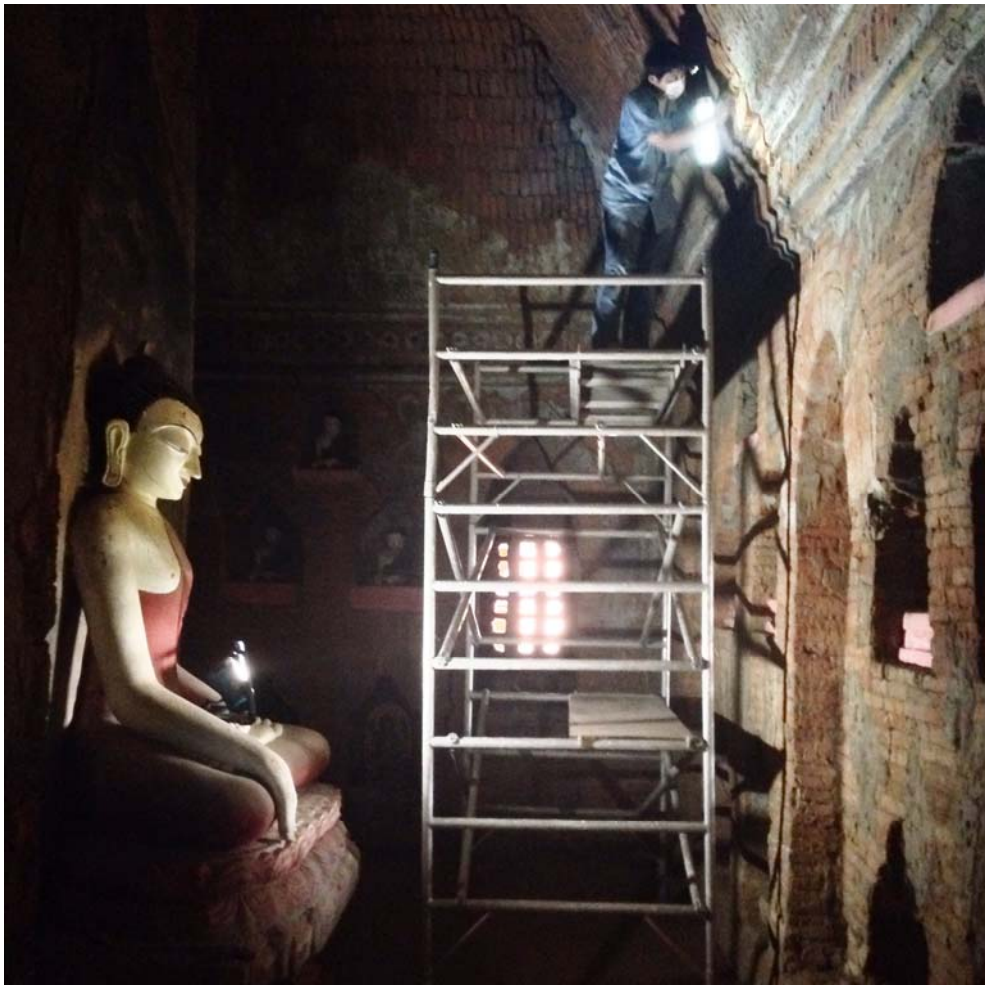
GUIDELINES FOR CONDUCTING RAPID CONDITION ASSESSMENT OF BAGAN MONUMENTS



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Contents

1.0 INTRODUCTION

The present Guidelines set procedures for a systematic rapid condition assessment of monuments in Bagan. This rapid condition assessment is based on the application of a standardized inspection format that was developed for the different types of monuments in Bagan. The standardized "Structure Rapid Condition Assessment Card" (called *S-card* in the Guidelines) is expected to be used by the Department of Archaeology (DoA) for regular condition monitoring of the monuments in Bagan. The S-Card is also meant to be used by those national and international experts and organizations that support the DoA with their work of systematically assessing and monitoring the condition of monuments. Further to this, the S-Card is intended to used by non-professionals, as well, in order to help DoA Bagan's limited number of staff in detecting changes to the monuments.. With view to ensuring that the results of the assessment by different inspectors are consistent and comparable the S-Card has predefined data entry categories that the inspectors choose from for their visual assessment.

The Guidelines include an introductory section briefly explaining condition assessment and monitoring, as well as the concept of rapid assessment (section 1). Section 2 presents procedures on how and what to prepare before going to the field to carry out the assessment. This is followed by fieldwork protocols (section 3). Section 4 includes instructions and guidelines for completing the "structure rapid condition assessment" card (S-card). Section 5 contains guidelines on post-fieldwork activities, including how to store and name image files associated with the S-card, storage of field cards, etc. The last section (section 6) presents guidelines on analysis and use of the information coming from the assessment. The appendices contain a visual glossary of degradations and illustrated glossary for architectural elements.

1.1 Condition Assessment and Monitoring

What is condition assessment and monitoring?

Condition assessment and monitoring is the act of recording the status of monuments and measuring changes at heritage places over time. The first time a monument is being assessed

its “condition” or “status” is being recorded. The following times that the same monument is assessed, the changes over time are being “measured”.

In order for a condition assessment and systematic monitoring to be effective and comparable, a standard format for collection of relevant data has to be developed and applied. Also the collection methodology and analysis of the results and reporting process should be standardized and uniformed. For the regular monitoring, this fixed set of information (i.e. filed field card) is repeatedly collected and recorded over time and the results of these assessments are analyzed and compared to the previous assessments in order to detect changes. The collection of data for the condition assessment using a field card facilitates identification of repeated damages and/or vulnerabilities of structures to degradation.

Ideally, condition assessment should be implemented as part of the “regular” inspection of the monuments in Bagan, for example, two times a year, yearly, every two years or in similar sequences that are deemed appropriate by the authority in charge and consulting experts. In case of a natural event such as heavy monsoon rains, a flood, an earthquake, or a human-induced event such as a major construction with potential impacts on the monuments, condition assessments should also be undertaken. By applying the standardized condition assessment method for routine inspections as well as for emergency assessments, the monuments that are in need of close monitoring, emergency conservation interventions, or further investigations can be identified. Further to this, the information provided by the assessment results will be helpful for prioritizing which monuments should be considered for implementation of specific conservation actions.

Why assess and monitor condition?

Condition assessment is one of the main components in the heritage management process. It ensures the long-term conservation of monuments and sites. In light of information on physical condition of monuments, decision makers can determine the best way to preserve the values of heritage places and develop strategies to respond to any changes of the condition and damages that have been detected.

The regular assessment of condition enables decision makers to recommend management and conservation activities and prioritize the required intervention activities. It also provides necessary information to them for making rational and effective decisions on how to allocate their limited resources. Assessing and monitoring condition enables the DoA to objectively justify their conservation needs, policies and decisions.

Gradual decay of monuments is one of the main causes of destruction of monuments. If signs of decay are detected, monitored and treated in advance, through regular inspection process, this can prevent the irreversible destruction of the monument. In most cases if damages are detected in time, limited scope interventions (such as vegetation clearance, cleaning of gutters, minor masonry work) can be enough to stabilize the ageing process of the monuments and prevent future risk of collapse. In addition large-scale restoration and reconstruction interventions could be avoided in this way.

1.2 Rapid Condition Assessment

Why rapid assessment?

The overall goal of a rapid condition assessment is to provide a systematic and standardized approach to rapidly assess the status and condition of monuments in Bagan that would help the DoA in its decision-making and prioritization of needed conservation and preservation activities. Contrary to rapid condition assessment where a standardized on-site inspection format is applicable for all types of monument in Bagan, the manner of detailed and in-depth condition assessment may vary from one building to another because of diverse structural characteristics and degradation phenomena, which require application of specifically selected technical methodology and devices including those to be performed at a laboratory. This process should be undertaken or supervised by experts with sufficient knowledge and experience in the relevant technical field.

In a large site like Bagan with over three thousands monuments, detailed condition assessment of all monuments would require decades of work. In addition to timing, this needs staff and financial resources.

With limited resources and limited time, a systematic rapid mapping of the condition is the logical method to quickly record current condition of all structures. Based on the results of the rapid assessment - with the consideration of magnitude and extent of degradation of monuments and their significance - structures in need of in-depth study (to detect causes of degradations in order to identify the appropriate interventions) or emergency intervention could be identified, rated and prioritized.

This method of rapid assessment if used as a basis for the periodic and regular monitoring of monuments in Bagan will enable DoA staff to identify any recent changes to the monuments, record them systematically, and to recommend and carry out any needed management and conservation interventions in a timely manner.

General approach for condition assessment and monitoring in Bagan

In the rapid condition assessment the inspector intends to record degradations and assess the overall actual condition based on “visual inspection”. At this stage the damages, as visible negative effects on structures, need to be recorded. In the “in-depth condition assessment” process the “causes” and “mechanisms” of deterioration are to be identified through examining and analyzing the current condition. It is possible that as part of the rapid assessment and while recording degradations, the inspector starts to develop hypotheses about the causes of decays. However it is advisable not to rush into deciding on the conservation treatment without further study at this stage.

It is expected that the first condition recording will take comparatively longer to carry out than consecutive inspections. In following instances the records and photographs of the monuments’ previous assessment(s) will be available already and inspectors will only be looking to record and measure any “changes” that might have happened since the previous monitoring event and “measuring changes” to the monuments. The inspector needs to only record new damages or the ones that are ongoing and threatening the integrity of the monument. If the damage is old and stable it does not need to be recorded (please refer to section 3.0 fieldwork protocols for further information).

As mentioned, a condition assessment could be scheduled and carried out as part of a regular monument inspection plan or be conducted on an emergency basis after a natural or human impact. Every year in Bagan in the rainy season, signs of damage occur on some monuments after only few days of heavy rain. Therefore, it is necessary to carry out inspections during the rainy season to record every damage caused by rain on monuments and record leakage inside the buildings.

All monuments need to be assessed in order to be able to record their condition at least one time in order to have a record of their present status and monitor them for any possible changes that might happen. Therefore, the DoA has to have the S-card filled out for all the monuments in Bagan.

After carrying out this "first" rapid condition assessment, the frequency of following inceptions, depends on the result of the first assessment. In the case of regular assessments, at the end of S-card the inspector recommends the next time that a monitoring activity should be carried out – every six months, every year, every two years, etc. This recommendation is based on the result of the assessment and the condition of the monument. The DoA should plan for and carry out these regular inspections in order to detect new degradations and treat them on time before they cause bigger losses to the monuments and call for larger scale conservation intervention.

Special assessment of the monuments ("emergency inspections") is needed during and after each rainy season. Monuments flagged out to the DoA after the rainy season need be urgently inspected by the DoA and emergency conservation actions and activities need to be recommended and applied once approved.

Standards and fixed terminology in the S-card

A standard method and format of collecting data is required (S-card) in order to effectively assess, compare and analyze the monuments. Different people with different backgrounds have different ways to record and describe damages and threats to monuments. In order to ensure

compatibility between data collected by different individuals, a standardized terminology and fixed data entry fields had to be developed and applied to describe the monuments and their problems.

In the monitoring process the S-card will be used to repeatedly collect and record this fixed set of information over time. When the standardized way of collecting data and fixed terminology is used, it will allow site managers to compare the status and condition of monuments. The result of the assessment after being analyzed can then be compared to the previous assessments in order to detect changes that are happening. In this way repeated damages and on-going degradation will be identified and appropriate methods of conservation and preservation activities can be recommended and applied at the affected monuments.

If the DoA simply uses written assessment reports or allows different experts (local or international) to use their own field cards, it would again complicate the process of analyzing and comparing these different formats of data and using them to make appropriate management and conservation decisions.

Date recording has to be standardized also because all the fields and gathered data will be imported into an envisioned database for Bagan. The S-card has been designed in a way to be used as a model for data entry fields in the database for Bagan.

Success criteria

During the development and implementation stages of the project, some risks to the success of the S-card and rapid assessment process have been detected. Key factors for the S-card's success and its long-term use are identified as follows:

- DoA has to feel ownership of the S-card. S-card is Bagan's card.
- Use of S-card and the rapid assessment process needs to be institutionalized at the DoA.
- Rapid assessment and monitoring (using of the S-card) needs to be integrated with the normal and day-to-day activities of the DoA.

- DoA and external local and international experts assessing the monuments as part of their work need to be asked to use the S-card format and return filled-out cards to the DoA.

- Condition assessment should be part of the management process of the site and needs to be Integrated by the DoA as a key element in their decision making process.

- It is important to train any new DoA staff in the use of the S-card and collection of data.

2.0 ASSESSMENT PREPARATION (OR BEFORE GOING TO THE FIELD)

2.1 Identify the Inspection Team and the Monuments to be inspected

It is recommended to have teams of two inspectors carry out the assessment. They do not need to be engineers or conservators or senior staff. As mentioned above, they may be members of expert organizations collaborating with the DoA or even non-professionals. However, they have to either be trained in the use of the S-card or they have to have independently studied the assessment process outlined in the Guidelines.

Section 1 of the S-card (i.e. Identification of Monuments and Detail of Inspection) can be filled in at the office (pre-field work) by junior staff. Section 2 of the S-card (i.e. Condition Assessment) is intended to be filled out in the field by junior staff (or any other inspector deemed appropriate) who will inspect the monuments and record the damages and their location. However, section 3 (i.e. Level of Priority and Recommended Actions) and the risk assessment at the end of the section 2 need to be assessed only by senior staff and professionals with a sound knowledge of the site and well experienced in the heritage condition and risk rating process. If junior inspectors are assessing the monuments and cannot assess the ratings and priorities, this part should be left blank. Later on at the office, they (junior inspectors) have to prepare a list with the inspected monuments and pass it to their supervisor (senior inspector) in order to schedule a time to jointly carry out the ratings.

If the inspector monitoring the monument at the site is senior and/or an expert capable of undertaking the assessment, then he/she can fill out the ratings and assessment part of the S-

card in the field. It is recommended as a good practice to have a roundtable discussion with the inspector(s) who has assessed the monument, senior staff and experts after each field survey to discuss, compare, share vision about ratings, and decide the final ratings, priorities, recommended actions, etc.

It is worth noting that when selecting monuments for condition assessment (and recommendation for future monitoring schedule) it is important to take into consideration that the monuments which are not under trustees and not in the usual circuits of visitors, such as grade II, grade III and non-graded monuments, are the ones more endangered by degradation and in need of monitoring than grade I monuments. Grade I monuments are frequently visited by tourists, tour guides and DoA staff and if there is an issue affecting the state of conservation, the DoA will in any event be informed about it.

2.3 Existing documentation and record

Review all the existing information about the monuments to be inspected: *Inventory of Monuments at Pagan* (by Pierre Pichard), other DoA inventory records, all existing reports about the monument, reports on any interventions on the monument, all existing images and plans, etc. All these documents can contain valuable information about the monument and can help to assess and identify changes to the monuments over time.

Section 1 of the S-card can be filled out using this documentation.

2.4 Necessary materials and recording equipment to carry out in the field

S-cards should be printed for the number of monuments that are going to be inspected on any inspection date. Each monument needs one inspection card.

Note that in the S-card, pages 3 and 4 are for recording damages to temples and monasteries. Page 5 is for stupas. If you are assessing temples and monasteries there is no need to print page 4, or if you are assessing stupas there is no need to print pages 2 and 3. If you do print all pages, you can leave the page(s) of the type of monument that you are not using at the office to be used for other corresponding monuments.

If monuments to be inspected have more than one level, a condition assessment table (section 2 of the S-card) needs to be printed for each floor. One table has to be filled out for each floor. On top of the condition assessment table page, you find a tick box ☐ to click if you are assessing the ground floor, 1st floor, 2nd floor, or 3rd floor. Check (✓) the appropriate box for each level and use those pages only to record the degradations of that floor. Print and use another copy for each relevant floor.

The last page of the S-card is for sketching the plan of the monument (or the elevation if the monument has more than one level and if inspector can do so). However a large number of the monuments already have their plan (and very few their elevation) since they were drawn for the *Inventory of Monument at Pagan* (Pierre Pichard). Those plans exist as individual digital files and are best to be printed in A4 format. Staple the plan as a last page to the S-card.

As mentioned, the rapid assessment is based on visual assessment and at this stage no specialized equipment is needed to assess the condition. Below is the list of the few basic tools needed:

- Clipboards are useful for filling out the cards in the field
- Each team needs to have a camera to take context pictures
- A flashlight is needed to be able to see and assess inside the temples and dark areas

3.0 FIELDWORK PROTOCOLS

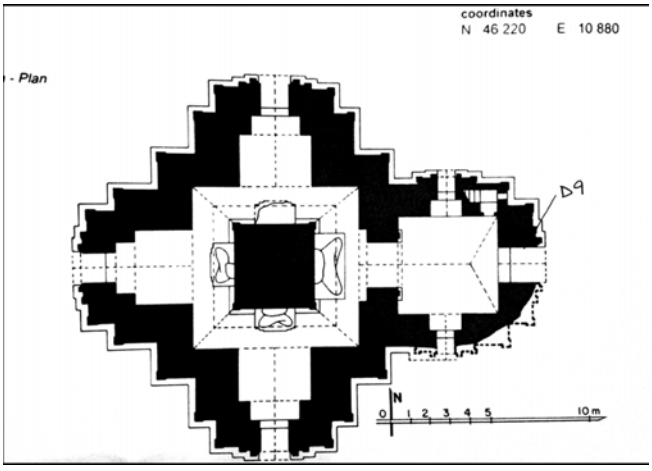
The fundamental protocols for carrying out rapid condition assessment in the field are the following:

- Write the monument number on top of each page in the “Monument Number / Name” field in order to minimize risk of mixing monuments’ pages in case of removal of staples.
- Observe/start from the exterior (in case of monuments with interior), and start from the East side and proceed clockwise around the monument.

- Go around and inspect the monument clockwise. Start your inspection by looking from top to bottom of monument. Record any recordable damage/degradation on the S-card.
- Take context pictures of the exterior and interior from different angles (East, South, West, North). Take one picture from each side of the monument covering the whole height of the monument.
- Record all new degradations in the assessment table of the field card (section 2 of the S-card) using ✓ or write the orientation (like N, NW, SE, etc.) in the cells corresponding to the relevant degradation type and the architectural element location.
- Damage should be recorded only if it is new (since the last condition assessment) or if the degradation is ongoing (and active) since the last condition assessment and might be a threat to the structure.
- Inspectors have to be able to differentiate between new and stabilized (and old) damages. If the damage has been there for many years, but has not worsened, it is stable. There would not be a need to record it and no actions need to be implemented. If the damage is ongoing but stable mention in the description that it has been there for a long time but it is stable.
- Observe past interventions (repairs) in relation to new deteriorations; for example if a past crack was repaired and now a new one is appearing, it means there might be some structural deformation and movement that causes the reappearance of a crack and needs to be observed (monitored) over time to measure the changes. Take a picture of the crack and record it and its size in the assessment table. In the “recommended future monitoring schedule”, select every year and in the “description/remark” field write the condition of the crack and the need for monitoring the movement of the crack. Come back next year to repeat the assessment, take a picture from the same location and compare photos. Only with monitoring of degradations can you assess (measure) any changes and understand the real problem and decide with confidence on the actions

that have to be taken. If you do not see any change in the crack, there would not be a need for any filling/repair.

- In the rapid assessment only severe and extensive damages and degradation should be recorded. Minor damages should not be recorded.
- In order to identify new damages since last monitoring, existing photographs, drawings and reports could be used and be compared to current condition to demonstrate if there is evidence of any change.
- Take detailed pictures demonstrating and locating recorded damages and add the picture reference number in the corresponding cell in the assessment table.
- It would also be helpful / good practice to have the plan of the monument (either printed out version from Pichard's inventory or drawn sketch) and locate the degradations on the plan using the combination of letters for kind of degradations and numbers for location assigned to each condition table in the pages 2-4 of the S-card. For example use D9 to indicate a crack (D) on the porch (9) of a temple (as it shown in the image below).



- If possible, assess the severity and extent of each recorded damage.

- Use the comment section of the table to add any additional and noteworthy information and/or to write any information that you cannot fit in the relevant table cell.

- After the assessment of the exterior monument is done, continue inside in case of a monastery or temple. Follow the explained protocols above for exterior: go around clockwise, look from top to bottom, record any "important" damage, take picture, etc. Continue to inside of central core (in case that there is a central core).

- If there are stairways with access go to the top to check the higher levels and also go to the roof to check the waterproofing, cracks, vegetation, etc.. *Note:* "Safety first!" – do not climb on top of the monument if there are any signs of danger of collapse.

- If you cannot access the roof and upper parts you need to clearly record in the S-card the parts that were not inspected.

- Remember that you are conducting a RAPID assessment! For small monuments half an hour to one hour should be enough to conduct the assessment. Depending on the size of the monument, each inspection team should be able to assess an average of 5 to 10 monuments in a day.

4.0 INSTRUCTIONS FOR COMPLETING THE "STRUCTURE RAPID CONDITION ASSESSMENT" CARD

Below are the instructions for completing the S-card and a brief description for each entry field in the S-card. At the end of these Guidelines, Appendix I and II contain a visual glossary of damages and degradation and an illustrated glossary for architectural elements. The S-Card has been added as Appendix III to this document.

4.1 Section 1: Identification of monument and details of inspection

Note that section 1 of the S-card can be completed at the office (before going to the field) mainly based on the information from the *Inventory of Monuments at Pagan* (Pierre Pichard)

and /or information gathered during the study of the existing documentation about each monument.

Once a database is in place for Bagan the information marked with * will be automatically generated from the inventory part of the database.

Name of monument*: Record name of the monument (if known).

Monument Number*: Record the monument inventory number (PP).

If the monument does not have a PP number, record the new DoA (reconstructed) number and the temporary number as assigned by the DoA survey team.

Main Entrance Orientation*: Record orientation of the main entrance (in case of temples and monasteries).

Type of Monument*: Select the type of monument that is being assessed (temple, stupa, monastery, etc.). Monuments types are defined and categorized based on Pierre Pichard's definition of type of monuments in the "Handbook for Repair and Conservation of Monuments in Pagan":

Temples have an accessible interior space, sometimes complex (entrance hall, ambulatory corridor, shrine, etc.) housing one or more images of the Buddha. They are crowned either by a square tower (sikhara) or by a stupa-like bell-shaped dome.

Stupas are solid monuments around which people can walk up, but which cannot be entered. They consist of a variable number of terraces and a dome.

Monasteries, like temples, have an accessible interior space, usually simpler (a single room for the small ones) or divided into several cells for the living of monks. They have usually a flat roof, or in a few cases a tiered tower (pyathat).

In Bagan's S-card there are 3 other categories of ***Underground Structure, Archaeological Element / Surrounding Structure*** (like wall, gates, etc), and ***Other*** (to include and specify any other type of monument).

Location Description* (include locality number if known): Record any directions to help to locate and access the monument (reference to a landmark, prominent monument, or village).

DoA has divided Bagan in 11 different localities. If inspector is aware of the locality number, record the locality number as well.

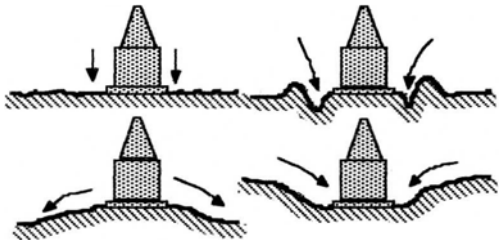
Location GPS coordinates* (Lat/Long) and Elevation (Above Sea Level): Once digital database is functional this information will be automatically generated.

Topography: Select the physical configuration of the landscape where the monument is located. Using the categories in the assessment card to select one.

The physical location of the monument in Bagan specifically is important in relation to the rain and evacuation of the rainwater.

Plain

Elevated ground, hilltop



Depression / valley

Previous Intervention: Based on the desk research and as well as field assessment, identify and record any previous intervention(s) (structural or chemical conservation, restoration, reconstruction, etc.). Choose as many as applies from the list provided in the S-card. Record the date of the intervention and any noteworthy information about the intervention(s). If the intervention present at the monument is not part of the list, choose “other” and specify it in the “description” field.

Previous Investigation and Report: Based on the desk research identify and record if there are any previous reports or documentation about the monument being recorded. Select as many as apply if there are previous reports. In the “description” field record the date of the report(s) and any noteworthy information about each report.

Inspector(s) Name: Record the full name(s) of the person(s) inspecting and assessing the monument.

Inspector(s)' Institution: Record the name of the institution that the inspector is affiliated to (for example record the "DoA" if the inspector is a staff of the DoA).

Inspection Date: Record the date of the field assessment of the monument. Enter the date as day/month/year.

Weather Condition on Inspection Date: Record the weather condition on the field inspection day – whether it was raining or not raining.

Type of Inspection: Record type of inspection; if it is a regular inspection, rainy season inspection, or an emergency inspection. In case of an emergency assessment, record any important information in the "remarks" field.

4.2 Section 2: Condition assessment

If you are assessing a temple or a monastery, print out and use the Structure (Temple and Monastery) table on pages 3 and 4. On the first page record the degradations visible on the exterior of the monument. Refer to the section 3.0 fieldwork protocols for a reminder on protocols for conducting rapid assessment (such as start from the main entrance, go around clockwise, etc.). The second page of the Structure (Temple and Monastery) table, is for assessing the interior of the monument. If the monument has more than 1 floor, you should use (and print) a separate table for each floor and at the top of the table indicate the floor corresponding to the floor being assessed.

If you are assessing a stupa, print and use Structure (Stupa) table on page 5.

A. Structure Condition Assessment table

The condition assessment tables of the S-card are the part of the field-card to be used by inspectors to record the degradations and their locations related to the monuments. Seven general types have been defined for damages/degradations + other in the columns of the table. Architectural elements (location) of the monuments with their orientation are in the rows of

the table. Simply choose the relevant degradation and the respective location cell and check (✓). In case you want to record corners, write the orientation corner (such as NW for North West corner) in the cell instead of✓. If the cell space is too small for the information you need to record, use the "description/remarks" field of the table. Take a photo for each recorded damage and enter its reference number in the table in the column "photo number".

If the inspector feels confident assessing the impact of each identified damage, he/she needs to record the severity and extent of each recorded damage in the respective cells. A decision has been made by the experts working on rapid assessment in Bagan and the DoA staff to assess the severity and extent of damage at Bagan based on the qualitative approach. In the qualitative approach words are used to define the magnitude and effect of damage (High, Medium, Low) and the extent of the damage (partial to total, partial, limited).

Damages: Damages are visible signs of (negative) effects on building material contributing to a monuments' degradation. Different general types of damages typical for Bagan monuments were identified and defined in order to assist with the visual identification. The types of damages are defined and illustrated in the "visual glossary of damages and degradation" in Appendix I of the guidelines. If the type of observed damage does not match the available types, use "other" and describe it in the "Description/Remarks" field.

Note- damages (signs of degradation) should only be recorded if they are either new and have not been recorded before or are ongoing and active since the last condition assessment (refer to the section 3.0 Fieldwork Protocols for more information). Also in the rapid assessment only serious and extensive signs of degradation should be recorded.

Location/Architectural Elements: Architectural elements are the distinct architectural components of each monument (such as wall, roof, etc). The location of each architectural element used in the condition assessment tables is illustrated in the "illustrated glossary for architectural elements" in Appendix II (based on Pichard's structure typology and terminology developed for Bagan).

Severity of Damage: The severity of damage relates to the level of impact the specific damage has or may have on the structural soundness of an architectural element or the entire monument (as can be judged from visual assessment). From the three levels of severity (High, Medium, Low), choose the appropriate one.

Extent of Damage: The extent of damage represents the fraction (size) of the recorded area affected by the damage. The extent of damage should be selected from three levels of partial to total, partial, and limited. For cracks, size of crack should be recorded here.

Description / Remarks: If necessary record any noteworthy information about the damage and its location. Also you can use this field to write any information you could not fit in the damage type/location cells.

Photo number: Take detailed photographs demonstrating and locating the signs of degradation. From the camera, record the number of the photograph taken to illustrate the damage.

Degradation observed in immediate surrounding of the monument: Record any signs of degradation in the immediate surrounding of the monument (such as on platform and/or apron) that could threat or affect the stability of the monument.

B. Other Types of Monuments

If the condition assessment is for underground structures or surrounding elements, use this part to record and describe degradations and their location.

C. Decorative Elements Table

Although the S-card has been designed to record and assess damages only to the structure of monuments and a separate “Rapid Condition Assessment for Mural Paintings and Decorated Architectural Surfaces (D-Card)” has been designed to conduct assessment of decorative elements, it has been decided to have a small table in the S-card, allocated to the assessment of decorative elements. This would allow inspector(s) to record and flag out any major / new

damage observed at the time of the structure assessment that is threatening the significance of decorative elements.

Type of decorative element: Indicate the type of decorative element(s) such as stucco, mural painting, glazed plaques, stone carving, sculpture, statue, flooring, etc. that you would like to record any damages to.

Location/Architectural Element: Identify and record the location of the damage. If you do not know the name of the architectural element, use Appendix II at the end of this document.

Damage type: Record the appropriate type of damage affecting the decorative element.

Severity of Damage: The severity of damage relates to the level of impact the specific damage has or may have on the decorative element (as can be judged from visual assessment). From the three levels of severity (High, Medium, Low), choose the appropriate one..

If the surveyor prefers, he/she can use the following colors based on the degree of severity to locate damages on the plan/sketch of the monument.

High

Medium

Low

Extent of Damage: The extent of damage represents the fraction (size) of the recorded area affected by the damage. The extent of damage should be selected from three levels of *partial to total, partial, and limited*. For cracks, size of crack could be recorded here.

Description: If necessary add any useful information about the observed damage.

Decorative surface assessment: If observed damages of decorative elements seem major and urgent to be addressed and it is necessary for the DoA mural team to go to that monument in order to assess the observed damage in more detail, type Yes. Otherwise, type No.

Photo number: Take detailed photographs demonstrating and locating the signs of degradation. From the camera, record the number of the photograph taken to illustrate the damage.

D. Threats and Risks

Note: **This section should be filled out by DoA technical staff or experts only since this kind of assessment requires a high level of professional experience and technical knowledge.**

Potential Threats to the Monument: Threats (or hazards) are phenomena that have the potential of causing damage to the monuments. Threats can be natural forces such as earthquakes, floods, etc. or human activities such as urban development, pollution, etc. Record the threat(s) as applicable. The types of threats listed in the field card are phenomena deemed as the most common potential threats to monuments in Bagan. If during the visual assessment a threat is identified that is not yet mentioned as an option in the field card, choose “other” and specify the kind of threat.

Exposure: Write down which elements or areas of the monument would particularly be affected by the identified threat. Exposure could also relate to the monument as a whole if more than just limited fractions are concerned.

Related Vulnerability Factors: Briefly summarize the factors that make the inspected monument more vulnerable in case a specific threat occurs. For example, if the identified threat was heavy rainfall “roof leakage” or “big cracks in masonry” would be factors that would make a Bagan monument extremely vulnerable.

Risk/Potential Impact: The potential impact is the result of an identified threat occurring when the monument is vulnerable, for example, if heavy rain falls onto a monument that has big cracks in its masonry, the potential impacts (depending on the severity of the cracks/ vulnerability of the monument) could be “water infiltration”, “further disintegration of masonry”, and/or even “collapse”.

Probability: Is the likelihood with which the identified threat will occur while having the potential to affect the monument. The inspector is meant to chose from “High”, “Medium” or “Low”, e.g. in case of an earthquake the inspector would most likely choose “Low”, because earthquakes do not occur very frequently and their occurrence is usually not reliably predictable, whereas the inspector would select “High” for heavy rainfall that occurs almost annually during monsoon season.

Severity of Impact: Taking into account the exposure, as well as, the vulnerability of the monument (Vulnerability Factors) the inspector needs to estimate what the severity of impact would be if an identified threat occurs. The inspector can chose “Low”, “Medium” or “High” depending on his/her judgment.

Risk Level: The Risk Level relates to the likelihood of an identified threat to occur and have an impact on the monument. In the process of conducting rapid condition assessment, it is important for the inspectors to assess the risk in order to specify to what degree the identified threat could cause future degradation. The risk level rating is important information for managers to take into consideration when for management planning and prioritizing preservation activities.

#	Potential Threats/Hazards	Exposure	Related Vulnerability factors	Risk/Potential Impact	Probability (likelihood)	Severity of Impact	Risk Level
1	* Flood (HL-22) Every year, heavy rainfall occurred within Aug; and Sept; according rainfall list from Department of Meteorology and Hydrology	Diffused on the site, especially inside of the structure	Lack of roofing Poor drainage	Cracking Decay of masonry Loss of adhesion	■High □Medium □Low	□High ■Medium □Low	□Very High ■High □Medium □Low □Very Low

*The already filled in example in the table is from the Pyu Cities.

In the process of rapid and visual assessment, some risks could be identified and assessed however more detailed work is needed to identify small-scale and/or difficult to detect risks, in order to monitor and prevent them. Choose and record one category based on the definitions below.

When undertaking the risk level rating, the inspector has to take into account the factors that were already assessed in the table and particularly relate the probability of the threat to occur with the level of severity of impact it may have on the monument in order to be able to estimate the risk level. The inspector has to assess the risk level of each particular identified threat to the monument by using the following ratings:

Very Low: No or very little damage could occur to a very small area of the monument.
Low: Little damage could occur to a small area of the monument.
Medium: Moderate damage to the monument may occur. A small part of the monument more vulnerable to identified threat is likely to be lost if actions to protect and conserve it are not taken.
High: Substantial damage to the monument could occur. Substantial loss of significance to a small fraction of a monument may happen or a substantial part of the monument may be lost if actions to protect and conserve them are not taken.
Very High: Significance damage to the monument could occur. All or most of the monument's significance is likely (expected) to be lost immediately or very soon. The monument will likely be irreversibly lost if actions to protect it are not implemented very soon.

Sketch of Monument: Draw to scale a ground plan of the monument being assessed. Indicate the approximate scale of the drawn plan. If the plan of the monument exists in Pichard's inventory, you can print the plan and use that instead of drawing the plan. If necessary for some monuments (especially for multilevel monuments), sketch the elevation of the monument in order to better locate the signs of degradation.

Locate signs of degradation (damages) on the plan using the combination of letters and numbers assigned to each condition table in the S-card (please refer to the image on page 12). The photo reference number taken for each detected damage can be added on the plan, as well, for easy reference.

4.3 Section 3: Level of priority and recommended actions

In order to make the prioritization more practical, accurate, and comparable in Bagan, ratings have been assigned and defined. Although ratings could be subjective, the intention is that by defining ratings, a shared vision can be created and an accurate grading and assessment system can be produced.

In the S-card, the assessment process starts in the section 2 “condition assessment” table. First step of the process is *identification* and *localization* of damages. The second step is to assess the *severity* of damage and *extent* (size) of damage for each recorded damage.

Once this section is completed in the field, the section 3 “Level of Priority and Recommended Actions” should be filled back in the office by a person with required credentials (or in the field if the inspector is senior and has experience in rating of condition). Based on severity and extent of overall observed damages and degradation, the overall condition could be assessed. Based on observed threats and damages, conservation and management actions and activities could be recommended. For prioritizing conservation activities and deciding where and how to prudently use the limited resources of the DoA, criteria such as loss of heritage integrity and value, degree of damage, public safety, intervention complexity and its feasibility, local staff capacity, etc. are important to be taken into consideration. For example the more severe the damage and the higher the value of the structure, the higher priority should be given to that specific monument to carry out the needed intervention actions/activities.

Monument Grading: Based on the desk research identify and record the grading of the monument being assessed. Given the large number of monuments in Bagan, a grading for the monuments had been defined by Pierre Pichard and the DoA in order to categorize the monuments in Bagan and prioritize them for conservation work. The monuments had been graded in 3 categories based on their archaeological and historical importance and value, i.e. Grade 1 monuments were deemed unique monuments based on their size, configuration, decorative elements, history, inscription, etc. and therefore outstanding examples of Bagan architecture.

Pierre Pichard in his "Handbook for Repair and Conservation of Monuments in Pagan" has further defined these categories as follows:

Grade 1: The greatest and best known monuments like Ananda 2171 or Shwe- zigon 1 have been included in grade 1 because of their historical and religious value, together with monuments of a unique type in Pagan like Kyaukku-umin 154 or Shin-bin-thaly-aung 1570. A total of 34 monuments have been graded 1.

Grade 2: 100 monuments of great archaeological importance are graded 2, either because they have exceptional features like paintings in Loka-hteik-pan 1580, or stucco decoration in monastery 906, or because they are instances of a rare type of building, like circular temple with central pillar (temple 1885). At least one monument representative of each variety of temples, stupas and monasteries, has been included in grades 1 or 2.

Grade 3 **-** 281 other important monuments are graded 3, either because they display original architectural or decorative features or because of their significance in the Bagan landscape.

Monuments graded 3 should be inspected every two years at least. When their stability is threatened, emergency repairs should be provided as soon as their need is detected, and regular repairs or strengthening should be systematically included in the coming budgetary year.

Value Factors (taken into account for prioritization)**:** This section intends to record the most important aspects of a monument's significance in order to use them as factors in assessing priorities, making decisions and recommending management and conservation actions, and recommending future monitoring schedule. In the prospective re-developed inventory for Bagan and database, values and significance need to be assessed and recorded by a committee of individuals and experts with thorough knowledge of the monuments in Bagan. Once the digital database is functional this information will be automatically generated. This information should not be collected by the inspectors.

Overall Severity Magnitude of Observed Damages: Overall severity magnitude represents the strength and intensity of the overall observed and recorded damages to the whole monument. The severity should be selected based on the qualitative approach. One degree of severity should be recorded from the list: “High”, “Medium”, or “Low”.

If the surveyor prefers he/she can use the following colors based on the degree of severity to locate degradations on the plan/sketch of the monument.

High

Medium

Low

Overall Extent of the Observed Damages: The overall extent of observed damages represents the overall fraction of the monument affected by degradation. It should be noted that the same measurement unit should be applied for different damages at the same monument. It has been decided that for Bagan at this stage of rapid assessment would be more appropriate to estimate the extent of damages based on the qualitative approach and three levels of “Partial to total”, “Partial”, or “limited”.

Overall Condition Rating (Current): The overall structure condition rating specifies to what degree the monument is experiencing (or not) active degradation, the monument’s physical stability, and its capacity (or incapacity) to resist natural or human factors.

In order to assess the overall condition rating the following points should be kept in mind:

- In order to assess the current overall condition, the inspector should assess the totality of the monument and assess the condition of the whole monument. At the same time the inspector should keep in mind different degradation factors affecting the structure, in order to assess the condition of the structure in its totality.
- Assess the overall condition based on the *overall severity magnitude* and *overall extent* of damages and degradation affecting the whole monument.
- Assess the overall condition based on damages causing the ongoing -and possible future further degradation of the monument. For the purpose of *monitoring*, old and stable

damages should not affect the current condition assessment of monuments (this point of new vs ongoing and stable damages has been described in section 3.0 of this document).

- Take into consideration that there are more than 3000 monuments in Bagan and based on available information (albeit not systematic and comprehensive inspections), a fair number are in relatively poor condition. However if most of the monuments are assessed as bad, actual implementation of activities becomes almost impossible. In order for the assessment to be useful and implementable, it is important to assess the monuments in a way that considers that there 3000 monuments and not just one.
- Do not calculate values (uniqueness) to assess the condition. Values / grading are criteria to consider for prioritizing the actions needed.

In order to assess the condition qualitatively, an agreed standard terminology and definition is necessary. In S-card, the "overall structure condition ratings" categories are defined as follows:

Good: The monument shows no evidence of active damages and the structure is well preserved and stable. No new signs of degradation exists since the last monitoring inspection.

Fair: the monument shows little evidence of active damages and/or minor signs of degradation of small areas of architectural elements are evident. The monument might be in need of small/minor interventions.

Poor: The monument shows minor signs of active degradation to minor parts of the architectural elements are evident. The monument needs some management and conservation actions to maintain its present condition.

Bad: visible signs or moderate signs of active degradation to moderate features of architectural elements. Immediate actions are needed in order to maintain the condition.

Very bad: visible signs of severe structural instability and/or serious active degradation. The majority of architectural elements are very seriously damaged or are missing. Emergency interventions are needed to maintain the current condition and integrity of the monument.

Overall risk rating: The overall risk rating should be based on the risk assessment that is undertaken as part of section 2. If the monument is affected by more than just one threat, the risks from all identified threats should be considered together in order to come up with the 'overall risk rating'. The rating categories for the overall risk rating are the same as the categories for rating the risk level of individual threats:

Remarks: In this field the inspector can record any additional information on hazards description, main vulnerability, risk statement and assessment, etc. as well as his/her final observations on the determined risk level(s).

Immediate Action(s) Needed: When assessing a monument, some activities/actions such as vegetation clearance or waterproofing (as listed in the S-card) could be carried out immediately with limited resources and without need for any further studies in order to immediately enhance the condition of the monument. Identify and select the appropriate immediate actions(s), if there are needs for any.

Action(s) Needed: Identify and select the intervention actions and activities needed to be carried out at the monument to protect and preserve integrity and mitigate the identified damages. Action(s) needed should be selected from the list in the S-card based on the observed degradation and overall condition of the monument. In choosing activities, criteria such as intervention complexity and its feasibility given the available resources and local staff capacity, need to be considered.

Level of Overall Priority (to undertake actions needed): Specify the level of priority to undertake the identified needed actions. The person carrying out this part of the assessment should consider the *value* of the monument, as well as the level of damage and risk to the monument. The *overall condition and risk ratings* are therefore important factors in the assessment of priorities. Choose a level of priority from the list in the S-card, either "Urgent", "High", "Medium", "Low", or "None".

Priorities should be identified and given in order to allocate resources to carry out needed management and conservation actions and activities. Monuments with urgent and high rating, will become high in the list of activities.

The categories for the priority for in depth condition assessment are as follows:

Urgent: The identified action(s) need to be carried out immediately.

High: The identified action(s) need to be carried out as soon as possible.

Medium: The identified action(s) need to be carried out within a year or two (or before next rainy season).

Low: The identified action(s) have a low priority for carrying out.

None: No priority in undertaking any actions.

Remarks: In the Remarks field, the inspector can explain his/her final observations on the current state and condition of the monument. It could include any additional information on potential rate of deterioration (why the inspector thinks the condition is poor or bad), any additional information on his/her recommendations on immediate interventions (vegetation that need to be cleared) and management and conservation activities.

Safety concerns (dangers for visitors): The ultimate objective of conducting condition and risk assessment is to ensure the preservation of monuments and the safety of the visitors. Enter 'No' if there are no visible safety concerns for visitors and enter 'Yes' if there are any concerns for visitors visiting the monument. If yes, specify the safety concern and its location.

Recommended Future Monitoring Schedule: Record how frequently the inspector recommends that the monument needs to be monitored and assessed. The monitoring frequency should be determined based on the vulnerability of the monument, its significance, its overall condition, and the availability of resources (staff, time, etc.) of the DoA and what is feasible and realistic for monitoring monuments in Bagan.

The inspector can choose from one of the monitoring frequencies that are listed in the S-card.

5.0 STORING AND MANAGEMENT OF COLLECTED INFORMATION

After every day of fieldwork, sufficient time should be allocated for the storing and archiving of the collected information. If the fieldwork is in the morning, the storing should be done in the afternoon. If the fieldwork takes the whole day, the second day (half of the day) should be devoted to storing and archiving of the documents.

Note that all the collected information need to be stored on a pre-identified DoA computer(s) that is selected to be used for the database, inventory, and condition assessment recording purposes. Inspectors can use their personal laptops only to store back-up of their data. The main copies should be stored on DoA's assigned database computer.

5.1 Photo Archiving Guideline

Good quality photographs are one of the most effective ways of recording (and comparing) the condition of monuments. Download photographs by the end of each inspection day. A dated photographic record is essential in order to be used for the future assessment and monitoring of the monuments and enables detection of changes to damages and/or detection of new damages.

Below is the list of protocols for downloading and storing photographs taken during the condition assessment:

Filing: Each inspector should create a folder for each monument and name the folder with the same inventory number as recorded for that monument. Create a subfolder and name it "rapid condition assessment". Then create another subfolder and name it "photographs". Under the photographs folder create subfolders for each date of the monitoring activity/condition assessment. Download all the photos taken for the monitoring of that monument under this folder.

For example your directory structure for a rapid assessment in September 2015 should look like this:

🡻Monument Inventory Number (E.g. 1248)
    🡻rapid condition assessment/

➔November 2014/
🡻September 2015/
🡻photographs/
Temple_1248_Sep2015_wall_crack_839.JPG
…

File name: It is strongly recommended to name the individual image files downloaded from camera using the following format:

Type_Monument Inventory Number_Date_Location_Damage Type_ Photo Number

Each element within this filing convention is defined as:

Type: enter type of the monument (i.e. temple, stupa, monastery, etc.).

Monument Inventory Number: record the monument inventory number (PP's nb). If the monument does not have a PP number, record its temporary number.

Date: record the month and year when the photo was taken (e.g. Sep 2015)

Location: record the location of the photograph. Use acronyms if necessary. For example for west wall exterior you can write "W wall ext".

Damage Type: enter type of the damage such as "crack"

Photo Number: enter the digital number associated for each photo

Photo Description Information: briefly describe the subject of the photograph describing the reason for taking the photo. For example describing the location and kind of degradation affecting the monument, etc.

It is recommended to add a Word document for each monument, copy the photos in that document and add a caption briefly describing the orientation, location of the damage (where is it) and main issue (what is it) of each photo.

5.2 Document Scanning and File Naming

The S-cards for each monument should be kept in an individual monument folder, filed by

monument inventory number and easily available when needed.

The individual at the DoA responsible for monitoring has to scan each filled and completed S-card and download the scanned copies in the monitoring folder created within each monument folder (where photos of the monument will be downloaded as well).

🡻Monument Inventory Number (E.g. 1248)
    🡻rapid condition assessment/
        🡺November 2014/
        🡻September 2015/
            🡺S-card scanned copies
            🡻photographs/
                Temple_1248_Sep2015_wall_crack_839.JPG
                …

It is expected that a database will be developed including the inventory and condition assessments of each monument. When the database is available in the future, all the information recorded in the field card should be entered into the database.

6.0 Analyze and outcomes of monitoring

Once the fieldwork is completed, the ratings are assessed, and the monuments are prioritized, the results need to be analyzed, categorized and presented in order to be used in an effective manner. Analyzing the collected data will identify trends and help to understand what is happening to monuments over time. By collecting data and measuring degradations in qualitative manner, based on fixed and defined terminology, data can be compared and priorities can be given to the monuments most in need. The monuments with higher value and higher level of priority are the ones that will get priority in the allocation of resources (financial and human) to apply the recommended management and conservation activities.

It is recommended that each inspector after every day of field work prepares a list and categorizes the monuments that were assessed based on the urgency for intervention activities, the monuments that need assessment of decorative elements, monuments whose assessment ratings need to be reviewed/completed by a senior expert and/or roundtable discussion, etc. For each monument the work to be carried out (and selected in the “immediate

action(s) needed" and "action(s) needed" fields) should be clearly stated. The manager based on these information can allocate Bagan's existing budget to undertake the preservation and conservation activities and to make budgetary requests for when funding is not available. He/she should inform the respective staff to prepare the schedule of the repair and maintenance team for the immediate actions to be carried out.

The condition assessment generates a substantial amount of information namely S-cards, photographs, any additional report, etc. All of that needs to be archived and stored as explained in section 5, and be accessible.

The best practice in order to enhance the management and conservation of a site is to record and store all the information on the condition of the site in a database and information system. This system that will be developed for Bagan will make the process of analyzing data coming from the monitoring form and making management decisions easier and more accurate. In the meanwhile, filing and storage of all gathered data is crucial.

Appendices

Appendix I: Visual Glossary of Damages and Degradation

Appendix II: Illustrated Glossary for Architectural Elements

Appendix III: Structure Rapid Condition Assessment Card for Bagan Monuments (S-Card)

Appendix I

Visual Glossary of Degradations

I. Collapse

Final stage of structural degradation, in which, by various factors, a structure falls in a state where it cannot stay independently standing or cannot support applied stress and it loses the equilibrium so that it collapses or is destroyed. In the case of that a structure collapses totally, it becomes structurally stable at the point in time. However, if a structure is only partially destroyed, its remaining part tends to be in an extremely unstable state, which may lead to a risk of triggering a chain reaction of collapse. It is crucial to assess if a structure is still in the process of falling to pieces or has already been completely fallen down and is in a stable state at the moment.

Total collapse

It can be the state of that all structures above the ground are completely destroyed. It also includes the situations where a tower, a roof and a porch totally collapse.

Partial collapse

The situation would be that part of a structure, for example only the upper half of a building, only a gallery or only around one corner, is destroyed. It can also include the case where only part of a vault on the upper part of a gallery partially collapses. As for the safety of a partially collapsed building, for instance, a building whose roofs have been destroyed and lost, which retains only wall bodies can be in a stabilized state but a partially collapsed structure that has lost only part of vault is highly probably in a extremely unstable state.

II. Deformation

There are two different cases: one is the state where an entire building is distorted and another one is the state where part of the structure constituting a building is deformed.

The deformation occurs in a whole building is roughly classified into inclination and subsidence. In both categories, they are generally caused by luck of a load bearing capacity of the ground or defect in a foundation structure.

On the other hand, the partial distortion generated in part of a structure occurs in relation to losing the stress balance or local stress concentration. It can be triggered by an earthquake. It can also be caused as a chain reaction by degradation of material strength over time and partial deficit. There are also cases of having a structural defect in the original design. Once such deformation occurs, it tends to progress irreversibly and therefore its transition needs to be observed with care. In many cases, deformation is multiple phenomenon accompanied by damage such as cracks and intrusion of rain water.

Uneven subsidence

Although there is a difference in degree, consolidation settlement occurs in the natural ground or foundation soil layers to consolidation due to the building load applied over a long period of time. Subsidence itself is, however, harmless to stability of a building, when it happens evenly. What matters is the case in which the degree of subsidence varies with locations, which is caused by the difference in loads from above, foundation structures and strength of the ground. Uneven subsidence brings about partial deformation of a structure, makes a flow of load of a upper structure discontinuous and leads a structure into the various states of damage and deterioration because of stress concentration.

Swelling out of wall

When a wall surface received horizontal load from an orthogonal direction, it often happens that the middle of the wall, which has a few resistance element, is extruded forward comparing to both end parts, drawing an arch shape. In the case of an outer wall of a gallery with a vault roof, it can be often observed that the middle part of the wall is inclined outward and the wall surface is twisted. Meanwhile, as for a retaining wall that receives earth pressure, its middle to bottom part in height direction tend to be pushed out, which might be risk of leading to collapse of the entire wall. In the case of the remains of Bagan, since the core of the large wall thickness of a brick wall contains much sludge mortar, it can happen that a vertical load presses and expanses both inner and outer walls, which can be counted as another type of deformation due to swelling out of a wall.

Inclination of wall

The phenomenon that an entire wall with a large surface is outwardly inclined can be observed. In the case of the condition missing resistive elements to out-of-plane stress due to occurrence of cracks around a corner, a wall tends to be inclined at an accelerated rate by the horizontal force applied on an area from a vault to an upper end of the wall. Besides that, in many cases, bricks on the foot of a wall are deteriorated and damaged, which can synergistically worsen the condition of a wall and would lead to collapse of an outer wall at last.

Deformation of vault

Regarding an arch structure, a vertical load is converted into compression stress inside the arch and the arch structure is eventually supported by vertical and lateral stress at its bottom edge. Therefore, if the bottom part becomes wide open or the curve of an arch is discontinuous, the stress balance turns out to be lost and it instantly becomes unbalanced. In the remains in Bagan, many vaults have incomplete keystones and therefore gaps are generated at the top of vaults. There are also many cases where a ridge of a cloister vault and a corner of a half vault placed on a gallery tend to have cracks, which bring about intrusion of rainwater into the structure.

Forward leaning of pediment

The upper part of a front wall of a porch or a front room corresponds a gable wall of a vault roof, which is located behind the front wall. The top end of this kind of front wall has a large projecting part above the roof level, which forms a decorative pediment. The back side of a pediment is easily covered by growing plants. The projecting part on top can be pushed out by such vegetation and lean forward, which would often lead to collapse of the pediment in the end.

III. Break

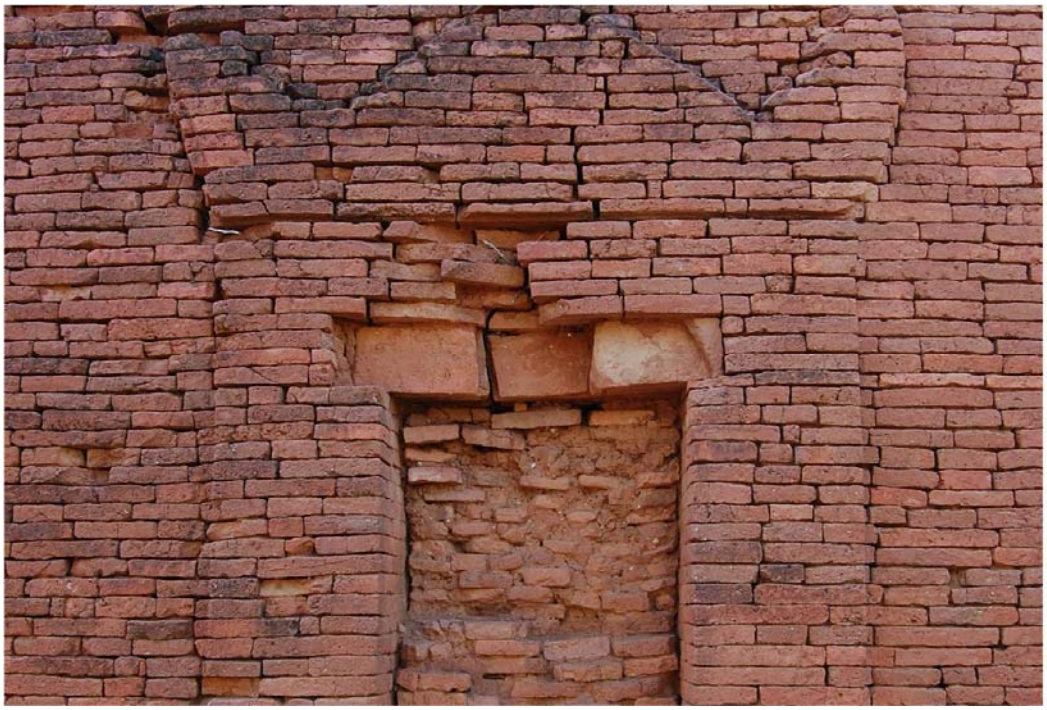
This term means here partial loss of a structure, which is generated due to a dynamic mechanism other than cracks. Representative examples are deficiency and lack of a tower top caused by earthquake, which are however rare to be found nowadays as many of them have been repaired or rebuilt in later years.

There are a relatively large number of cases where a lintel stone installed above an opening is broken as it cannot bear the load from above. Compression breakage around a wall corner and a foundation can also happen when stress is concentrated in one location because of subsidence and inclination of a building.

On undersurface of a vault and at a wall top around a cornice, a certain unit of a brick-made body, which can no longer support self weight due to deterioration of some members or reduction of adhesive strength regarding joints, would fall off by becoming a block shape.

Although there might be relatively few cases where damage due to impact naturally occurs, with the building close to a road would have a risk of being damaged by a car crash. There are also some incidents of human destruction including illegal digging.

Breakage of a lintel



Breakage around a wall corner

Lack of members from the cornice level of a wall

Lack of bricks from a vaulted ceiling

IV. Crack

When a structure is under applied stress that is not originally expected, cracks are generated on a certain point as a preliminary step toward collapse or break of the structure. Occurrence of cracks is always accompanied with displacement and /or deformation. In the state that cracks are extended and therefore the structure becomes discontinuous, deformation is highly probably accelerated. Conversely saying, through the observation whether cracks are enlarged, it can be judged if deformation is in progress.

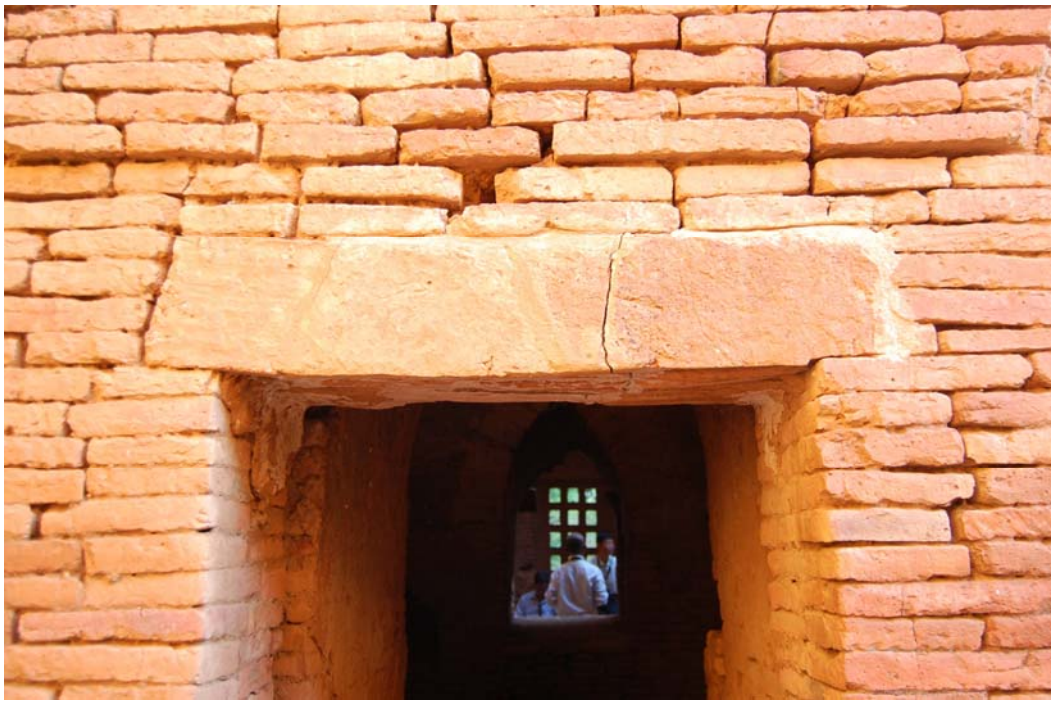
The cracks that occur within a limited location due to partial stress applied are not necessarily a huge risk of causing instability to a whole structure. On the other hand, even though the cracks are minor, given that they are extended over a wide range, such as from the bottom of a wall up to a roof, it should be considered that stress might be unevenly distributed in an entire structure and we should observe its transition cautiously.

From the cracks rainwater intrudes into a structure. Besides that, when growth of microorganism leads to vegetation of higher plants, the structure falls into the vicious cycle of that the plants roots which develop into inside cracks further stretch and extend the cracks, which turns out to destroy the structure.

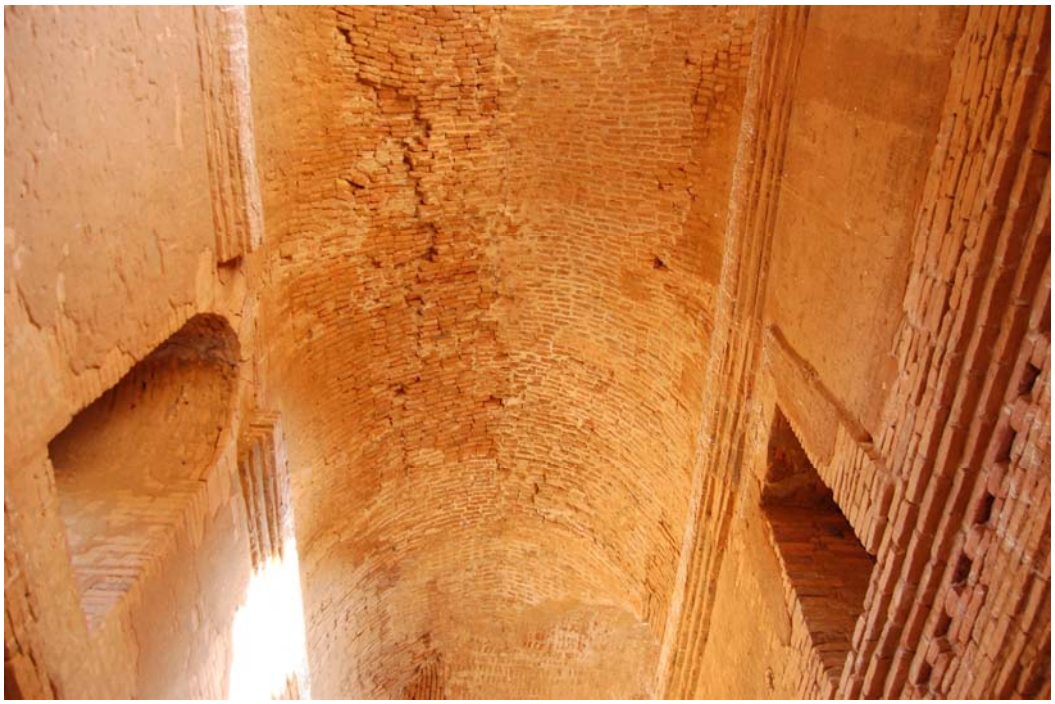
In the case of the cracks seen on a brick wall, some are generated along joints and some others penetrate bricks destroying them regardless of joints. Although the difference between them depends on strength of material, the latter is possibly applied strong stress over a wide area. Many of cracks occur on the locations with weak strength or the place where stress tend to be concentrated.

From an upper corner of an opening, cracks apt to start. At the part that has a thin wall thickness, for instance the location having stairs or blind corridors, cracks tend also to be generated. The cracks most often found are vertical cracks around a corner of an exterior wall and horizontal cracks at the top or in the middle part of a vault. Shear cracks that diagonally traverses on a wall surface most likely occurred due to past earthquakes.

Local crack



Horizontal crack on top of a vault



V. Deterioration/Decay

Deterioration or Decay is a general term for lowering the quality of material resulted from a physical, chemical or biochemical action.

It includes weathering of a surface by being exposed under sunshine, wind and rain, salt weathering caused with repeating absorption and evaporation of moisture, surface degradation due to the growth of algae and mosses and insect damage by bugs and termites. In the case of timber, it can deteriorate because of wood-rotting fungi. As Bagan is located in the subtropics, there is no possibility of deterioration of material caused by freezing.

The degree of deterioration hugely depends on material and the given environmental conditions. Weathering easily progress in a windy and high place and salt weathering is prominent at a foundation near the ground. Growth of microorganisms are obvious at the locations with little sun exposure, is poorly ventilated and continuously humid. Some examples of violent deterioration can be observed in particular on the wall surface where rainwater flows down from a roof.

There are a very few monuments for which sandstone was used as building material, in particular as exterior material, and with these monuments show conspicuous deterioration especially at the bottom of an exterior wall. Together with salt weathering, cracking generated along layers of sandstone are obviously found.

Although, at the present moment, it is unclear how much acid rain caused by air pollution might affect a condition of a structure in Bagan, we need to consider it as a potential risk factor for deterioration in the future.

Growth of microorganisms on the wall

Deteriorated surface of a sandstone wall

Deteriorated surface of a brick wall

VI. Vegetation

Growth of plants, such as bushes and trees, is one of the harmful elements for a masonry structure. Needless to say on the ground where there are originally soil containing nutrition and moisture, the growth condition necessary for plants can be satisfied, given soil and seeds are carried by wind or animals and moisture is supplied, even though it is on an upper surface of a structure. Vigorous growth of plants is often found on an upper surface of a terrace and behind a rising wall where there is soil and moisture.

Once roots of plants get into a cracks generated in a structure, they keep growing through the void inside the structure and extend the cracks, which can cause water intrusion into a structure. Therefore, it is crucial to eliminate plants at an initial stage of their growing.

Inside a building there are only limited sunlight and moisture and therefore it is basically not suitable for plants to grow. However, once a roof is lost, plants can rapidly grow and they destroy the structure. Even though plants do not touch a structure itself, it is far from desirable to have plants growing next to the structure, as they block ventilation. If trees are large, there is also a danger that fallen branches and fallen trees would destroy the building.

Growth of bushes on the roof terrace

Growth of trees in the vicinity of a monument

VII. Poor drainage

Stagnation of moisture entails chemical or biochemical deterioration of a structure of bricks and joint material. It also offers suitable growing conditions necessary for plants that are harmful to the monuments. Monument structures used to have protective devices, such as a water-proof layer that prevents the water from intruding into a structure, a water gradient and a gutter both of which drain rainwater fallen to a rooftop and around the foot of a building. Stagnating of rainwater is caused when these devices cannot sufficiently work because of the deterioration over time, damage or deformation.

Poor drainage around a building brings about salt weathering at the brick foundation of an exterior wall due to a capillary action, which results in an unstable state of an entire wall by weakening of these bricks.

When a large amount of rainwater intrudes into the inside of a structure through cracks, the rainwater seeks to the space to escape and creates a water passage, which might lead to lowering of structural strength because of loss of joint material.

Additional drainages from the roof terrace

Deteriorated surface of the roof

VIII. Leak

One of the indexes that indicate the existence of cracks around a roof is patches of damp on a ceiling made by rainwater soaked in. This means that, at the same time, the cracks penetrate outside-inside the structure and water path has already been created inside the structure. Not only there are some cracks caused by deformation of a structure but also water entered into the structure through cracks, which highly probable cause loss of joint materials, degradation of strength and growth of plants and the structure may deteriorate further.

Rain leaking into a interior space, not only damages and washes out mural paintings executed on a ceiling face and an interior wall, but also deteriorates and exfoliates its under layers.

Trace of water leakage at the corner of vaulted ceilings

Washed out surface of the mural paintings

IX. Others

Even though some elements are not structurally important, deterioration or loss of sculptured figures and decorative members lower the values of a building in terms of its religious, historical and aesthetic aspects. We should also be cautious to prevent graffiti on the wall.

There are some cases where supporting members are inserted into structurally unstable parts. It can be a huge risk to structural stability if this kind of supporting member deteriorates or is damaged and therefore it is necessary to continuously check the condition of supporting members to see if they maintain a sound state.

The condition of maintenance and operation facilities, such as doors at the entrance of a building, should be confirmed. They should be maintained in a good condition in order to prevent humans and animals from entering the building in an efficient manner.

Graffiti on the surface of a wall

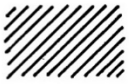
Burning fire next to a monument

Appendix 2 – Architectural Elements*

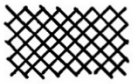
1 DRAWING CONVENTIONS
CONVENTIONS GRAPHIQUES
ပုံဆွဲများ၏သင်္ကေတများ

masonry (usually brickwork)
maçonnerie (brique généralement)
ပန်းရံအတတ် (လုပ်ရိုးလုပ်စဉ်အုတ်လုပ်ငန်း)

masonry : later addition
maçonnerie : addition ultérieure
ပန်းရံအတတ် (နောက်တိုးဖြည့်စွက်ခက်)

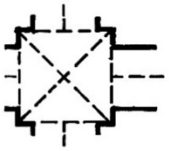


virgin soil (underground structures)
terrain naturel (structures souterraines)
သဘာဝသဲမြေ (မြေအောက်အဆောက်အိုးများ)



debris covering floor
gravats masquant le sol
ကြမ်းပြင်ပေါ်ထွင်မရှင်းလင်းရသေးသောသဲခဲမ ား

stone inscription, or inscription shed
inscription sur pierre, ou abri à inscription
ကောက်စာ (သို့မဟုတ်)ကောက်စာရုံ



main lines of vaulting
lignes principales du voûtement
အဓိကအမိုးကုန်းခေင်လိုင်းများ

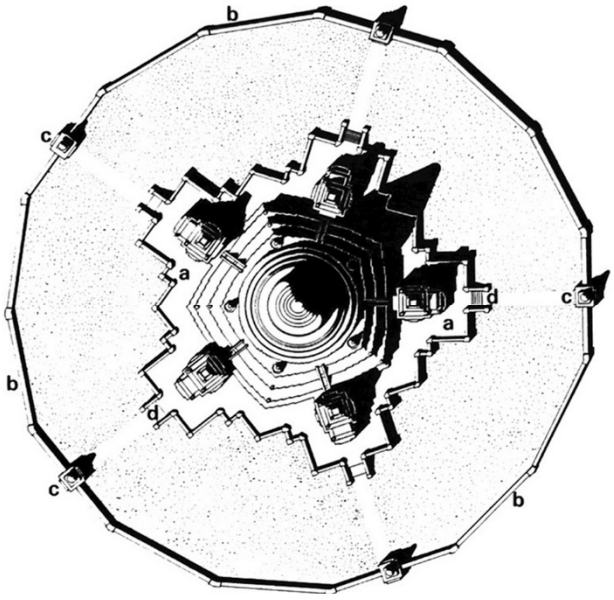
missing section
partie détruite
ပက်စီးသွားသောအပိုင်း

upper exit of staircase
issue supérieure d'un escalier
အပေါ်တက်ရန်ကြောင်လိန်လှေကားပေါက်

2 STRUCTURES SURROUNDING MONUMENTS
ABORDS DES MONUMENTS

ရှေးဟောင်းအဆောက်အဦးမာ၏ပတ်ဝန်းကင်အစိတ်အပိုင်းများ

947



a - platform
b - enclosure wall
c - gateway
d - stairway

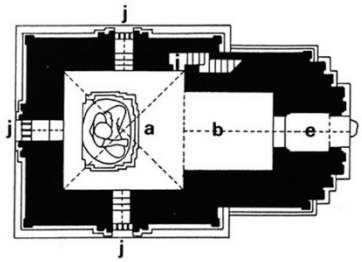
a - terre-plein
b - mur d'enceinte
c - pavillon d'entrée
d - perron

a - အုတ်ခုံ (စင်္ကြံခုံ)
b - တန်တိုင်
c - တန်တိုင်းမုခ်ပေက်
d - အုတ်ခုံလှေခါး

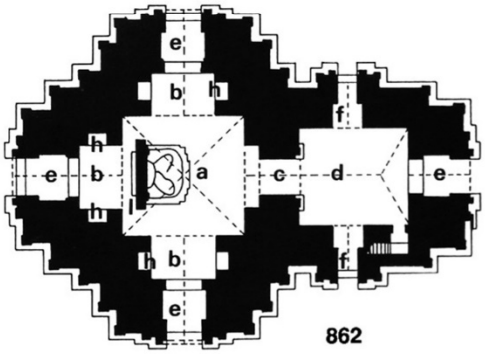
3 TEMPLES

3.1 CENTRAL-SHRINE TEMPLES
TEMPLES A CELLA CENTRALE

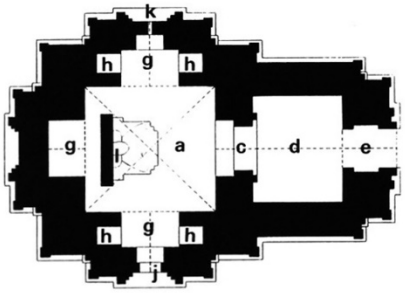
အလယ်မဏ္ဍိုင်မပသောဂူဘုရား များ (ဂန္ဓကုဋိတိုက်အလယ်တွင်ရှိသောဂူဘုရားများ)



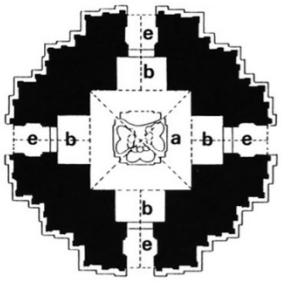
1580



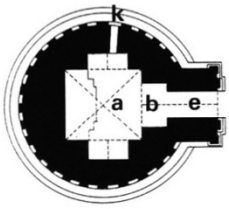
862



44



475



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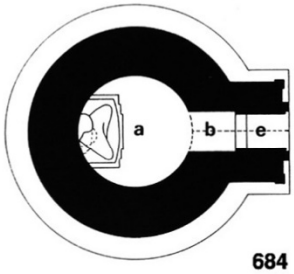


684

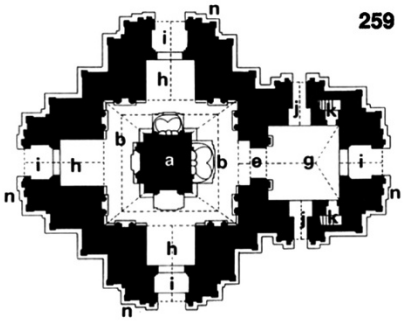
a - central shrine
b - vestibule
c - passage
d - entrance hall
e - porch
f - lateral porch
g - forepart
h - niche
i - internal staircase
j - window
k - aperture
l - screen-wall

a - cella centrale
b - vestibule
c - passage
d - hall d'entrée
e - porche
f - porche latéral
g - avant-corps
h - niche
i - escalier interne
j - fenêtre
k - jour
l - mur écran

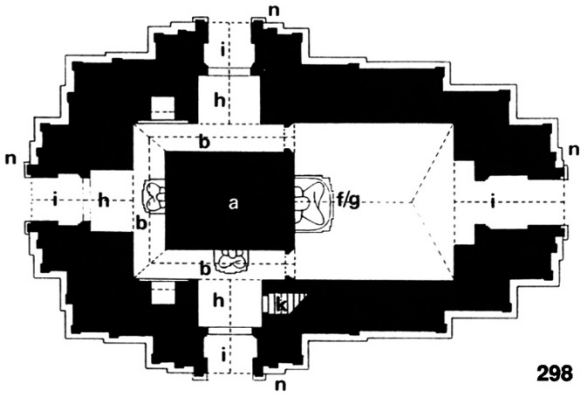
a - အလယ်ဗဟိုဂန္ဓကုဋိတိုက်
b - အာရုံခံ
c - ဖြတ်ကူးလမ်း
d - ရှေ့အောင်ခန်းမကြီး
e - အဝင်မုခ်ဆောင်
f - ဘေးဝင်မုခ်ဆောင်
g - ဘေးဆောင်အခန်း
h - မုခ်ကပ်
i - ကြောင်လှိန်လှေခါး
j - ပြူတင်းပေါက်
k - ရောင်လင်းပေါက်စ
l - တံခါ

3.2 TEMPLES WITH A SOLID CORE
TEMPLES A NOYAU PLEIN
အလယ်မဏ္ဍိုင်ပသောဂူဘုရားများ

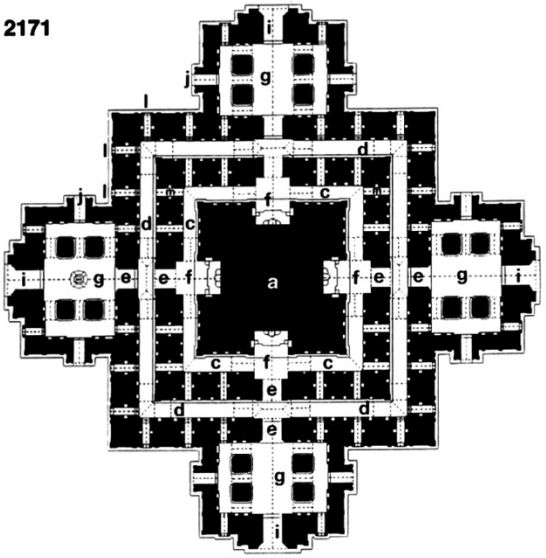
259



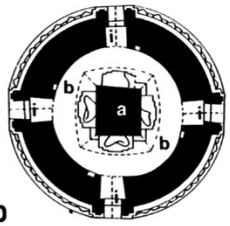
298



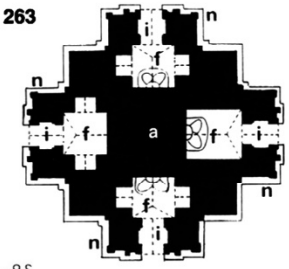
2171



1790



263



a - solid core
b - corridor
c - inner corridor
d - outer corridor
e - passage
f - shrine
g - entrance hall
h - vestibule
i - porch
j - lateral porch
k - staircase
l - window
m - internal opening
n - forepart with porch

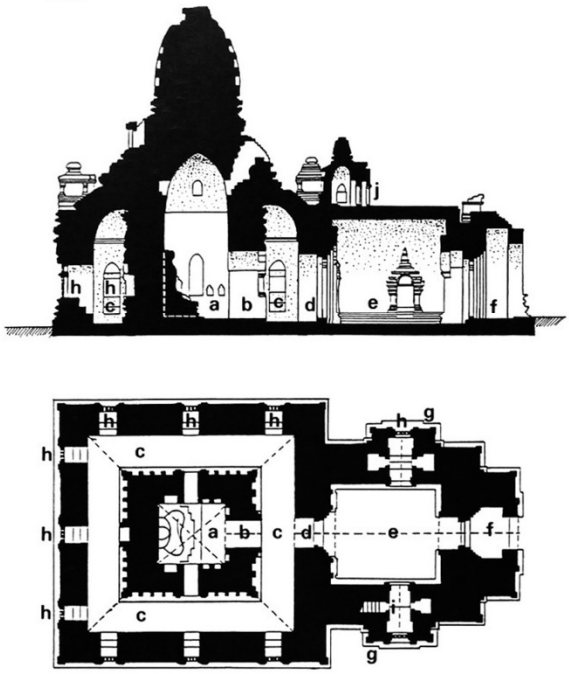
a - noyau plein
b - couloir
c - couloir interne
d - couloir externe
e - passage
f - cella
g - hall d'entrée
h - vestibule
i - porche
j - porche latéral
k - escalier
l - fenêtre
m - fenêtre interne
n - avant-corps avec porche

a - အလယ်မဏ္ဍိုင်
b - စင်္ကြံပတ်လမ်း
c - အတွင်းစင်္ကြံပတ်လမ်း
d - အပြင်စင်္ကြံပတ်လမ်း
e - ဖြတ်ကူးလမ်း
f - အတွင်းဂန္ဓကုဋိတိုက်
g - ရှေ့ဆောင်ခန်းမကြီး
h - အာရုံခံ
i - ရှေ့ဝင်မုခ်ဆောင်
j - ဘေးဝင်မုခ်ဆောင်
k - ကြောင်လိန်လှေခါး
l - ပြူတင်းပေါက်
m - အတွင်းဘက်ပြူတင်း
n - မုခ်ဆောင်နှင့်တကွရှေ့ထွက်တံခါး

3.3 TEMPLES WITH CENTRAL SHRINE AND CORRIDOR
TEMPLES A CELLA CENTRALE ET COULOIR

ဂန္ဓကုဋိတိုက်နှင့်တကွစကြ်ပတ်လမ်းပါသောဂူဘုရားများ

1323



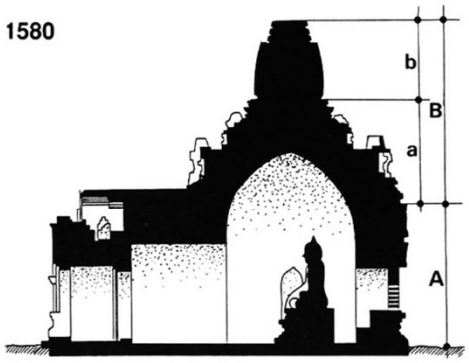
a - central shrine
b - inner passage
c - corridor
d - outer passage
e - entrance hall
f - porch
g - lateral forepart with window
h - window
i - staircase
j - roof shrine

a - cella centrale
b - passage interne
c - couloir
d - passage externe
e - hall d'entrée
f - porche
g - avant-corps latéral avec fenêtre
h - fenêtre
i - escalier
j - sanctuaire en toiture

a - အလယ်ဂန္ဓကုဋိတိုက်
b - ဂန္ဓကုဋိတိုက်အဝင်လမ်း
c - စကြ်ပတ်လမ်း
d - တိုက်မအဝင်လမ်း
e - ရှေ့ဆောင်ခန်းမကြီး
f - အဝင်မုခ်ဆောင်
g - ဓာပေါက်ပြုတင်းနှင့်တကွဘေးမုခ်ဆောင်
h - ဓာပေါက်လေသာပြုတင်း
i - ကြောင်လိန်လှေကား
j - အပေါ်ထပ်ဂန္ဓကုဋိတိုက်

3.4 SINGLE-STOREY TEMPLES
TEMPLES D'UN NIVEAU
တစ်ထပ်လှိုဏ်ဂုဘုရားများ

1580



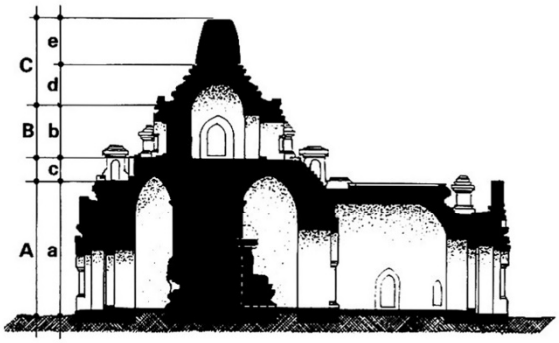
A - main body
B - upper parts
a - terraces
b - square tower

A - corps d'édifice
B - parties hautes
a - terrasses
b - tour carrée

A - တိုက်မပိုင်း
B - အပေါ်ဆင့်အစိတ်အပိုင်းများ
a - ပစ္စယံဆင့်များ
b - ကွန်းတောင်

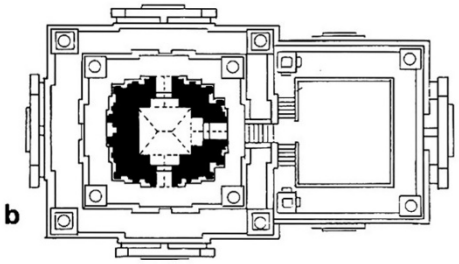
3.5 TWO-STOREY TEMPLES
TEMPLES DE DEUX NIVEAUX
နှစ်ထပ်လှူဏ်ဂုဘုရားများ

765



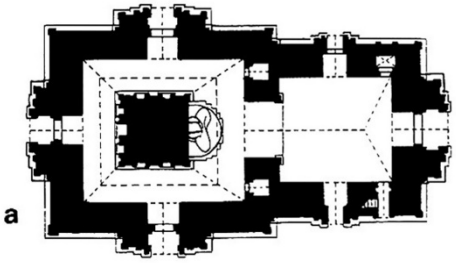
A - ground floor
B - upper storey
C - upper parts

a - ground floor with solid core
b - upper storey with central shrine
c - lower terraces
d - upper terraces
e - square tower



A - rez-de-chaussée
B - étage
C - parties hautes

a - rez-de-chaussée à noyau plein
b - étage à cella centrale
c - terrasses inférieures
d - terrasses supérieures
e - tour carrée

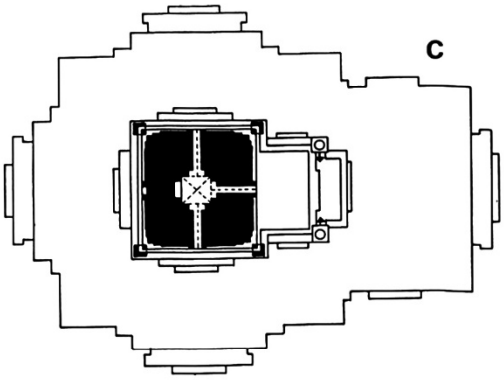


A - အောက်ထပ်
B - အပေါ်ထပ်
C - အပေါ်ဆင့်အစိတ်အပိုင် များ

a - အလယ်မဏ္ဍိုင်နှင့်တကွအောက်ထပ်
b - အလယ်ဘုရာ ခန် နှင်တကွပေါ်ထပ်
c - အောက်ပစ္စယများ
d - အထက်ပစ္စယများ
e - ကွန် တောင်

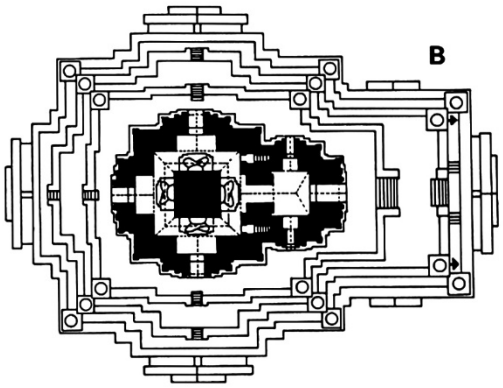
3.6 THREE-STOREY TEMPLE : 918 Thisa-waddy
TEMPLE DE TROIS NIVEAUX

သုံးထပ်လျှိုဏ်ဂူဘုရားများ



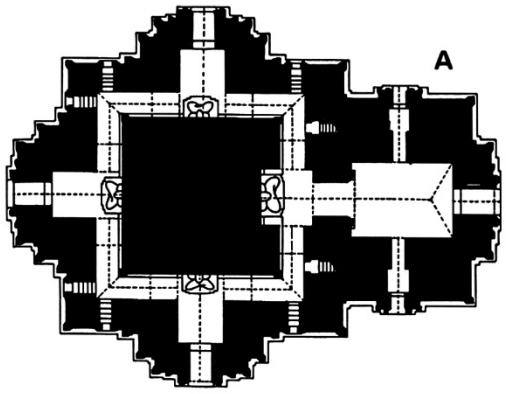
A - ground floor with solid core
B - upper storey with solid core
C - tower storey with central shrine
D - upper parts

a - lower terraces
b - upper terraces
c - square tower



A - rez-de-chaussée à noyau plein
B - étage à noyau plein
C - étage sous tour, à cella centrale
D - parties hautes

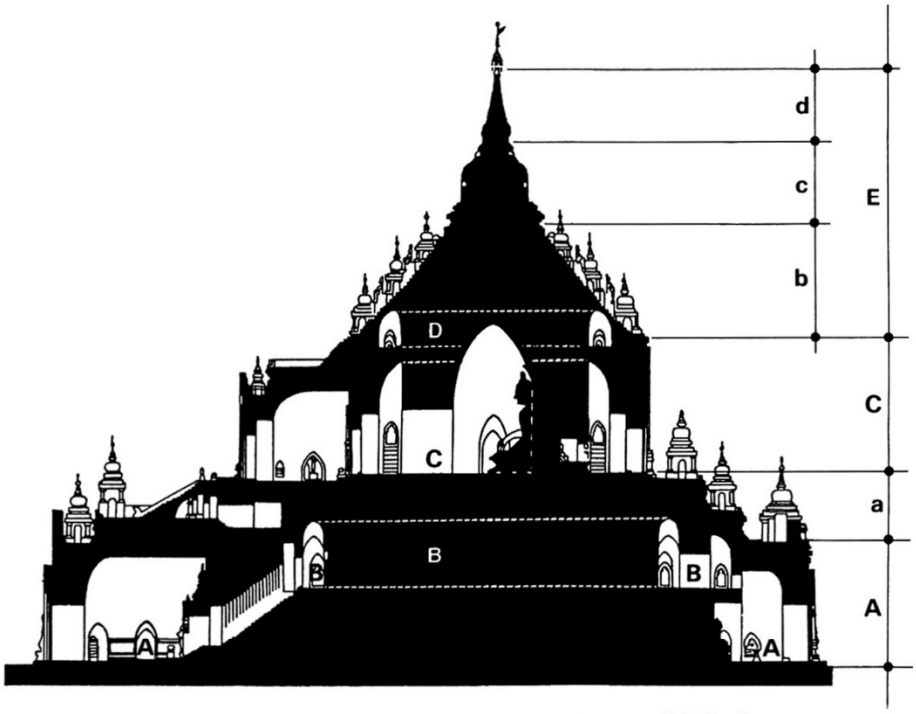
a - terrasses inférieures
b - terrasses supérieures
c - tour carrée



A - အလယ်မဏ္ဍိုင်နှင့်တကွအောက်ထပ်
B - အလယ်မဏ္ဍိုင်နှင့်တကွပေါ်ထပ်
C - အလယ်ဂန္ဓကုဋိတိုက်နှင့်တကွအပေါ်ဆုံးထပ်
D - အပေါ်ဆုံးထပ်အစိတ်အပိုင်းများ

a - အောက်ပစ္စယ်များ
b - အထက်ပစ္စယ်များ
c - ကွန်းတောင်

3.7 **FOUR-STOREY TEMPLE : 1597 That-byin-nyu**
TEMPLE DE QUATRE NIVEAUX
လေးထပ်လှိုဏ်ဂုဘုရားကြီး



A - ground floor
B - lower entresol
C - upper storey
D - upper entresol
E - upper parts

a - lower terraces
b - upper terraces
c - square tower
d - spire

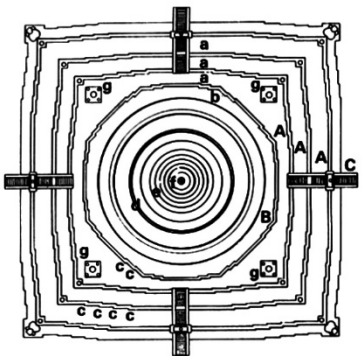
A - rez-de-chaussée
B - entresol
C - étage
D - couloir sous terrasses
E - parties hautes

a - terrasses inférieures
b - terrasses supérieures
c - tour carrée
d - flèche

A - အောက်မြေညီထပ်
B - အောက်လှိုဏ်ပတ်လမ်းထပ်
C - အပေါ်ထပ်
D - အပေါ်လှိုဏ်ပတ်လမ်းထပ်
E - အပေါ်ပိုင်းအစိတ်အပိုင်းများ

a - အောက်ထပ်ပစ္စယ်များ
b - အထက်ထပ်ပစ္စယ်များ
c - ကွန်းတောင်
d - အထွဋ်စေတီ

4 STUPAS (1)
STUPA (1)
ထူပများ(၁)



1

A - accessible terrace
B - inaccessible terrace
C - stairway

a - square terrace with 4 projections
b - octagonal terrace with 2 projections
c - projection
d - bellshaped dome
e - conical spire
f - umbrella
g - corner stupa
h - corner urn
i - corner amortizement

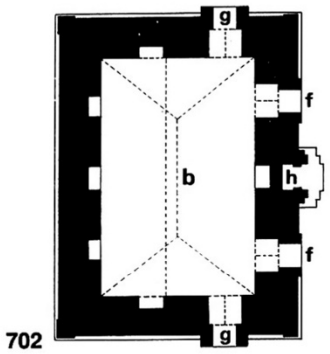
A - terrasse accessible
B - terrasse inaccessible
C - escalier

a - terrasse carrée à 4 avancées
b - terrasse octogone à 2 avancées
c - avancée
d - dôme en cloche
e - flèche conique
f - parasol
g - stupa d'angle
h - urne d'angle
i - mitre d'angle

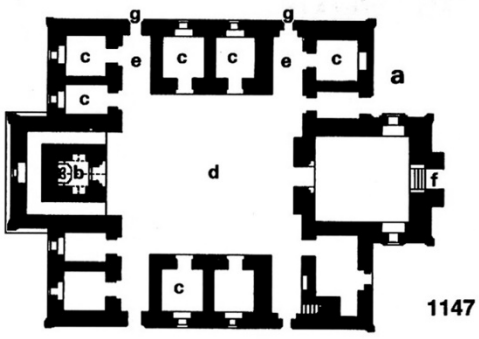
A - လှေကားထက်နတ်လမ်းပတ်သောပစ္စယံဆင့်
B - လှေကားထက်နတ်လမ်းမပတ်သောပစ္စယံဆင့်
C - နတ်လမ်းလှေကား

a - လေးထောင့်ပစ္စယံ(ဖေါင်းတန်းလေးခု၀)
b - ရှစ်မြောင့်ပစ္စယံ(ဖေါင်းတန်းနှစ်ခု၀)
c - ဖောင်းတန်း(ခင်မိတ်တိုး)
d - ခေါင်းလောင်းပုံ
e - ဖေါင်းရစ်
f - ထီး
g - ထောင့်စေတီ(စေတီရုံ)
h - ထောင့်စိုက်ပန်းအိုး
i - အစောင့်နတ်ရုပ်ပလွင့်ခုံ

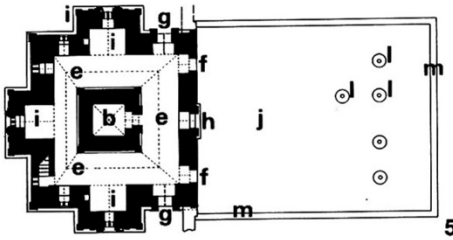
5 MONASTERIES
MONASTERES
ဘုန်းကြီးကျောင်းများ



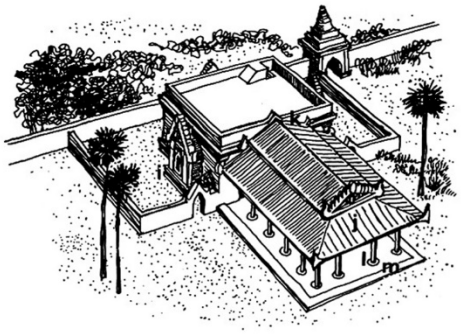
702



1147



540

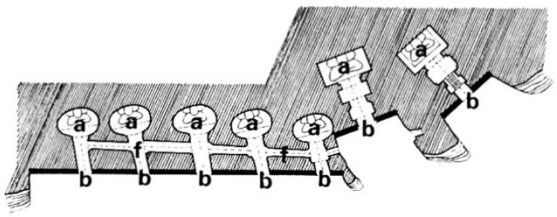


a - multiple-cell monastery
b - central cell
c - cell
d - courtyard
e - corridor
f - front door
g - lateral door
h - axial niche
i - forepart
j - timber pavilion
k - roof line
l - stone socket
m - stone plinth
n - timber floor

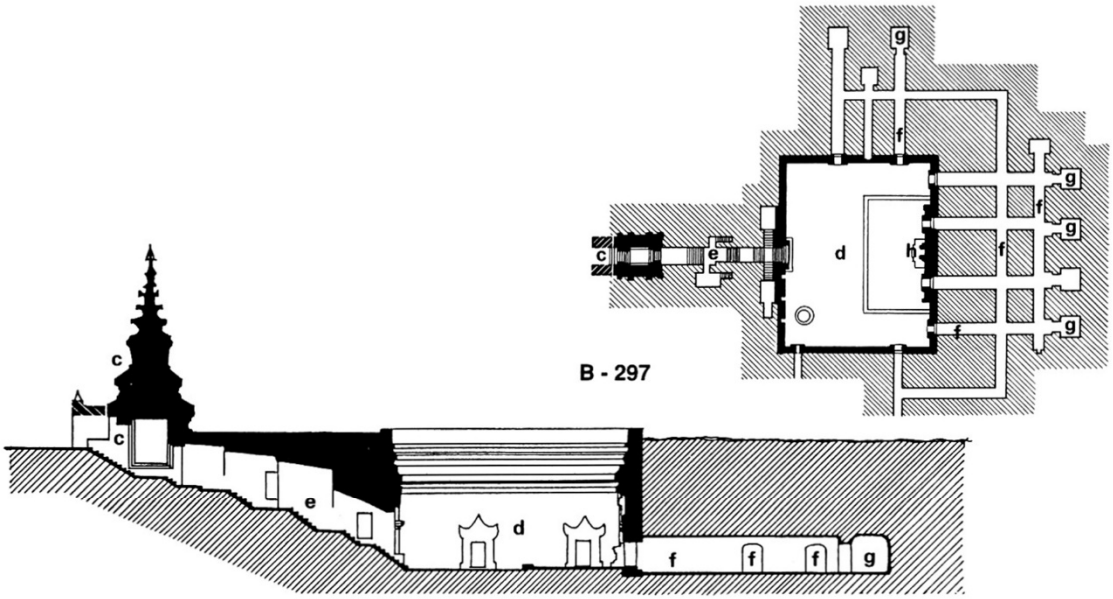
a - monastère à cellules multiples
b - cellule centrale
c - cellule
d - cour
e - couloir
f - porte frontale
g - porte latérale
h - niche axiale
i - avant-corps
j - pavillon de charpente
k - trace du toit
l - base de pilier en pierre
m - bordure de pierre
n - plancher de bois

a - အခန်းများပတ်လည်နှင့်ဘုန်းကြီးကျောင်း
b - အလယ်ဘုရားခန်း
c - ကျောင်းခန်းငယ်(စာသင်သားနေရန်)
d - အလယ်ဓမ္မသာလာသစ်သားပြာသာဒ်ဆောင်ရာ
e - စင်္ကြံပတ်လမ်း
f - ရှေ့ဝင်တံခါးပေါက်
g - ဘေးဝင်တံခါးပေါက်
h - ဓမ္မပလ္လင်မုခ်ကပ်အခိုင်
i - ဘေးထွက်အဆောင်
j - ဓမ္မသာလာသစ်သားဆောင်
k - အမိုးမြင့်မိုရ်ရာ
l - တိုင်အောက်ခံကျောက်ခွက်
m - အုတ်ခုံကျောက်တုံးဘောင်တန်း
n - သစ်သားကြမ်းခင်း

6 UNDERGROUND STRUCTURES
STRUCTURES SOUTERRAINES
မြေအောက်အဆောက်အအုံ များ (ဥမင်များ)



A - 172



B - 297

A - underground temple
B - underground monastery

a - shrine
b - entrance
c - gateway
d - central courtyard
e - stairway
f - tunnel
g - cell
h - axial niche

A - temple souterrain
B - monastère souterrain

a - cella
b - entrée
c - pavillon d'entrée
d - cour centrale
e - escalier d'accès
f - tunnel
g - cellule
h - niche axiale

A - မြေအောက်ဥမင်ဂူဘုရာ
B - မြေအောက်ဥမင်ကျောင်

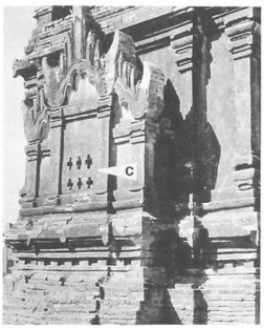
a - ဂန္ဓကုဋိတိုက်(ဘုရာ ခန်)
b - ဝင်ပေါက်
c - မုခ်ဝင်ပေါက်
d - အလယ်ခမ္မသာလာသစ်သာ ပြာသာဒ်ဆောင်ရာ
e - လှေကား တက်လမ်
f - ဥမင်လိုဏ်ခေါင်
g - တရာ အာ ထုတ်ရန်အခန် ငယ်
h - ခမ္မပလ္လင်မုခ်ကပ်ခါင်

7 ELEVATIONS
FAÇADES
အပြင်ဘက်မြင်တွင် များ

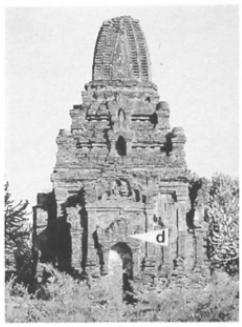
765

947

75



882



44

285

664

a - forepart with porch
b - forepart with window
c - forepart with apertures
d - forepart with niche
e - blind forepart
f - window
g - lateral porch
h - brick grille built by Dept. of Archaeol. to restrict access to temple (not drawn on plans)

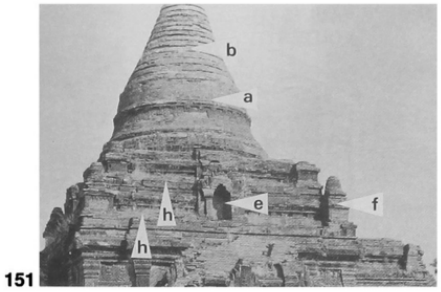
a - avant-corps avec porche
b - avant-corps avec fenêtre
c - avant-corps avec jours
d - avant-corps avec niche
e - avant-corps aveugle
f - fenêtre
g - porche latéral
h - claustra de brique construite par le Dép. d'archéol. pour contrôler l'accès au temple (non dessiné sur les plans)

a - မုခ်ဆောင်နှင့်တကဲ
b - ပြူတင် ပေါက်နှင့်တကဲ
c - အလင် ရောင်ပေါက်နှင့်တကဲ
d - မုခ်ကပ်အခေါင်နှင့်တကဲ
e - ဂင် ပိတ်မုခ်ပုံအဆောင်နှင့်တကဲ
f - ပြူတင် ပျေက်
g - ဘော မုခ်ဆောင်
h - ဓာပေက်အုတ်ရှိ ပြူတင် (အခါဂုဘုရာ များ ၏မုခ်ပေက်ကို တွင်ကြွေ ဟောင် သုထေသနဌာနမှပြုလုပ်ထာ ပသည်ဖြင့် ဓာပေါက်အုတ်ရှိ ကိုပန္နက်ပုစများ တွင်ရေ ဆွဲဖေါ်ပြမထာ ပ

8 UPPER PARTS
PARTIES HAUTES
အပေါ်ပိုင်းအစိတ်အပိုင်းများ

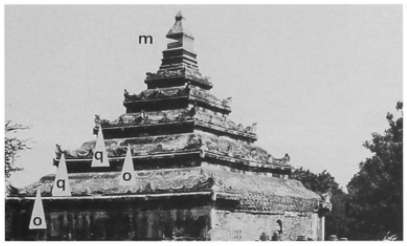
1

1086



151

1587

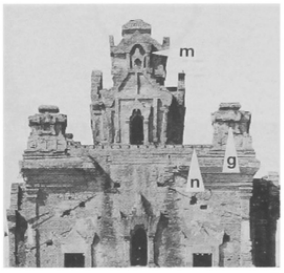


482

285

143

361



73

a - bellshaped dome
b - ringed conical spire
c - umbrella
d - crowning block
e - axial niche
f - corner stupa
g - corner turret
h - square terrace
i - square tower (*sikhara*)
j - exterior staircase
k - pyramidal square tower
l - 12-sided terrace
m - tiered tower (*pyathat*)
n - flat roof
o - curved sloping roof
p - square spire
q - corner amortizement

a - dôme en cloche
b - flèche conique annelée
c - parasol
d - massif de couronnement
e - niche cardinale
f - stupa d'angle
g - tourelle d'angle
h - terrasse carrée
i - tour carrée (*sikhara*)
j - escalier extérieur
k - tour carrée pyramidale
l - terrasse à 12 pans
m - tour à faux-étages (*pyathat*)
n - toit en terrasse
o - toit galbé en pente
p - flèche carrée
q - mitre d'angle

a - ခေါင် လေင် ပုံ
b - ဖေါင် ရစ်
c - ခရာ သီ
d - ဓာတ်တော်တိုက်(ဓထုဂဒ္ဓ)
e - မုခ်ကပ်
f - ထောင့်စေတီ
g - ထောင့်ပြသာ
h - လေ ထောင့်ပစ္စယ်
i - ကွန် တောင်
j - နှတ်လမ် လေကား
k - ဗောဓိပုံကွန် တောင်
l - တပ်ဆယ့်နှစ်မြောင့်ပစ္စယ်
m - အုတ်ပြာသာဒ်
n - အမိုး ကြမ် ပြင်
o - ဆင်ခြေလျော်အမိုး စောင်
p - ပိကာ
q - ရင်

*the entire appendix 2 is taken from UNESCO/EFEO publication *Pierre Pichard, Inventory of Monuments at Pagan, Volume 1*.

STRUCTURE RAPID CONDITION ASSESSMENT CARD BAGAN, REPUBLIC OF THE UNION OF MYANMAR Version8 03/16	Monument Number/Name:

1. IDENTIFICATION OF MONUMENT & DETAILS OF INSPECTION

Name of Monument	Monument Number	Main Entrance Orientation

Type of Monument

☐ Temple ☐ Stupa ☐ Monastery ☐ Underground Structure ☐ Archaeological Element / Surrounding Structure (e.g. wall, gate) ☐ Other (specify)

Location Description (include locality number if known)

Location GPS Coordinates (Lat/Long) and Elevation (Above Sea Level)

Topography

☐ Plain ☐ Elevated ground ☐ Slope ☐ Depression ☐ Hilltop ☐ Valley ☐ Other (specify)

Previous Intervention	Previous Investigation and Report
☐ Conservation (structural) ☐ Conservation (chemical) ☐ Re-plastered/whitewashed ☐ Restoration ☐ Reconstruction ☐ Excavation ☐ Other (specify) Date of intervention (if known) and Description:	☐ Documentation ☐ Field Observation ☐ Survey ☐ Technical Report ☐ Other (specify) Description:

Inspector (s) Name	Inspector (s)' Institution

Inspection Date	Weather Condition on Inspection Date
	☐ Raining ☐ Not Raining

Type of Inspection

☐ Regular Inspection ☐ Emergency Condition Assessment ☐ Rainy Season Inspection

Remarks (in case of emergency assessment):

3. LEVEL OF PRIORITY AND RECOMMENDED ACTIONS

Monument Grading	Value factors (taken into account for prioritization)
☐ Grade I ☐ Grade II ☐ Grade III ☐ No Grade	

Overall Severity Magnitude of Observed Degradations	Overall Extent of Observed Degradations
☐ High ☐ Medium ☐ Low	☐ Partial to Total ☐Partial ☐ Limited

Overall Condition Rating – Current (based on severity and magnitude of overall degradations)

☐ Very Bad ☐ Bad ☐ Poor ☐Fair ☐ Good

Remarks:

Overall Risk Rating

☐ Very High ☐ High ☐ Medium ☐ Low ☐ Very Low

Remarks:

Immediate Action(s) Needed

☐ Vegetation clearance ☐ Waterproofing ☐ Drainage improvement ☐ Partial masonry repair
☐ Locking gate and fencing ☐ Other (specify):

Action(s) Needed

☐ Emergency action needed ☐ In depth condition assessment ☐ Mural and decorated surfaces assessment ☐ Further research
☐ Minor Conservation ☐ Relocate development proposal ☐ Improve previous restoration
☐ No action needed (stable condition) ☐ Other (specify):

Level of Overall Priority (to undertake action(s) needed)

☐ Urgent ☐ High ☐ Medium ☐ Low

Remarks:
Safety concerns (danger for visitors)
☐ Yes ☐ No If 'yes' please specify:
Recommended Future Monitoring Schedule
☐ Every month ☐ Every 6 months ☐ Every year ☐ After each rainy season ☐ Every 2 years ☐ 3-5 years ☐ Other (specify)

STRUCTURE RAPID CONDITION ASSESSMENT CARD BAGAN, REPUBLIC OF THE UNION OF MYANMAR Version8 03/16	Monument Number/Name:

2. CONDITION ASSESSMENT

Structure (TEMPLE and MONASTERY)

☐ Ground floor ☐ 1st floor ☐ 2nd floor ☐3rd floor

		EXTERIOR		A	B	C	D	E	F	G	H					
				Collapse	Deformation	Break	Crack	Deterioration/ Decay	vegetation	Poor Drainage	Other	Damages Severity (H, M, L)	Damage Extent (Size)	Clarify the locations Not Inspected	Photo Number	Description/Remarks
Exterior		Spire	E													
			S													
			W													
			N													
	1	Square Tower/Circular Dome/Tower	E													
			S													
			W													
			N													
	2	Corner Tower/Stupa	E													
			S													
			W													
			N													
	3	Roof	E													
			S													
			W													
			N													
	4	Terrace (1,2,3), wall	E													
			S													
			W													
			N													
	5	Main Body (cornice, wall, base)	E													
			S													
			W													
			N													
	6	Entrance Hall	E													
			S													
			W													
			N													
	7	Porch	E													
			S													
			W													
			N													
	8	Lateral Porch	E													
			S													
			W													
			N													

Degradation Observed in Immediate Surroundings (i.e. platform, apron, etc.):

STRUCTURE RAPID CONDITION ASSESSMENT CARD BAGAN, REPUBLIC OF THE UNION OF MYANMAR Version8 03/16	Monument Number/Name:

			A	B	C	D	E	F	G	H	I					
		INTERIOR	Collapse	Deformation	Break	Crack	Deterioration/ Decay	Vegetation	Poor Drainage	Leak	Other	Damage Severity (H, M, l)	Damage Extent (Size)	Clarify the locations Not Inspected	Photo Number	Description/Remarks
Interior	9	Porch/front door														
		Vault														
	10	Lateral Porch/lateral door														
		Vault														
	11	Vestibule														
		Vault														
	12	Entrance Hall														
		Vault														
	13	Passage														
		Vault														
	14	Corridor (Int or Ext)														
		Vault														
	15	Staircase														
	16	Solid Core														
	17	Shrine / Central Cell														
		Vault														

STRUCTURE RAPID CONDITION ASSESSMENT CARD BAGAN, REPUBLIC OF THE UNION OF MYANMAR Version8 03/16	Monument Number/Name:

CONDITION ASSESSMENT
Structure (STUPA)

			Orientation	A Collapse	B Deformation	C Break	D Crack	E Deterioration / Decay	F vegetation	G Poor Drainage	H Leak	I Other	Damage Severity (H,M,L)	Damage Extent (Size)	Clarify the locations Not Inspected	Photo Number	Description/Remarks
		Spire	E														
			S														
			W														
			N														
	1	Tower/ Dome	E														
			S														
			W														
			N														
	2	Upper Terrace(s)	E														
			S														
			W														
			N														
	3	Corner Stupa	E														
			S														
			W														
			N														
	4	Lower Terrace(s)	E														
			S														
			W														
			N														
	5	Stairway	E														
			S														
			W														
			N														
	6	Base	E														
			S														
			W														
			N														

Degradation Observed in Immediate Surroundings (i.e. platform, apron, etc.):

Other Types of Monuments Underground structure and surrounding elements (e.g. wall and gate)

STRUCTURE RAPID CONDITION ASSESSMENT CARD **BAGAN, REPUBLIC OF THE UNION OF MYANMAR** Version8 03/16	**Monument Number/Name:**

Decorative Elements (e.g. stucco, mural painting, glazed plaque, stone carving, sculpture, statue, flooring, and other decorative elements)

Type of Decorative Element	Location (Architectural Element)	Degradation Type	Damage Severity (CHOOSE: HIGH, MEDIUM,LOW)	Extent (size) of Damage (CHOOSE: TOTAL/ PARTIAL/ LIMITED)	Description	Decorative Surface Assessment Needed: YES or NO	Photo Number

Risk Assessment (based on common threats such as *Animal Impact, Earthquake, Fire, Flood, Inappropriate Restoration, Pollution, Rain, Theft/Looting, Urban Development, Vandalism*)

Potential Threat(s)	Exposure	Related Vulnerability Factors	Risk/Potential Impact	Probability (likelihood)	Severity of potential Impact	Risk Level
				□ High □ Medium □ Low	□ High □ Medium □ Low	□ Very High □ High □ Medium □ Low □ Very Low
				□ High □ Medium □ Low	□ High □ Medium □ Low	□ Very High □ High □ Medium □ Low □ Very Low
				□ High □ Medium □ Low	□ High □ Medium □ Low	□ Very High □ High □ Medium □ Low □ Very Low
				□ High □ Medium □ Low	□ High □ Medium □ Low	□ Very High □ High □ Medium □ Low □ Very Low

Sketch of Monument with location of disturbances; use combination of letters (for kind of degradation) and numbers (for location) assigned to each condition table to locate disturbance.