Hundred Nine and 75/100). The contract entered into force on May 29, 2015. The date of completion is May 25, 2017.

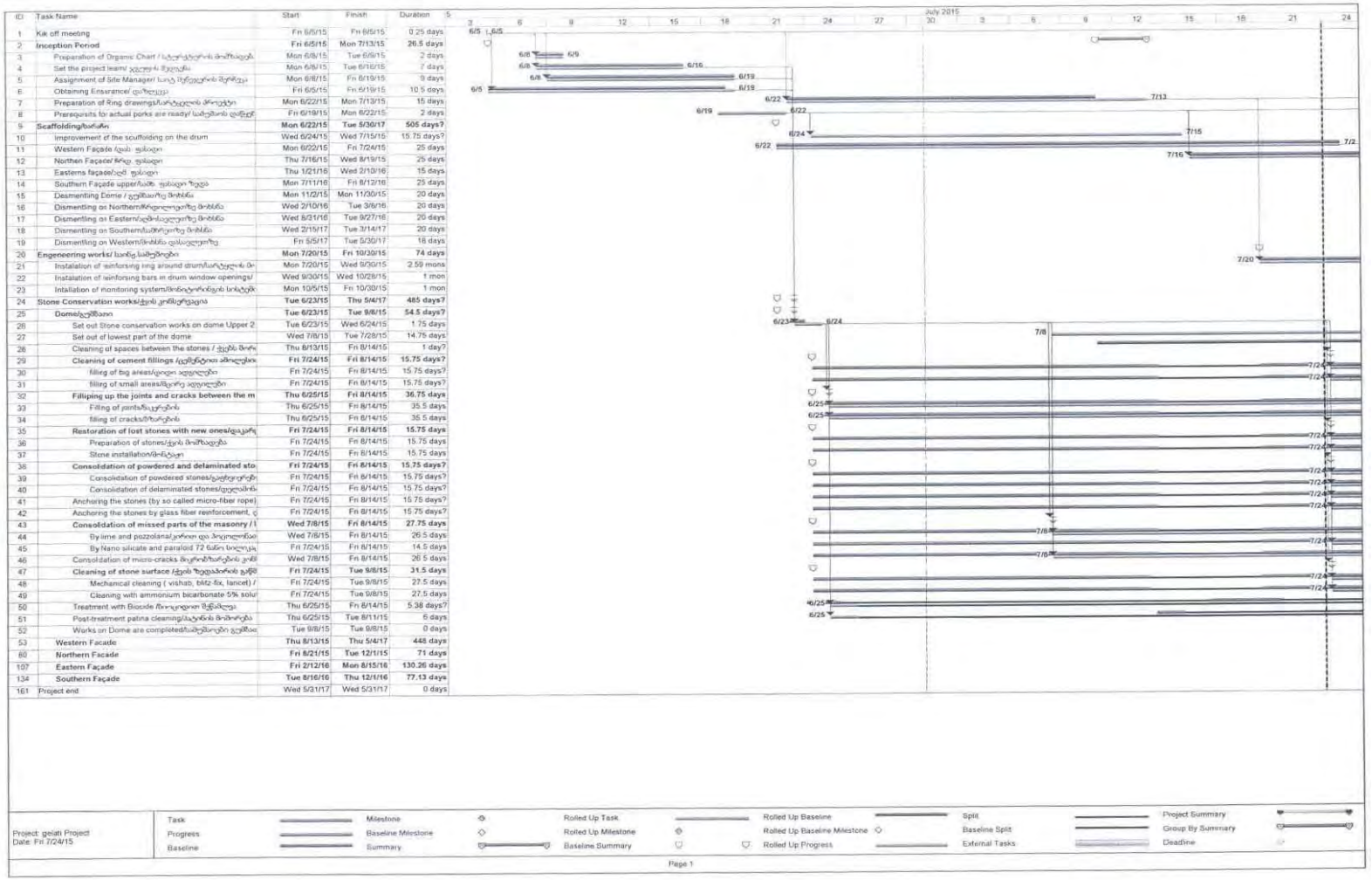
The financing institution is: The World Bank – International Development Association (IDA)
The Employer: Municipal Development Fund of Georgia
The Contractor: Georgian Arts and Culture Center
Project Manager: Eptisa Servicios de Ingenieria
The Project team structure is as follows:



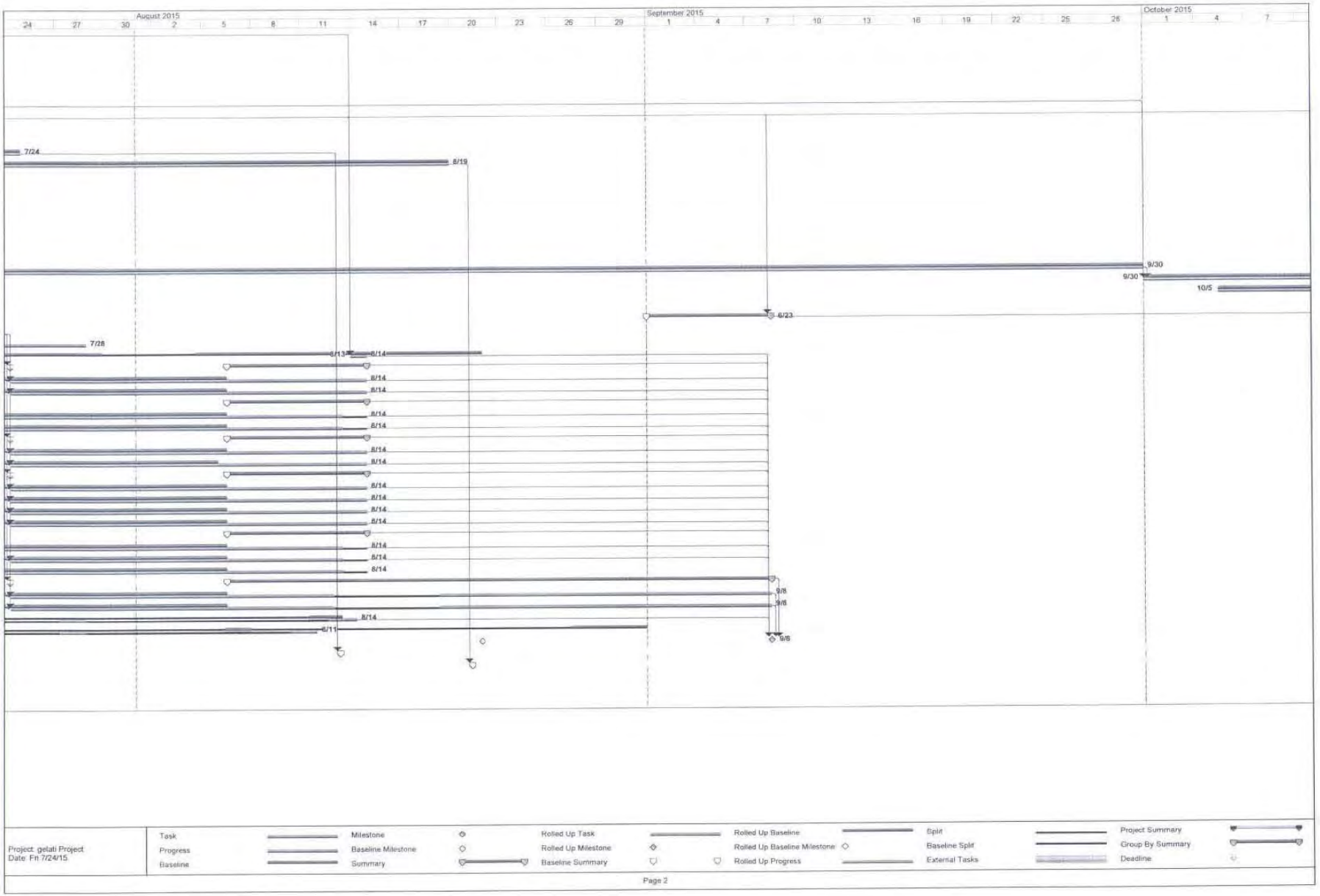
The director of the project is Mrs. Mariam Dvalishvili, director of the Georgian Arts and Culture Center. The scientific manager of the project Mr. Kakha Trapaidze and head of the conservation division Mrs. Nana Kuprashvili. Ioseb Kenchadze is assigned as a site manager.

2.Works Accomplishments

Scheduled Progress & Actual Progress *Microsoft Project file is attached



ID	Task Name	Start	Finish	Duration
1	Kik off meeting	Fri 6/5/15	Fri 6/5/15	0.25 days
2	**Inception Period**	**Fri 6/5/15**	**Mon 7/13/15**	**26.5 days**
3	Preparation of Organic Chart / სტრუქტურის მოწესრ	Mon 6/8/15	Tue 6/9/15	2 days
4	Set the project team/ პროექტის შეკრება	Mon 6/8/15	Tue 6/16/15	7 days
5	Assignment of Site Manager/ საიტ მენეჯერის მეთვა	Mon 6/8/15	Fri 6/19/15	9 days
6	Obtaining Ensurance/ დაზღვევა	Fri 6/5/15	Fri 6/19/15	10.5 days
7	Preparation of Ring drawings/სარგებლის პრინტები	Mon 6/22/15	Mon 7/13/15	15 days
8	Prerequisits for actual porks are ready/ სამუშაოს დაწყებ	Fri 6/19/15	Mon 6/22/15	2 days
9	**Scaffolding/ხარაში**	**Mon 6/22/15**	**Tue 5/30/17**	**505 days?**
10	Improvement of the scuffolding on the drum	Wed 6/24/15	Wed 7/15/15	15.75 days?
11	Western Façade /დას. ფასადი	Mon 6/22/15	Fri 7/24/15	25 days
12	Northen Façade/ ჩრდ. ფასადი	Thu 7/16/15	Wed 8/19/15	25 days
13	Eastern façade/აღმ. ფასადი	Thu 1/21/16	Wed 2/10/16	15 days
14	Southern Façade upper/სამხ. ფასადი ზედა	Mon 7/11/16	Fri 8/12/16	25 days
15	Desmentling Dome / გუმბათზე მოხსნა	Mon 11/2/15	Mon 11/30/15	20 days
16	Dismentling on Northern/ჩრდილოეთზე მოხსნა	Wed 2/10/16	Tue 3/8/16	20 days
17	Dismentling on Eastern/აღმოსავლეთზე მოხსნა	Wed 8/31/16	Tue 9/27/16	20 days
18	Dismentling on Southern/სამხრეთზე მოხსნა	Wed 2/15/17	Tue 3/14/17	20 days
19	Dismentling on Western/მოხსნა დასავლეთზე	Fri 5/5/17	Tue 5/30/17	18 days
20	**Engeneering works/ საინჟ.სამუშაოები**	**Mon 7/20/15**	**Fri 10/30/15**	**74 days**
21	Installation of reinforsing ring around drum/არმატურის რ	Mon 7/20/15	Wed 9/30/15	2.59 mons
22	Installation of reinforsing bars in drum window openings/	Wed 9/30/15	Wed 10/28/15	1 mon
23	Intallation of monitoring system/მონიტორინგის სისტემ	Mon 10/5/15	Fri 10/30/15	1 mon
24	**Stone Conservation works/ქვის კონსერვაცია**	**Tue 6/23/15**	**Thu 5/4/17**	**485 days?**
25	**Dome/გუმბათი**	**Tue 6/23/15**	**Tue 9/8/15**	**54.5 days?**
26	Set out Stone conservation works on dome Upper 2	Tue 6/23/15	Wed 6/24/15	1.75 days
27	Set out of lowest part of the dome	Wed 7/8/15	Tue 7/28/15	14.75 days
28	Cleaning of spaces between the stones / ქვებს შორ	Thu 8/13/15	Fri 8/14/15	1 day?
29	**Cleaning of cement fillings /ცემენტით ამოვსებ**	**Fri 7/24/15**	**Fri 8/14/15**	**15.75 days?**
30	filling of big areas/დიდი ადგილები	Fri 7/24/15	Fri 8/14/15	15.75 days?
31	filling of small areas/მცირე ადგილები	Fri 7/24/15	Fri 8/14/15	15.75 days?
32	**Filliping up the joints and cracks between the m**	**Thu 6/25/15**	**Fri 8/14/15**	**36.75 days**
33	Filling of joints/ნაკერების	Thu 6/25/15	Fri 8/14/15	35.5 days
34	filling of cracks/ბზარების	Thu 6/25/15	Fri 8/14/15	35.5 days
35	**Restoration of lost stones with new ones/დაკარგ**	**Fri 7/24/15**	**Fri 8/14/15**	**15.75 days**
36	Preparation of stones/ქვის მომზადება.	Fri 7/24/15	Fri 8/14/15	15.75 days
37	Stone installation/მონტაჟი	Fri 7/24/15	Fri 8/14/15	15.75 days
38	**Consolidation of powdered and delaminated sto**	**Fri 7/24/15**	**Fri 8/14/15**	**15.75 days?**
39	Consolidation of powdered stones/გაფხვიერებუ	Fri 7/24/15	Fri 8/14/15	15.75 days?
40	Consolidation of delaminated stones/დელამინ	Fri 7/24/15	Fri 8/14/15	15.75 days?
41	Anchoring the stones (by so called micro-fiber rope)	Fri 7/24/15	Fri 8/14/15	15.75 days?
42	Anchoring the stones by glass fiber reinforcement, (	Fri 7/24/15	Fri 8/14/15	15.75 days?
43	**Consolidation of missed parts of the masonry / I**	**Wed 7/8/15**	**Fri 8/14/15**	**27.75 days**
44	By lime and pozzolanal/კირით და პოზოლანით	Wed 7/8/15	Fri 8/14/15	26.5 days
45	By Nano silicate and paraloid 72 ნანო სილიკა	Fri 7/24/15	Fri 8/14/15	14.5 days
46	Consolidation of micro-cracks მიკრობზარების კონს	Wed 7/8/15	Fri 8/14/15	26.5 days
47	**Cleaning of stone surface /ქვის ზედაპირის გაწმ**	**Fri 7/24/15**	**Tue 9/8/15**	**31.5 days**
48	Mechanical cleaning (vishab, blitz-fix, lancet) /	Fri 7/24/15	Tue 9/8/15	27.5 days
49	Cleaning with ammonium bicarbonate 5% solu	Fri 7/24/15	Tue 9/8/15	27.5 days
50	Treatment with Biocide ბიოციდით შეწამვლა	Thu 6/25/15	Fri 8/14/15	5.38 days?
51	Post-treatment patina cleaning/პატინის მოშორება	Thu 6/25/15	Tue 8/11/15	6 days
52	Works on Dome are completed/სამუშაოები გუმბათ	Tue 9/8/15	Tue 9/8/15	0 days
53	**Western Facade**	**Thu 8/13/15**	**Thu 5/4/17**	**448 days**
60	**Northern Facade**	**Fri 8/21/15**	**Tue 12/1/15**	**71 days**
107	**Eastern Façade**	**Fri 2/12/16**	**Mon 8/15/16**	**130.26 days**
134	**Southern Façade**	**Tue 8/16/16**	**Thu 12/1/16**	**77.13 days**
161	Project end	Wed 5/31/17	Wed 5/31/17	0 days


August 2015
September 2015
October 2015
7/24
8/19
9/30
9/30
10/5
6/23
7/28
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9/8
9/8
9/8
8/14
6/11
Project: gelati Project
Date: Fri 7/24/15
Task
Progress
Baseline
Milestone
Baseline Milestone
Summary
Rolled Up Task
Rolled Up Milestone
Baseline Summary
Rolled Up Baseline
Rolled Up Baseline Milestone
Rolled Up Progress
Split
Baseline Split
External Tasks
Project Summary
Group By Summary
Deadline
Page 2

Narrative on deviation from schedule

The small slippage from the scheduled progress is due to the delay of the start of the actual works caused by the need of the improvement of the existing scaffolding. At the same time because of the specifics of the conservation works for the proposed of the final methodology the International consultancy was needed. It was provided by Mr. Stefano Volta during June 27 – July 1, 2015. The drawings of the upper and middle levels of the dome had been elaborated and submitted on July 3, 2015. The schemes of actual works of the lowest level of the dome, calculations of full actual works and full list of the materials will be submitted at the beginning of the following reporting period. Thus the conservation works during the reporting period had been started only partially.

Resources (list of equipment, personnel, materials) on site

During the reporting period on site permanently are working Site Manager and 2 project groups: engineering and conservation. The engineering group 10 persons and conservation group 4 persons. At the same time had been conducted two missions of project management team to the site for technical meetings with Eptisa representatives. During the reporting period had also been conducted the onsite mission of International consultant Stefano Volta for the elaboration of the final methodology for stone conservation.

The main materials used during the reporting period are:

- Benzalconio cloruro
- Calce NHL5
- Pozzolana Romana

The materials onsite conditions had been requested on June 10, 2015 but not accepted yet.

Testing results and Quality Control

The conservation team prepared the tests of biocide treatment, mortar repairs, pointing joints and filling cracks. The test areas had been approved during the technical meeting on July 1, 2015.

The methodology of the stone conservation works had been elaborated with the consultations of Stefano Volta. The methodology and part of the materials had been submitted and approved by the Eptisa.

2. Financial Aspects

Form 2.

* Scanned version is attached

№	Works	Dimen.	Unit cost GEL	Works completed	Total GEL
1	2	3	5		6
1	**Improvement and Construction of the Scaffolding of the whole area of Facades/ხარაჩო**	m2	51.90	589.00	30569.10
	Stone Conservation works/ ქვის კონსერვაცია				
5	Cleaning of spaces between the stones / ქვებს შორის ცარ. ადგილების გასუფთ	m	7.00	185.38	1297.66
7	**Filliping up the joints and cracks between the masonry stones/ ნაკერების ამოვსება**				
7.1	Filling of joints/ნაკერების	m	70.50	184.00	12972.00
7.2	filling of cracks/ბზარების	m	70.50	1.38	97.29
12.1	By lime and pozzolana/კირით და პოცოლონათი	m2	146.50	1.89	276.89
13	**Consolidation of micro-cracks მიკრობზარების კონსოლიდაცია**	m	198.50	6.30	1250.55
15	**Treatment with Biocide / ბიოციდით შეწამლვა**	m2	3.50	428.00	1498.00
16	**Post-treatment patina cleaning/ პატინის მოშორება**	m2	0.80	3.49	2.79
	Totals				**47964**

Proposed and Approved Variation Orders Description and Financial Aspects

During the reporting period no variation orders had been proposed or approved

3. Construction Issues

At the starting stage of the project had been aroused the issue of existing scaffolding on the dome of the church. The inspection showed up that it doesn't fully meet the requirements. The measures for the improvement of the existing scaffolding on the drum had been undertaker during the period June 24 – July 15, 2015. In particular: on tower at the east end of the church had had added braces and shore, strengthened by the diagonal bars. The railing on two levels: knee and waist had been added to the whole perimeter of the dome scaffolding.

The electricity supply on the scaffolding had been improved and adjusted to the outdoor conditions.

The construction of the scaffolding on the west and north (western part) façades as well as protecting passage on the west façade of the church had been started in accordance to the drawing approved by the Eptisa by the letter EPR/IRDO II-1166 from 29.06.15. So, for the next reporting period no construction issues are foreseen.

4. Health, Safety and Environment Aspects

At the beginning of the project implementation the project team management attended the seminar on safety provided by the MDF safety manager. In accordance to the gained information the safety norms for the project had been elaborated. All workers had been equipped with special outfits: special uniforms, shoes and hamlets. The safety manager had been assigned onsite: Irakli Kenchadze who is assisted by George Navrozashvili, restoration group and Tariel Kervalishvili, engineering group. The regular daily control of the safety norms and working process are conducted.
The insurance policies had been obtained for all group members in accordance to the requirements of the contractor.

During the reporting period no site/work related accident had been occurred.

The environmental issues are under control. The restoration group has no construction garbage, most of the wastes, such as removed mortar, stones etc are kept by the group for further use in restoration

process. The minor wastes such as cotton, gloves etc. are discarded in the special municipal or monastery bunkers.

5. Summary and conclusions

Summary conclusions

The start of the project revealed unexpected technical problems, i.e. scaffolding defects, need of additional documentation and detailed methodology for the conservation, which caused some delay of the start of Actual works. This caused the slippage from the initial schedule and partial performance of the conservation works, but for the end of the reporting period all mentioned issues had been resolved and from the beginning of the next months the works will gain the full scale.

During the reporting period the following works had been conducted:
Construction of scaffolding: 589 m^2
Cleaning of spaces between the stones – 185.38 m
Filling of joints – 184 m
Filling of cracks – 1.38
Consolidation of missed part of the masonry by lime and pozzolana – 1.89 m^2
Consolidation of micro-cracks – 6.3 m.
Treatment with biocide – 428 m^2
Post-treatment cleaning – 3.49 m^2

Expected works for the next month

During the next month the construction of the scaffolding on the western façade will be accomplished. The arrangement of the scaffolding on the western part of the Southern facade will be also started.
Conservation works on the drum of the church will be accomplished. The restoration team will move to western and northern facades.

Annex 1. Photo documentation

Photo documentation

Church of the Virgin at Gelati Monastery

Contracts #: IDA/RDPII/CW/DC/11-2015

Monthly Progress Report #1
Reporting Period: May 29, 2015 - July 22, 2015

Safety

1-2. Staff equipment

Works Implemented

Scaffolding

3-4. Improvement of existing scaffolding on the Dome

5-6. Improvement of existing scaffolding on the Dome

7-8. Construction of Scaffolding on the Western facade

9-10. Construction of Scaffolding on the Western facade

11-12. Construction of Scaffolding on the Northern facade

Stone Conservation

13-14. Elaboration of Stone Conservation Methodology with prof. Stefano Volta

15-16. Treatment with Biocide

17-18. Cleaning of spaces between stones

19-20. Injection with lime solution

21-22. Filling of Joints, Drum Upper level, Northern side

23-24. Filling of Joints, Drum Upper level, Southern side

25-26. Filling of Joints, Drum Upper level, Eastern side

27-29. Filling of Joints, Drum Upper level, Uppers side of the window, Southern side

30-31. Filling of Joints, Drum Upper level, Northern side

32-33. Filling of Joints & Consolidation of missed parts of masonry by lime and pozzolana, Drum Upper level, North-Western side

34-35. Filling of Joints & Consolidation of missed parts of masonry by lime and pozzolana

Drum Upper level, Southern side

36-37. Consolidation of missed parts of masonry by lime and pozzolana, Drum Upper level

38-39. Consolidation of micro-cracks, Drum Upper level, South-west side

40-41. Consolidation of missed parts of masonry by lime and pozzolana. Niorthern side

Seminars & Meetings

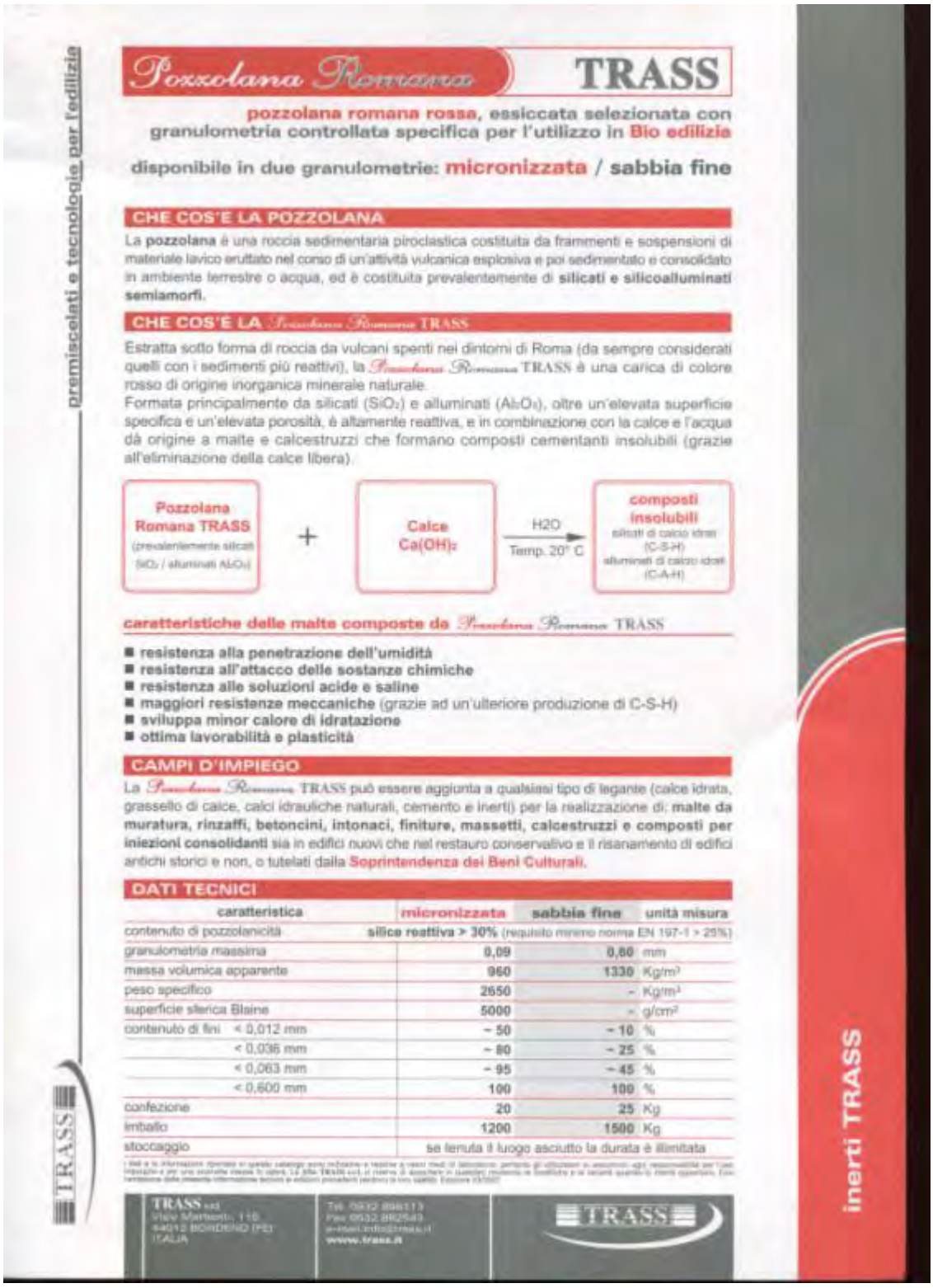
42-43. Seminar on safety provided by the MDF at GACC

44-45. Kik-off meeting June 5, 2015

46-47. Technical Meeting June 22, 2015

48-49. Technical meeting July 6, 2015

Annex 2. Material Certification for the Month



premiscelati e tecnologie per l'edilizia

Pozzolana Romana TRASS

pozzolana romana rossa, essiccata selezionata con granulometria controllata specifica per l'utilizzo in Bio edilizia

disponibile in due granulometrie: micronizzata / sabbia fine

CHE COS'E LA POZZOLANA

La **pozzolana** è una roccia sedimentaria piroclastica costituita da frammenti e sospensioni di materiale lavico eruttato nel corso di un'attività vulcanica esplosiva e poi sedimentato e consolidato in ambiente terrestre o acqua, ed è costituita prevalentemente di **silicati e silicoalluminati semiamorfi.**

CHE COS'E LA Pozzolana Romana TRASS

Estratta sotto forma di roccia da vulcani spenti nei dintorni di Roma (da sempre considerati quelli con i sedimenti più reattivi), la Pozzolana Romana TRASS è una carica di colore rosso di origine inorganica minerale naturale.
Formata principalmente da silicati (SiO_2) e alluminati (Al_2O_3), oltre un'elevata superficie specifica e un'elevata porosità, è altamente reattiva, e in combinazione con la calce e l'acqua dà origine a malte e calcestruzzi che formano composti cementanti insolubili (grazie all'eliminazione della calce libera).

Pozzolana Romana TRASS (prevalentemente silicati (SiO_2) / alluminati (Al_2O_3)) + **Calce $Ca(OH)_2$** —H_2O, Temp. 20° C→ **composti insolubili** silicati di calcio idrati (C-S-H) alluminati di calcio idrati (C-A-H)

caratteristiche delle malte composte da Pozzolana Romana TRASS

- **resistenza alla penetrazione dell'umidità**
- **resistenza all'attacco delle sostanze chimiche**
- **resistenza alle soluzioni acide e saline**
- **maggiori resistenze meccaniche** (grazie ad un'ulteriore produzione di C-S-H)
- **sviluppa minor calore di idratazione**
- **ottima lavorabilità e plasticità**

CAMPI D'IMPIEGO

La Pozzolana Romana TRASS può essere aggiunta a qualsiasi tipo di legante (calce idrata, grassello di calce, calci idrauliche naturali, cemento e inerti) per la realizzazione di: **malte da muratura, rinzaffi, betoncini, intonaci, finiture, massetti, calcestruzzi e composti per iniezioni consolidanti** sia in edifici nuovi che nel restauro conservativo e il risanamento di edifici antichi storici e non, o tutelati dalla **Soprintendenza dei Beni Culturali.**

DATI TECNICI

caratteristica	micronizzata	sabbia fine	unità misura
contenuto di pozzolanicità	**silice reattiva > 30%** (requisito minimo norma EN 197-1 > 25%)		
granulometria massima	0,09	0,60	mm
massa volumica apparente	960	1330	Kg/m³
peso specifico	2650	-	Kg/m³
superficie slerica Blaine	5000	-	g/cm²
contenuto di fini < 0,012 mm	~ 50	~ 10	%
< 0,036 mm	~ 80	~ 25	%
< 0,063 mm	~ 95	~ 45	%
< 0,600 mm	100	100	%
confezione	20	25	Kg
imballo	1200	1500	Kg
stoccaggio	se tenuta il luogo asciutto la durata è illimitata		

TRASS srl
Viale Martiri n. 110
44012 BONDENO (FE)
ITALIA

Tel. 0532 898113
Fax 0532 892649
e-mail info@trass.it
www.trass.it

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BENZALCONIO CLORURO

Il BENZALCONIO CLORURO è un potente disinfettante-germicida, lo spettro d'azione del quale include batteri Gram+, Gram-, lieviti e microflora in genere, incluse le alghe.
L'effetto del BENZALCONIO CLORURO nel controllo algale non è persistente.

Il BENZALCONIO CLORURO deve esser usato in soluzione acquosa o in formulazione con altri prodotti, ad esempio come germicida in colle animali o pappe per rifoderatura di dipinti.

CARATTERISTICHE CHIMICO-FISICHE

Aspetto	liquido oleoso praticamente incoloro o leggermente giallastro
Peso specifico	980 g/l
pH soluzione 1%	7 - 8
Stabilità al pH	2 - 12
Solubilità	solubile in ogni proporzione in acqua, alcool etilico, metilico, isopropilico, glicoli, chetoni.
Stabilità	perfettamente stabile al magazzinaggio. tende a congelare in forma reversibile senza subire alterazioni alle caratteristiche.
Tossicità	LD 50 orale ratto 450 mg/kg

USO E METODOLOGIA
BENZALCONIO CLORURO si usa diluito in acqua allo 0,5-2 % ossia 5-20 ml per litro.
Viene impiegato per la disinfezione e pulizia di superfici in vetro, ceramica, marmo, metalli, gomme naturali sintetiche, fibre tessili, carta e anche per la disinfezione di locali.
Impiegato allo 2% permette di devitalizzare fioriture fungine ed algali su materiali lapidei.
La sua azione non controlla però nel tempo la microflora e viene consigliato, a restauro finito, un trattamento a solvente con ALGOPHASE che permane attivo per alcuni anni..
Può esser aggiunto a tensioattivi non ionici per avere anche effetto detergente.
I materiali trattati devono venir lasciati asciugare naturalmente.

PRECAUZIONI
Praticamente non tossico per assorbimento cutaneo. Leggermente irritante se a contatto con gli occhi.
Nocivo per ingestione. Si consigliano le comuni norme di precauzione.

CALCE TCS passione materica

dalla natura l'unicità
dalla storia l'esempio
dall'esperienza il sapere

...la nostra formula per la tua eccellenza

Calce NHL 5

Calce naturale pura propriamente idraulica ad alta resistenza

Descrizione

LA NHL5 è una vera **CALCE IDRAULICA NATURALE puradi colore bianco** prodotta mediante cottura in forni verticali a temperature inferiori ai 1250°C di soli calcari silicei senza aggiunte di argilla o altre materie prime, e ridotta in polvere mediante il solo spegnimento dell'ossido di calcio, **senza aggiunta di materiali pozzolanici, scorie d'altoforno, ceneri volanti o leganti idraulici di qualsiasi natura (clinker, cemento ecc.)**, conforme alla Norma **UNI EN 459-1**

Caratteristiche

La calce idraulica naturale pura **NHL 5** è:

ECOLOGICA, BIOCOMPATIBILE, REVERSIBILE: l'assenza di prodotti chimici, la natura totalmente minerale e naturale dei componenti, l'efficienza della combustione del carbone con residui minimi e bassissimi contenuti di solfati ne garantiscono la purezza (quasi totale assenza di sali idrosolubili) la non tossicità, la non nocività, l'assenza di emissioni di composti organici volatili (VOCs), l'imputrescibilità, l'assenza di emanazione di gas tossici

da combustione e la totale riciclabilità nel più totale rispetto dell'uomo e dell'ambiente.

VERSATILE: permette di operare - in perfetta affinità fisica, funzionale ed estetica e di conseguenza con quella perfetta coerenza dettata dall'antica regola dell'arte del costruire -, oltre che nel restauro e nel recupero dell'edilizia storico-monumentale anche in quella dell'edilizia di nuova edificazione e bio-compatibile.

FACILE: facilmente lavorabile senza dover aggiungere additivi di sintesi chimica. Rilavorabile nell'arco delle 24 ore successive all'impasto.

VELOCE: grazie all'elevato indice di idraulicità che determina elevate resistenze meccaniche e una presa in tempi brevi, permette modi di lavorazione compatibili con le conoscenze e le capacità delle maestranze presenti sui cantieri con tempi di esecuzione del tutto consoni alle esigenze dei nostri tempi.

LEGGERA: la microporosità che caratterizza la struttura morfologica delle calci ne determina il basso peso specifico.

RESISTENTE: L' elevato contenuto di silice solubile ne determina lo sviluppo di elevate resistenze meccaniche in tempi brevi, fermo restando le caratteristiche peculiari della calce quali il lento processo di indurimento, lo sviluppo continuo nel tempo delle resistenze meccaniche, il basso modulo elastico e un'adesione superiore alla coesione, caratteristiche - quest'ultime due in particolare - che caratterizzano l'elasticità dei manufatti ottenuti con l'impiego di questa calce.

TRASPIRANTE: La microporosità aperta, la bassissima resistenza alla diffusione del vapore e l'elevata permeabilità al vapore coniugate ad un ottimo indice di asciugamento, permettono lo smaltimento totale dell'acqua assorbita sia per capillarità che per immersione e la sua asciugatura in brevissimo tempo, a differenza dei cementi e dei leganti idraulici artificiali che trattengono sia l'acqua d'impasto, sia quella meteorica sia quella derivata dall'umidità relativa dell'aria con notevole svantaggio per l'isolamento termico e il comfort ambientale degli edifici ove vengono applicati.

Permette di evitare tutti i problemi di degrado cagionati dall'umidità "da condensa".

DEUMIDIFICANTE: data l'elevatissima porosità, sia finale sia accessibile all'acqua, l'elevata permeabilità al vapore, la spiccata capacità d'assorbire per capillarità l'acqua presente nelle murature e di rilasciarla immediatamente verso l'ambiente, unitamente ad un ottimo indice di asciugamento, svolge un'ottima azione di controllo della risalita capillare della medesima, riducendone la quantità e la pressione.

COIBENTE: l'elevatissima microporosità caratterizzante la struttura morfologica della calce- nei pori è contenuta un'elevata quantità di aria ferma, l'isolante per eccellenza, - gli conferisce una certa capacità isolante che associata a quella di particolari materiali inerti con capacità isolanti contribuisce alla formazione di manufatti aventi spiccate caratteristiche isolanti sia termiche, sia acustiche.

INSENSIBILE ALLE MUFFE: La calce "l'antimuffa naturale per eccellenza" con la sua elevatissima basicità (ph > 12,5) garantisce - negli ambienti interni - l'inattaccabilità delle superfici sulle quali è stata applicata da parte degli agenti biodeteriogeni e la loro proliferazione.

ANTIBATTERICA: Crea condizioni ostili alla sopravvivenza dei microrganismi patogeni (batteri, miceti, virus) che sono causa di infezioni, malattie o reazioni allergiche.

DISINFETTANTE: l'elevato Ph basico disinfetta e risana i supporti sui quali viene applicata.

E' UNA GARANZIA PER LA SALUBRITA' E IL BENESSERE DEI CONTESTI ABITATIVI.

Unitamente ad un' adeguata ventilazione dei locali che favorisca l'evaporazione cutanea e lo smaltimento dell'umidità in eccesso eventualmente presente nel locale:

-Scongiura la formazione di dannose condense e conseguente proliferazione di agenti biodeteriogeni (muffe), regolandone nel contempo il tenore di anidride carbonica e di umidità ambientale.

-Origina superfici asciutte che nel regolare il gradiente dell'U.R. dell'aria determinano una maggior sensazione di benessere e forniscono un contributo essenziale alla creazione d'ambienti asciutti.

-Ambienti asciutti e di conseguenza salubri che evitano l'insorgenza di stati ipertensivi, depressivi, di ansia, di nausea, che generano situazioni di fastidio e di intolleranza (derivati invece dalla prolungata permanenza in ambienti umidi) dove gli eventuali microrganismi patogeni (batteri, miceti, virus) che sono immessi nelle nostre abitazioni, causa di infezioni, malattie o reazioni allergiche, trovano condizioni ostili alla loro sopravvivenza.

RICICLABILE: Essendo totalmente minerale non costituisce "rifiuto speciale" e opportunamente frantumato ed eventualmente vagliato, può essere impiegato nella formazione di nuovi manufatti.

Dati tecnici

Dati caratteristici generali

- **TIPO DI PRODOTTO (UNI-EN 459.1):** Calce idraulica naturale NHL 5
- **ASPETTO DEL PRODOTTO:** Polvere
- **COLORE:** Bianco - indice di bianchezza 69
- **ODORE:** Inodore
- **MASSA VOLUMICA APPARENTE (g/cm³) :** 0,77 circa
- **FINEZZA 90 micron:** 3,12%
- **FINEZZA 200 micron:** 0,08%
- **PH IN SOLUZIONE ACQUOSA:** Basico ≥ 12,5
- **CALCE LIBERA Ca(OH)2 :** 19,73% circa
- **ESPANSIONE:** 0,40 mm
- **RESISTENZA A COMPRESSIONE 7GG:** 5,50 Mpa
- **RESISTENZA A TRAZIONE 7GG:** 1,25 Mpa
- **RESISTENZA A COMPRESSIONE 28GG:** 10,20 Mpa
- **RESISTENZA A TRAZIONE 28GG:** 3,50 Mpa
- **PENETRAZIONE:** 22,6 mm
- **TEMPO DI PRESA:** 3,6 h.
- **CONFEZIONE:** Sacco da kg 30
- **PALLET (40 sacchi):** 1200 kg
- **CONSERVAZIONE:** Fino a 16 - 24 mesi nella confezione originale in luogo asciutto.

Analisi chimica

- **PERDITA AL FUOCO:** 16%
- **CaO:** 59%
- **SiO2 insolubile:** 5,6%
- **SiO2 combinato:** 15%
- **Al2O3:** 1,92%
- **Fe2O3:** 0,57%
- **SO3:** 0,41%
- **MgO:** 1,01%
- **MnO:** 0,02%
- **TiO2:** 0,18%
- **K2O:** 0,21%
- **Na2O:** 0,07%

Impieghi

Consigliata in tutti quei lavori dove unitamente alla plasticità degli impasti e alla facilità di posa, si vogliono ottenere delle spiccate prestazioni sia in termini di presa sia in termini di resistenze meccaniche finali.

Specifica - miscelata con gli inerti più appropriati in funzione del lavoro da eseguirsi - per la formazione di:

- malte di allettamento per murature in pietra, tufo, laterizio (mattoni pieni di recupero o di nuova manifattura profilati o fatti a mano, blocchi forati, termolaterizi, ecc);
- Malte d'allettamento per pavimentazioni in pietra naturale e tavelle di cotto di recupero o di nuova manifattura fatti a mano;
- Malte per rinzaffi consolidanti semplici o armati con reti in fibra di vetro o metalliche in acciaio inox o zincate;
- Malte per intonaci strutturali;
- Malte per intonaci tradizionali;
- Malte per intonaci rasopietra e per stuccature;
- Malte per intonaci deumidificanti;
- Malte per intonaci termici;
- Composti per riempimenti e consolidamenti strutturali;
- Conglomerati per massetti e riempimenti;

* Conglomerati per la formazione di pavimenti in battuto di cocciopesto, seminati alla veneziana, ecc.

Particolarmente indicata nelle costruzioni e nei consolidamenti di strutture in ambienti marini e a diretto contatto con l'acqua anche di mare, oltre che in tutti quei lavori esposti all'azione degli agenti atmosferici ed alle intemperie.

Applicazione

Composizione delle malte
Importanza del rapporto legante-aggregato

Il corretto rapporto volumetrico o in peso tra il legante e gli aggregati è un aspetto molto importante nelle malte sia allo stato plastico - ai fini della facilità di applicazione e lavorazione - sia per quanto concerne le loro prestazioni fisico-meccanico finali, la loro stabilità e resistenza agli agenti atmosferici nel tempo.

Natura e qualità dell'aggregato

Altrettanto importante risulta essere la qualità dell'aggregato che potrà essere di natura silicea, carbonatica, silicatica, vulcanica o di coccio macinato.

Tali inerti, quale sia la loro origine - estratti da cave fluviali o ottenuti per "macinazione"- devono essere lavati e risultare privi di qualsiasi materia deliquescente (argilla, limo ecc), vagliati con un arco granulometrico continuo e granulometria in funzione dell'opera che si deve eseguire.

Per malte da rinzaffo si consiglia l'impiego di aggregati con granulometria massima non inferiore al 2,5-3 mm.

Per quelle da intonaco rustico di fondo si consiglia l'impiego di aggregati con granulometria massima non inferiore al 1,6-2 mm.

Per quelle da allettamento si consiglia l'impiego di aggregati con granulometria massima non inferiore al 1,6 mm.

Nei conglomerati per la formazione dei massetti di sottofondo si consiglia l'impiego di aggregati con granulometria massima non inferiore ai 3,5-4 mm.

In quelli per la formazione dei pavimenti in battuto di cocciopesto si consiglia l'impiego di aggregati con curva granulometrica fino a 10 mm e oltre.

Sono assolutamente da evitare monogranulari (granulometria accentrata su 1 o 2 vagli).

Fondamentale risulta infine la scelta relativa alla natura dell' aggregato in funzione del lavoro che si deve eseguire e delle problematiche di carattere strutturale, ambientale, meteorologico con cui ci si deve confrontare.

Resa volumetrica delle calci idrauliche naturali di Saint-Astier

In considerazione del basso peso specifico delle calci NHL di Saint-Astier, la quantità di legante necessaria alla produzione della malta è decisamente ridotta.

Questo significa che, a parità di volume di malta prodotta, la quantità di calce NHL impiegata risulterà essere significativamente inferiore a quella di altri leganti (cementi, leganti idraulici per costruzioni, grasselli di calce, ecc.).

Consumo di calce NHL 5 per il confezionamento di 1 mc di malta per:

* **Malte di allettamento per murature in pietra, tufo, laterizio (mattoni pieni di recupero o di nuova manifattura profilati o fatti a mano, blocchi forati, termolaterizi, ecc);**
  Kg 300 - 350 circa (pari a 1 sacco di calce da kg 30 per 5 latte di sabbia da lt 20 - corrispondente a nr 3 sacchi per betoniera da lt 300, nr 2,5 sacchi per betoniera da lt 250, nr 1,5-2 sacchi per betoniera da lt 200)
* **Malte di allettamento per pavimentazioni in pietra naturale e tavelle di cotto di recupero o di nuova manifattura fatti a mano;**
  Kg 300 - 350 circa (pari a 1 sacco di calce da kg 30 per 5 latte di sabbia da lt 20 - corrispondente a nr 3 sacchi per betoniera da lt 300, nr 2,5 sacchi per betoniera da lt 250, nr 1,5-2 sacchi per betoniera da lt 200)
* **Malte per rinzaffi consolidanti semplici o armati con reti in fibra di vetro o metalliche in acciaio inox o zincate;**
  Kg 350 - 400 circa (pari a 1 sacco di calce da kg 30 per 4 latte di sabbia da lt 20 - corrispondente a nr 3,2/3,3 sacchi per betoniera da lt 300, nr 2,5/2,7 sacchi per betoniera da lt 250, nr 1,75-2 sacchi per betoniera da lt 200)
* **Malte per intonaci strutturali;**
  Kg 350 - 400 circa (pari a 1 sacco di calce da kg 30 per 4 latte di sabbia da lt 20 - corrispondente a nr 3,2/3,3 sacchi per betoniera da lt 300, nr 2,5/2,7 sacchi per betoniera da lt 250, nr 1,75-2 sacchi per

betoniera da lt 200)

- **Malte per intonaci rustici;**
  Kg 280 - 300 circa (pari a 1 sacco di calce da kg 30 per 6 latte di sabbia da lt 20 - corrispondente a nr 2,5 sacchi per betoniera da lt 300, nr 2 sacchi per betoniera da lt 250, nr 1,5 sacchi per betoniera da lt 200)
- **Malte per intonaci rasopietra e per stuccature ;**
  Kg 280 - 300 circa (pari a 1 sacco di calce da kg 30 per 6 latte di sabbia da lt 20 - corrispondente a nr 2,5 sacchi per betoniera da lt 300, nr 2 sacchi per betoniera da lt 250, nr 1,5 sacchi per betoniera da lt 200)
- **Malte per intonaci deumidificanti;**
  Quantità in funzione del tipo e della natura dell'aggregato impiegato, possibile fino al rapporto di 1 a 1 in peso.
- **Malte per intonaci termici;**
  Quantità in funzione del tipo e della natura dell'aggregato impiegato, possibile fino al rapporto di 1 a 1 in peso.
- **Conglomerati per massetti di sottofondo e riempimenti;**
  Quantità in funzione del tipo e della natura dell'aggregato impiegato, possibile fino al rapporto di 1 a 1 in peso.
- **Conglomerati per la formazione di pavimenti in battuto di cocciopesto, seminati alla veneziana, ecc.**
  Kg 300 - 350 circa (pari a 1 sacco di calce da kg 30 per 5 latte di inerte da lt 20 - corrispondente a nr 3 sacchi per betoniera da lt 300, nr 2,5 sacchi per betoniera da lt 250, nr 1,5-2 sacchi per betoniera da lt 200)

Modalità d'impasto

Manualmente o meccanicamente con betoniera versando prima l'acqua aggiungendo gradatamente la sabbia e il legante. Non aggiungere troppa acqua per ottenere velocemente la plasticità desiderata. Per migliorare ulteriormente la plasticità e la lavorabilità finale della malta lasciare mescolare l'impasto per qualche minuto in più lasciando riposare la miscela così ottenuta per una decina di minuti prima del suo impiego.

Acqua d'impasto variabile dal 20 fino al 100% sul peso della miscela, in funzione della natura e granulometria dell' aggregato, se il medesimo è fornito asciutto o bagnato e del tipo di lavoro che si deve eseguire.

Capitolato

Esecuzione di.. superfici verticali, orizzontali ed oblique, interne ed esterne **con malta biocompatibilepriva di cemento o dei composti appartenenti al gruppo del clinker**, confezionata in cantiere e composta da circa kg.............. di sola **calce idraulica naturale pura, di colore bianco**, ottenuta dalla calcinazione a temperature inferiori ai 1250°C di calcari silicei puri con successiva riduzione in polvere mediante il solo spegnimento dell'ossido di calcio, **senza aggiunta dimateriali pozzolanici, scorie d'altoforno, ceneri volanti o leganti idraulici di qualsiasi natura (clinker, cemento ecc.)** con un contenuto di calce libera non inferiore al 19%, una densità di 0,77 g/cm³, una resistenza a compressione a 28 gg non inferiore a 10 Mpa, identificata con la sigla **NHL 5** conforme alla norma **UNI EN 459-1 (CALCE NHL 5 TCS)** in ragione di 1 m³ di sabbia silicea/carbonatica/silicatica/vulcanica/cocciopesto, dalla granulometria di ...... mm, lavata priva di qualsiasi materia deliquescente.

AL M² €____________________

Avvertenze

Non applicare con temperature inferiori ai + 5° C o superiori a + 32° C del supporto e dell'aria. Ad applicazione avvenuta evitare forti insolazioni e, nel caso, tenere la superficie inumidita per evitare veloci perdite d'acqua con possibili fenomeni di spolveramento.

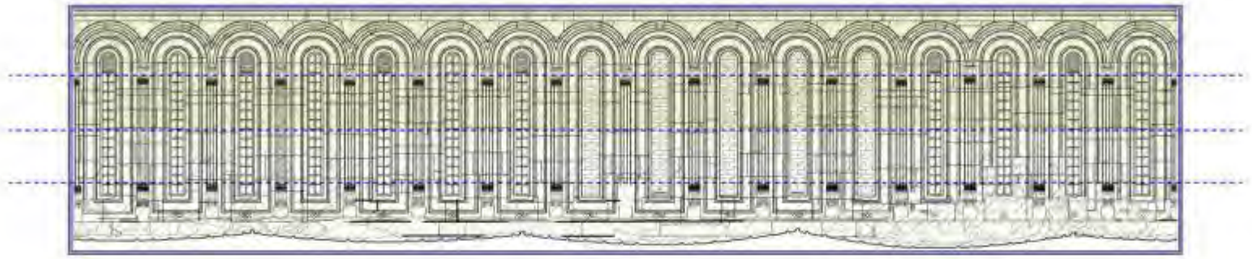
Conservare il prodotto in luogo asciutto ed al riparo dalla pioggia.

L'introduzione negli impasti di qualsiasi dose di cemento comprometterà la qualità dei manufatti e la bontà dei risultati. I dati riportati si riferiscono a valori medi riscontrati nel corso di produzione ed alle conoscenze tecniche ed applicative in nostro possesso e sono fornite per favorire l'uso più appropriato del prodotto.
Le indicazioni riportate - non essendo la nostra società l'esecutore dei lavori e non potendo intervenire direttamente sulle condizioni dei cantieri e sulle modalità di esecuzione delle opere - sono da ritenersi di carattere indicativo e generale, pertanto non vincolante per la medesima.

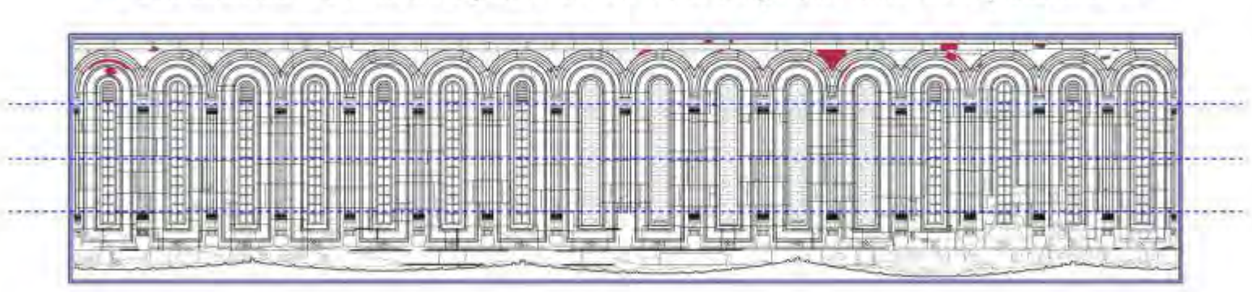
In merito si consiglia l'esecuzione di una prova pratica preventiva al fine di verificare l'idoneità del prodotto relativamente all'impiego previsto ed al suo consumo.
La società si riserva di apportare in qualsiasi momento e senza preavviso le modifiche che riterrà necessarie. Per ulteriori informazioni e dimostrazioni pratiche relative ai prodotti consultare il ns. servizio tecnico.

Annex 3. Schemes of conducted conservation works

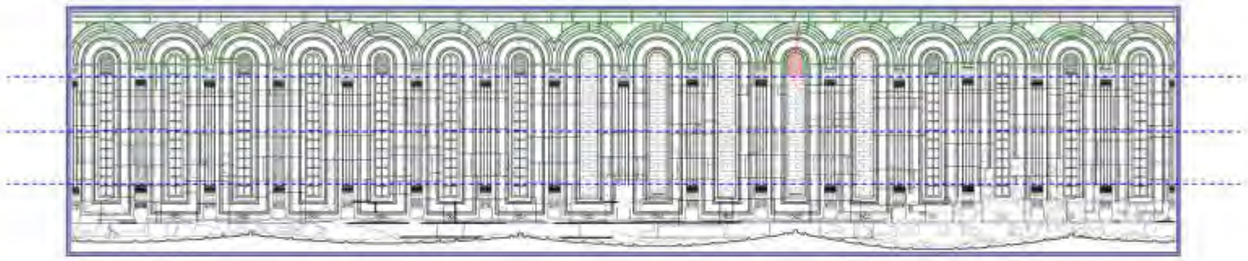
Treatment with Biocide



Consolidation of missed parts of the masonry with lime and pozzolana



Filling up the Joints and Cracks Between the Masonry Stones; Consolidation of Microcracks



Amount of work realized

Treatment with biocide : 428m^2

Post-treatment patina cleaning: 3.49 m^2

Consolidation of missed parts of the masonry with lime and pozzolana : 1.89 m^2

Cleaning of spaces between the stones - 185.38 m

Filling of joints: 184 m

Filling of Cracks: 1.38 m

Consolidation of microcracks: 6.3 m

LEGENDA

- Treatment with biocide
- Consolidation of missed parts of the masonry with lime and pozzolana
- Filling of joints
- Filling of Cracks
- Consolidation of microcracks

Georgian Arts and Culture Center
7, Niko Nikoladze str., Tbilisi, Georgia
Tel: 995-32-2931335; e-mail: gacc@gaccgeorgia.org

Project title:

Preservation Measures for Gelati Monastery Cultural Heritage Site

Restoration of Architectural Structure of the Church of the Virgin at Gelati Monastery

Contracts #: IDA/RDPII/CW/DC/11-2015

Monthly Progress Report #1
Reporting Period: August 24, 2015 - October 22, 2015

Date: October 24, 2015

Table of Contents:

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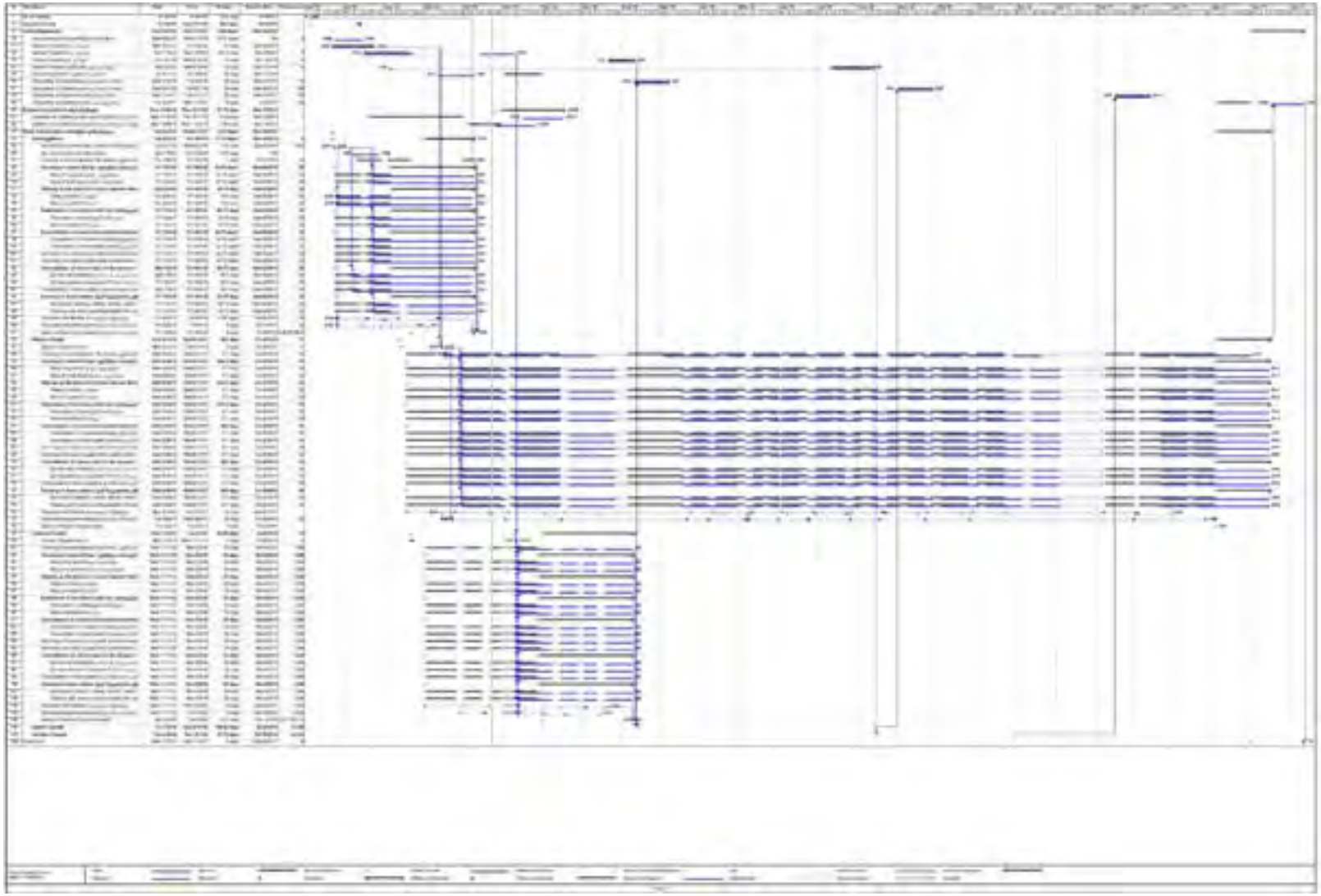
1. Introduction and Background Information

Contract IDA/RDPII/CW/DC/11-2015 for Preservation Measures for Gelati Monastery Cultural Heritage Site total cost is 985209.75 (Nine Hundred Eighty Five Thousand Two Hundred Nine and 75/100). The contract entered into force on May 29, 2015. The date of completion is May 25, 2017.

The financing institution is: The World Bank – International Development Association (IDA)
The Employer: Municipal Development Fund of Georgia
The Contractor: Georgian Arts and Culture Center
Project Manager: Eptisa Servicios de Ingenieria
There are no changes in Project team structure. For details see submitted organic chart.
Key persons: The director of the project is Mrs. Mariam Dvalishvili, director of the Georgian Arts and Culture Center. The scientific manager of the project Mr. Kakha Trapaidze and head of the conservation division Mrs. Nana Kuprashvili. Ioseb Kenchadze is assigned as a site manager.

2.Works Accomplishments

Scheduled Progress & Actual Progress



Resources (list of equipment, personnel, materials) on site

During the reporting period on site permanently are working Site Manager and 2 project groups: engineering and conservation. The engineering group 4 persons and conservation group 9 persons. During the reporting period had been conducted 1 onsite technical meetings.

The certificates of the materials used during the reporting period see in the attachment 2

Testing results and Quality Control

The testing of methodology had been conducted during the previous reporting period.

2. Financial Aspects

Form 2.

* Scanned version is attached

Proposed and Approved Variation Orders Description and Financial Aspects

The changes in the BOQ for the scaffolding, engineering works and conservation works on Dome and Western Façade had been submitted on October 10, 2015.

The changes in the conservation works were caused by the examination of the actual situation from the scaffolding and elaboration of the methodology together with the International consultant Stefano Volta and representatives of EPTISA. Some works planed on the initial stage are not needed while there are some new activities introduced by the approved methodology. Financially the changes caused increase of the budget by 36610.97 GEL.

Another issue is the scaffolding. As reported in the previous progress report the overall quantity of the scaffolding had been increased. The detailed description of variation had been submitted on October 19, 2015.

The slight changes had occurred in the construction of the reinforcement ring. The horizontal bars in the window openings are removed from the design while arrangement of isolation layer

of the ring had been introduced as an additional activity. The material certificates and variation details had been submitted on October 19, 2015.

3. Construction Issues

No specific construction issues were faced during the reporting period

4. Health, Safety and Environment Aspects

At the beginning of the project implementation the project team management attended the seminar on safety provided by the MDF safety manager. In accordance to the gained information the safety norms for the project had been elaborated. All workers had been equipped with special outfits: special uniforms, shoes and hamlets. The safety manager had been assigned onsite: Ioseb Kenchadze who is assisted by George Navrozashvili, restoration group and Tariel Kervalishvili, engineering group. The regular daily control of the safety norms and working process are conducted.

The insurance policies had been obtained for all group members in accordance to the requirements of the contractor.

During the reporting period no site/work related accident had been occurred.

The environmental issues are under control. The restoration group has no construction garbage, most of the wastes, such as removed mortar, stones etc are kept by the group for further use in restoration process. The minor wastes such as cotton, gloves etc. are discarded in the special municipal or monastery bunkers.

5. Summary and conclusions

Summary conclusions

During the reporting period all works had been conducted in full scales. In particular the amounts are as follows

	Dome		Price	Quantity	Total
	Works from initial BOQ				
1	Cleaning of spaces between the stones / ქვებს შორის ცარიელი ადგილების გამოწმენდა	m	7.00	49.29	345.03
2	*Filling of joints / ნაკერების ამოვსება*	*m*	70.50	5.79	408.19
3	*filling of cracks / ბზარების ამოვსება*	*m*	70.50	124.81	8799.11
4	Mechanical cleaning (vishab, blitz-fix, lancet) / მექანიკური წმენდა	m2	37.45	200.70	7516.22
5	Post-treatment patina cleaning / პატინის მოშორება	m2	0.80	43.02	34.42
	Works not included in initial BOQ				
6	injectionof the joints/ ნაკერების ინექტირება*	m	77.50	1.73	134.08
7	injection the spaces / ბზარებისა და მიკრობზარების ინექტირება	m	77.50	3.89	301.48
8	Installation of anchors / ანკერის დამონტაჟება	unit	465.00	5.00	2325.00
9	Preparation of carcas / კარკასის მომზადება	m2	93.00	0.61	56.73
10	Reconstruction by lime mortar / რეკონსტრუქცია კირის ხსნარით	m2	178.25	0.61	108.73
11	Cleaning of the old fillings / ძველი შევსებების გაწმენდა და შეცვლა კირის ხსნარით	m2	232.50	3.50	813.75
	Subtotal dome				**20842.72**

	West Façade		Price	Quantity	Total
	Works from initial BOQ				
1	Cleaning of spaces between the stones / ქვებს შორის ცარიელი ადგილების გამოწმენდა	m	7.00	206.34	1444.38
2	*Filling of joints / ნაკერების ამოვსება*	*m*	70.50	197.78	13943.49
3	*filling of cracks / ბზარების ამოვსება*	*m*	70.50	6.86	483.63
4	*Reconstruction of missing parts of the masonry with lime mortar / sapire wyobis nakluli adgilebis rekonstruqcia kiriT*	*m2*	146.50	21.32	3123.38
5	Treatment with biocide	m2	3.50	787.69	2756.93
	Works not included in initial BOQ				
6	injectionof the joints/ ნაკერების ინექტირება	m	77.50	235.38	18241.95
7	injection the spaces / ბზარებისა და მიკრობზარების ინექტირება	m	77.50	6.86	531.65
	Reassembling the fragmented parts of the stone / qvis fragmentirebuli nawilebis gaerTianeba	m2	3.75	930.00	3487.50
	Subtotal dome				**44012.91**

*In the red are works not included in initial BOQ

Expected works for the next month

During the next month most of the conservation works on the western façade will be finished. The scaffolding will be added to the north façade and the works will be started after the set out of the existing situation. At the same time, if the weather conditions will be suitable, the installation of reinforcement belt will be conducted.

Attachment 1.

Photo documentation

Church of the Virgin at Gelati Monastery

Contracts #: IDA/RDPII/CW/DC/11-2015

Monthly Progress Report #3
Reporting Period: September 24 – October 22, 2015

Filling the joints

Western facade of the Church of the Virgin at Gelati Monastery

Cleaning of spaces between the stones

Consolidation of cracks

North facade of the Church of the Virgin at Gelati Monastery

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Reassembling the fragmented parts of the stone

South of the Church of the Virgin at Gelati Monastery

Reconstruction of missing parts of the masonry with lime mortar

North façade of the Church of the Virgin at Gelati Monastery

North façade of the Church of the Virgin at Gelati Monastery

Cleaning of the old fillings

South façade of the Church of the Virgin at Gelati Monastery

Treatment with Biocide

West façade of the Church of the Virgin at Gelati Monastery

Attachment 2

Certificates of the Materials Used

Georgian Arts and Culture Center
7, Niko Nikoladze str., Tbilisi, Georgia
Tel: 995-32-2931335; e-mail: gacc@gaccgeorgia.org

Project title:

Preservation Measures for Gelati Monastery Cultural Heritage Site

Restoration of Architectural Structure of the Church of the Virgin at Gelati Monastery

Contracts #: IDA/RDPII/CW/DC/11-2015

Monthly Progress Report #5
Reporting Period: October 24, 2015- November 30, 2015

Date: November 30, 2015

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1. Introduction and Background Information

Contract IDA/RDPII/CW/DC/11-2015 for Preservation Measures for Gelati Monastery Cultural Heritage Site total cost is 985209.75 (Nine Hundred Eighty Five Thousand Two Hundred Nine and 75/100). The contract entered into force on May 29, 2015. The date of completion is May 25, 2017.

The financing institution is: The World Bank – International Development Association (IDA)
The Employer: Municipal Development Fund of Georgia
The Contractor: Georgian Arts and Culture Center
Project Manager: Eptisa Servicios de Ingenieria
There are no changes in Project team structure. For details see submitted organic chart.
Key persons: The director of the project is Mrs. Mariam Dvalishvili, director of the Georgian Arts and Culture Center. The scientific manager of the project Mr. Kakha Trapaidze and head of the conservation division Mrs. Nana Kuprashvili. Ioseb Kenchadze is assigned as a site manager.

2.Works Accomplishments

Scheduled Progress & Actual Progress

Narrative on deviation from schedule

There are two main issues concerning the deviation from schedule.

1. Reinforcing belt and monitoring system which was due to the December 2015 was postponed for Spring 2016. The main reasons were the several changes in the initial design which caused delay with getting permissions from Eptisa and National Agency for Preservation of Cultural Heritage (October 12, 2015). At present all preparatory works, including material purchase. The project team intended to continue the works and make installation of the ring but the works include opening of the roofing on the pendantives. As it is unclear what is the situation there. In case of need of unexpected measures the works will take longer which is not preferable due to the high risk of precipitation during the winter period.

2. The sequence of conservation works on the facades of the church had been slightly changed. During autumn period the team was concentrated on the western facade which was scheduled to be implemented during the whole period of the project parallel to the other facades. It enables to finish the most of west façade conservation in spring 2016 and only the biocide treatment and monitoring activities will last till the end of the project. Thus the works on the Northern façade, scheduled for the end of 2015 had been moved to the beginning of the 2016.

Resources (list of equipment, personnel, materials) on site

During the reporting period on site permanently are working Site Manager and 2 project groups: engineering and conservation. The engineering group 4 persons and conservation group 9 persons. During the reporting period had been conducted 1 onsite technical meetings.

The certificates of the materials used during the reporting period see in the attachment 2

Testing results and Quality Control

Quality control had been conducted by the head of conservation team and Eptisa representatives.

2. Financial Aspects

Form 2.

* Scanned version is attached

Proposed and Approved Variation Orders Description and Financial Aspects

The changes in the BOQ of dome and west facade which were caused by the examination of the actual situation from the scaffolding and elaboration of the methodology together with the International consultant Stefano Volta and representatives of EPTISA had been proposed on August 3, 2015. The details had been reported in previous report

At present the variation is waiting the final approval.

3. Construction Issues

Several parts of the scaffolding and electric supply system were not meeting the standards. Project team made all necessary improvements.

4. Health, Safety and Environment Aspects

At the beginning of the project implementation the project team management attended the seminar on safety provided by the MDF safety manager. In accordance to the gained information the safety norms for the project had been elaborated. All workers had been equipped with special outfits: special uniforms, shoes and hamlets. The safety manager had been assigned onsite: Ioseb Kenchadze who is assisted by George Navrozashvili, restoration group and Tariel Kervalishvili, engineering group. The regular daily control of the safety norms and working process are conducted.

The insurance policies had been obtained for all group members in accordance to the requirements of the contractor.

During the reporting period no site/work related accident had been occurred.

The environmental issues are under control. The restoration group has no construction garbage, most of the wastes, such as removed mortar, stones etc are kept by the group for further use in restoration process. The minor wastes such as cotton, gloves etc. are discarded in the special municipal or monastery bunkers.

5. Summary and conclusions

Summary conclusions

During the reporting period all works had been conducted in full scales. In particular the amounts are as follows

#	Description	Unit	Quant.
1	Cleaning of spaces between the stones / ქვებს შორის ცარიელი ადგილების გამოწმენდა	m	523.66
2	*Filling of joints / ნაკერების ამოვსება/ mikrobzarebis da bzarebis*	*m*	815.36
3	Mechanical cleaning (vishab, blitz-fix, lancet) / მექანიკური წმენდა	m2	40.00
4	Treatment with Biocide / ბიოციდით შეწამვლა	m2	572.31
5	Post-treatment patina cleaning / პატინის მოშორება	m2	170.00

Works not included in initial BOQ

#	Description	Unit	Quant.
1	*injectionof the joints/ ნაკერების ინექტირება/bzarebis*		487.76
2	Preparation of anchors and anchor wholes / საანკერე ხვრელისა და ანკერის მომზადება	unit	20.00
3	Cleaning of anchor wholes / საანკერე ხვრელის გასუფთავება	unit	20.00
4	Installation of anchors / ანკერის დამონტაჟება	unit	20.00
5	Reassembling the fragmented parts of the stone / ქვის ნაწილების ფრაგმენტების გაერთიანება	m2	4.45
6	Cleaning of the old fillings / ძველი შევსებების გაწმენდა და შეცვლა კირის ხსნარით	m2	3.80

Expected works for the next month

The works will be stopped during the winter period and recommenced depending on the weather conditions admittedly in March, 2016

Attachment 1. Photo documentation

Church of the Virgin at Gelati Monastery

Contracts #: IDA/RDPII/CW/DC/11-2015

Monthly Progress Report #2
Reporting Period: August 25 – September 24

Filling the joints

Western façade, Church of the Virgin at Gelati Monastery

Cleaning of spaces between the stones

Western facade Church of the Virgin at Gelati Monastery

Consolidation of cracks

Western facade Church of the Virgin at Gelati Monastery

Reassembling the fragmented parts of the stone

Western facade Church of the Virgin at Gelati Monastery

Western facade Church of the Virgin at Gelati Monastery

Reconstruction of missing parts of the masonry with lime mortar

Western facade Church of the Virgin at Gelati Monastery

Cleaning of the old fillings

Western facade Church of the Virgin at Gelati Monastery

Injection

Western facade Church of the Virgin at Gelati Monastery

Treatment with Biocide

Western facade Church of the Virgin at Gelati Monastery

Attachment 2. Certificates of the Materials Used

Attachment 3. Schemes of conducted works on western facade