Conservation designs for the projects of the Technical Committee on Cultural Heritage (TCCH)

Design process and requirements
Proposed interventions must be compliant with relevant international conservation standards:

- United Nations Educational Scientific and Cultural Organization (UNESCO)
- International Council for Monuments and Sites (ICOMOS)
- International Centre for the Study of the Preservation and Restoration of Cultural Property (ICCROM)
- International Union for Conservation of Nature (IUCN)
Conservation Philosophy
Conservation Philosophy

- Optimum structural consolidation/stabilisation
- Minimum interventions – no reconstructions
- Reversibility of interventions
- Cost effectiveness of interventions
- Safe accessibility including people with disabilities
LIMITATIONS

- Existing plaster removal is not a foregone decision
- Incompatible plasters if proven to cause damage
- Plastering and re-plastering only in exception
- No investigations for underlying floors and walls for possible frescoes/murals
- Conservation of only visible ones
- No excavations for any investigation – it is not an archaeological project
OUTPUTS OF THE ASSIGNMENT

- **OUTPUT 1A**: Survey/Releve (measured drawings) and Historical analysis

- **OUTPUT 1B**: Condition assessment and Conservation recommendations

Both the above will constitute OUTPUT 1
Historic Analysis Report (including identification of historical phases in a drawing)

- Original date of the construction
- History of interventions on the building
- Historical account of building’s analysis
- Change of use over time

This is important to see the evolution of the structure over time.

Changes to the structure, derelictions and misuses must be recorded.
Terms of Reference (ToR)

Condition Assessment and Conservation Intervention

- Damages and deterioration location and degrees of severity
- List of the building pathologies
- Conservator assessment - description of condition of special elements and recommendations
- Any additional investigations and tests that are considered necessary and with reasons
- Descriptions of the interventions, supported by a clearly explained rationale, in a matrix format
Presentation to Stakeholders

- Design team will present Output 1
- Focus on condition assessment and recommendations
- Will be arranged by UNDP in online format due to COVID-19 pandemic
- Design team can:
  - Incorporate all or some of the feedbacks OR
  - Revert with responses why some/all of these feedbacks are not incorporated
OUTPUT 2A: Conservation designs in draft format

- Proposed interventions drawings & details
- Particular Specifications; should be specific & avoid generic descriptions
- Bill of quantities; compiled using the same alphanumeric sequences as in Particular Specifications
- Estimates using current market prices.

The overall consistency between drawings, Particular Specifications and BoQ is the responsibility of the Service provider.
Terms of Reference (ToR)

Presentation to Stakeholders

- Design team will present Output 2A

- Will be arranged by UNDP in online format due to the COVID-19 pandemic

- Design team can:
  - Incorporate all or some of the feedbacks OR
  - Revert with responses why some/all of these feedbacks are not incorporated
OUTPUT 2B: Conservation designs in final format

Based on the feedback obtained from UNDP, the design team shall submit final revised/modified version.

Final Format is required after Four (4) calendar weeks from receipt of the feedback from UNDP.

The final conservation designs should be submitted:

- Drawings signed by the architect and the civil engineer
- Particular specifications, in Microsoft Word
- Unpriced and priced BoQ in Microsoft Excel
Additionally, after acceptance of the final designs:

- Final approved set of drawings in Turkish or Greek
- Extensive summary of the particular specifications in Turkish or Greek
- Extensive summary of the unpriced bills of quantities in Turkish or Greek

Final designs shall be submitted by designers to the relevant technical chambers.

ONE month is considered to be sufficient to complete the procedure with the technical chambers.
OUTPUT 3 – Supervision Advices during the Works

• Up to X working days per month will be required
• A day will be taken as 8 hours of time spent
• Estimated input up to X days per month for up to Y months - i.e. in total 30 person-days
• Payments shall be made in two instalments;
  • First, at the halfway of the duration of the works
  • Second, upon the issuance of the certificate of substantial completion

A maximum of one person-day will be used for the site visit and preparation of the note.
TIMELINES - WORKPLAN OF THE ASSIGNMENT

• The assignment will be split into 2 phases; design and supervision advices
• Design phase (outputs 1 and 2) completed in number of months defined in TOR
• Detailed work-plan for the design phase to be prepared
• The work-plan should be in ‘calendar weeks’
• Presentations to stakeholders should be clearly indicated in the workplan
• The +1 month is for design review procedures

Teams, tasks and staffing shall be arranged according to limitations emanating from the COVID-19 pandemic
The Design Team

Conservation Designs Team

• **Two architects** (registered with GCYP technical chamber and with TCYP technical chamber)

• **Two civil engineers** (registered with GCYP technical chamber and registered with TCYP technical chamber)

• **One conservator** (required by almost all projects)

• **One archaeologist** (required by some projects)
• The Design team can be enhanced with more technical staff and/or additional disciplines.

• List of the names of all the team members (core + additional) shall be submitted.

Half of the team members must be women in line with the SDG 6
BELOW ARE SOME EXAMPLES OF DETAILS AND CONTENT REQUIRED FROM DESIGNERS

• Releve/architectural survey
• Condition assessment & intervention recommendations
• Conservation design drawings
Site: Othello tower & citadel in Famagusta
Site: Panagia tis Kyras church in Livadia
Terms of Reference (ToR)

Site: Panagia tis Kyras church in Livadia
Terms of Reference (ToR)

- Photographic documentation
Terms of Reference (ToR)

Keymap drawing

Site: Orounda mosque
<table>
<thead>
<tr>
<th>Component Description</th>
<th>Condition Description</th>
<th>Risk Assessment and Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bearings</strong></td>
<td><strong>Uncoursed random rubble stone masonry</strong></td>
<td><strong>CC3</strong></td>
</tr>
<tr>
<td></td>
<td>• Extensive cracking</td>
<td>• Degradation of the mechanical properties of the masonry</td>
</tr>
<tr>
<td></td>
<td>• Separation among orthogonal walls</td>
<td>• Failure of heavily cracked masonry sections leading to partial collapse</td>
</tr>
<tr>
<td></td>
<td>• Deterioration of jointing mortar along the walls’ base</td>
<td>• Stress localization due to stiffness variation</td>
</tr>
<tr>
<td></td>
<td>• Indications of out-of-plane movement of the west wall</td>
<td>• Loss of global stability under moderate seismic actions or ground deformations</td>
</tr>
<tr>
<td></td>
<td>• Stiffness variation due to partial reconstruction with contemporary materials</td>
<td><strong>Recommended measures</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Removal of incompatible materials</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Reconstruction of masonry areas severely affected by erosion</td>
</tr>
<tr>
<td><strong>Tie-rod</strong></td>
<td><strong>Φ16 rebars welded to Φ16 full thread rods and X-shaped anchor plates</strong></td>
<td><strong>CC3</strong></td>
</tr>
<tr>
<td></td>
<td>• Tie-rods exhibit sagging</td>
<td>• Loss of functionality</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Inability to provide lateral restrain</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Stress localization due to shape/form of the anchor plates</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Recommended measures</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Redesign and replacement of the tie-rod and anchor system</td>
</tr>
<tr>
<td><strong>Structure</strong></td>
<td><strong>Concrete ring beam, steel IPE ridge, timber rafters and OSB overlay with clay roof tiles</strong></td>
<td><strong>CC0</strong></td>
</tr>
<tr>
<td></td>
<td>• No visible signs of damage</td>
<td>• None</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Recommended measures</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- None</td>
</tr>
<tr>
<td><strong>Coatings</strong></td>
<td><strong>Gypsum-based plasters in the interior and Cement-based renders on the exterior</strong></td>
<td><strong>CC3</strong></td>
</tr>
<tr>
<td></td>
<td>• Sections of the coatings exhibit rather pure adhesion to the masonry substrate</td>
<td>• Cementitious coatings can trap moisture within the wall promoting the onset of moisture-driven decay mechanisms</td>
</tr>
<tr>
<td></td>
<td>• Areas of the coatings are heavily cracked</td>
<td><strong>Recommended measures</strong></td>
</tr>
<tr>
<td></td>
<td>• Parts of the interior plaster have become quite friable</td>
<td>- Removal of cementitious coatings and replacement with compatible lime-based renders</td>
</tr>
<tr>
<td>MACRO-ELEMENT</td>
<td>PICTORIAL REPRESENTATION OF THE PATHOLOGY</td>
<td>DAMAGE DESCRIPTION [CATEGORY OF PATHOLOGIES-ICOMOS]</td>
</tr>
<tr>
<td>----------------------</td>
<td>------------------------------------------</td>
<td>-----------------------------------------------------</td>
</tr>
<tr>
<td>North-western fence wall</td>
<td><img src="image1.jpg" alt="Image" /></td>
<td>- Vertical fissures and cracks on adobe wall [A]</td>
</tr>
<tr>
<td></td>
<td><img src="image2.jpg" alt="Image" /></td>
<td>- Fractured capping [A]</td>
</tr>
<tr>
<td></td>
<td><img src="image3.jpg" alt="Image" /></td>
<td>- Plaster detachment / loss of surface coating on adobe wall and of cementitious coating on the wall’s capping [B]</td>
</tr>
<tr>
<td></td>
<td><img src="image4.jpg" alt="Image" /></td>
<td>- Disintegration of adobe masonry [B]</td>
</tr>
<tr>
<td></td>
<td><img src="image5.jpg" alt="Image" /></td>
<td>- Erosion of adobe wall [C]</td>
</tr>
<tr>
<td></td>
<td><img src="image6.jpg" alt="Image" /></td>
<td>- Loss of joint mortar between units [C]</td>
</tr>
<tr>
<td></td>
<td><img src="image7.jpg" alt="Image" /></td>
<td>- Soiling on the exterior of the wall and deposits on the wall’s capping [D]</td>
</tr>
</tbody>
</table>
**Table 4. Conservation intervention recommendation matrix for the Panagia Chrysopolitissa Church.**

<table>
<thead>
<tr>
<th>MASONRY WALLS</th>
<th>Pathology Pictures</th>
<th>Description of Damage Cause of Damage</th>
<th>Intervention Proposals</th>
<th>Materials proposed</th>
<th>Method of intervention (if specific)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exterior and interior masonry</td>
<td><img src="image1" alt="Image" /></td>
<td>Deterioration of jointing mortar due to weathering and moisture-driven decay</td>
<td>Repointing of the masonry throughout</td>
<td>Natural Hydraulic Lime mortar</td>
<td>Cut out existing deteriorated mortar to a depth ≥ 3 cm and clean the area to be treated. Repoint joints with lime mortar.</td>
</tr>
<tr>
<td>Exterior and interior masonry</td>
<td><img src="image2" alt="Image" /></td>
<td>Deterioration of stone blocks due to erosion, moisture-driven decay, natural weathering and alveolization.</td>
<td>Replacement of stone blocks that have lost &gt; 50% of their volume</td>
<td>Local limestone with properties matching those of the historic fabric</td>
<td>Cut out deteriorated material and clean the area to be treated. Replace damaged stones with new ones of the same shape/size and texture.</td>
</tr>
<tr>
<td>Interior masonry of the south and central aisles</td>
<td><img src="image3" alt="Image" /></td>
<td>Surface soiling (black staining) induced by exposure to smoke generated by fire.</td>
<td>Cleaning of smoke deposits with mild form of abrasive blasting</td>
<td>Sodium bicarbonate particles</td>
<td>Sodablasting (i.e. blasting of sodium bicarbonate particles against soiled surfaces using compressed air).</td>
</tr>
<tr>
<td>Exterior masonry of the west and south walls</td>
<td><img src="image4" alt="Image" /></td>
<td>Biological colonization due to ineffective drainage of rainwater from the roof caused by missing/damaged stone drain (west wall) and absence of coping to prevent water shed on vertical surfaces (north wall)</td>
<td>Cleaning of masonry surfaces by combination of mild abrasive method and chemical treatment with biocide*</td>
<td>Biocide containing carbamate fungicide</td>
<td>Abrade the face of the organic growths with bristle brushes. Apply diluted biocide by means of spraying. Remove the killed growth and repeat application of biocide compound.</td>
</tr>
</tbody>
</table>

*Note: Additional measures involving the replacement of the missing/damaged stone drain and the addition of coping along the roof’s edge are proposed (see relevant recommendations for the roof) to prevent reoccurrence of biological growths.*
Photos of building pathologies
Site: Agios Antonios church in Masari
Site: Agios Artemon church in Afaneia

NOTES

1. At the points where deep and severe cracks are formed, as in the south and east wall, the stones should be carefully dismantled on either side of the cracks. Subsequently, the masonry should be rebuilt with stones similar to the original ones in both size and texture using of "stitching". It is suggested that additional steel beams are positioned in 2. Thereafter, rubble filling and mortar pointing, to be implemented on the masonry and then lime plaster coatings, to its interior face.

3. Other smaller cracks to be filled up with solid rubbework and be properly pointed up, so that the stones which are displaced, and the rest of the masonry are well-bound together.

4. The filling stones which either detached, weathered, decayed or at risk of collapsing, as well as any eroded and cracked mortar joints should be repointed, removed or replaced, for instance when the mortar joints go deeper than 3 cm from the surface of the stone, then the stone pointing must be renewed with mortar, after having first removed the original pointing.

5. Most of the joints of the walls to be pointed.

6. Injection grouting to be applied where indicate on drawings

7. Apply stone consolidant Kimistine KFS to all exposed stones

The dimensions are in meters (m)
Conservation designs for the projects of the Technical Committee on Cultural Heritage (TCCH)

Thank you for your attention!