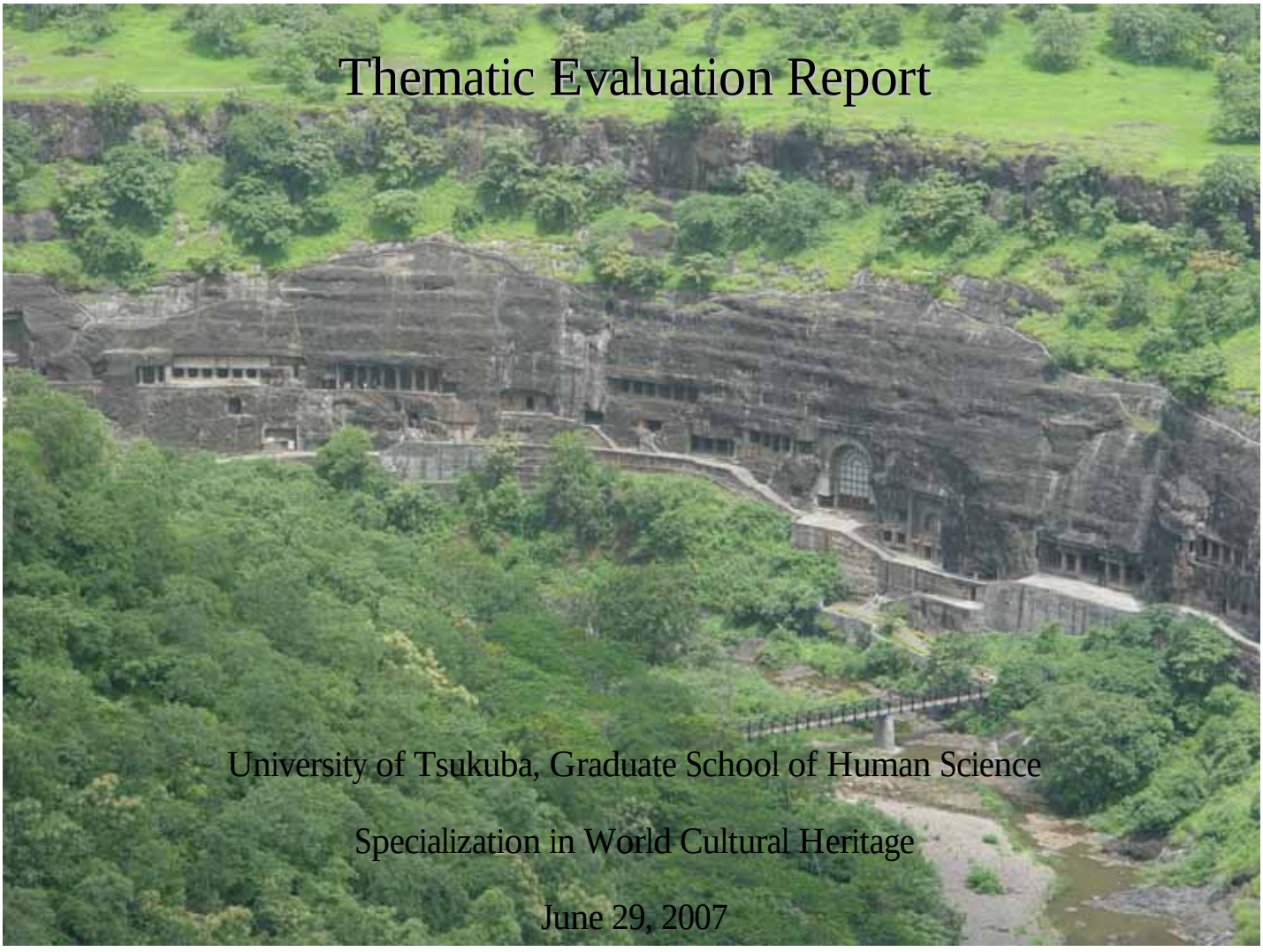
Japan Bank for International Cooperation

2006/7 Yen Loan Financed Project Evaluation (India (I))

"Ajanta- Ellora Conservation and Tourism Development Project: Special Evaluation from the viewpoint of the Preservation and Use As a World Cultural Heritage"



Thematic Evaluation Report

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Specialization in World Cultural Heritage

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I Evaluation Policy and Components of Items to be Evaluated for the Specific Aspects

1 Formulation of Evaluation Policy

The Ajanta-Ellora Conservation and Tourism Development Project (Loan Agreement No. ID – P82) is an infrastructure development project for conservation of cultural heritage sites listed in the World Heritage List under the World Heritage UNESCO World Heritage Convention (hereinafter referred to as World Cultural Heritage) and development of tourism based around such heritage sites. It is the first yen-loan project that aims at both conservation of world cultural heritage and peripheral infrastructure development. Therefore, the evaluation was conducted by setting up, in addition to the existing evaluation methods and policies used in yen-loan financed projects, an evaluation policy from the viewpoint of conservation and use of the cultural heritage.

Ideas that support the formulation of the evaluation policy are based on the following points a), b) and c).

a) From the viewpoint that World Cultural Heritage sites possess significant universal value which should be shared by all mankind, the evaluation will be conducted based on the global standard derived from internationally recognized documents related to the conservation, restoration, and use of cultural heritage including Operational Guidelines for the Implementation of the World Heritage Convention and International Charter for the Conservation and Restoration of Monuments and Sites (The Venice Charter).

b) To use cultural heritage sites as tourist resources accompanies dangers of causing damage to the sites and reducing their value. Therefore, it must be done with the public interest of the society which shares the site's value in mind. In other words, the cultural heritage site must not be used simply for the purpose of the local community's economic development, but must also promote mutual understanding among all citizens, ethnic groups, and religious groups, ultimately contributing to peace building that come about through cultural exchange and understanding of different cultures. As such, evaluation will be conducted from the viewpoint of how well such objectives are being achieved.

c) Based on the idea that a cultural heritage site primarily belongs to the community of the region in which it is located, and that it is difficult to preserve appropriately without the cooperation of the people of that community, tourism development that uses cultural heritage sites as its resource must not lead to destruction of the regional community or traditional culture, but promote respect of and harmonious coexistence with them. Therefore, the evaluation will be conducted with such views in mind.

The following evaluation policies 1), 2) and 3) were set up based on the basic principles listed above. According to the provisions in the Operational Guidelines for the Implementation of the World

Heritage Convention, design, materials, technique and workmanship, and location and environment are the four basic factors that determine the authenticity of the cultural asset. Whether or not these factors were maintained through this yen-loan project is an important point for this evaluation.

1) Evaluation policies on the conservation and restoration of historic sites

1-1) Were the restoration and reconstruction, preventive measures, and peripheral maintenance of the historic sites appropriately carried out?
1-2) Has the authenticity been maintained throughout the restoration and reconstruction of historic sites, preventive measures, and peripheral maintenance projects?
1-3) Has the principle of minimum intervention been followed throughout the restoration and reconstruction of historic sites, preventive measures, and peripheral maintenance projects?
1-4) Have restoration and reconstruction of the historic sites, preventive measures, and peripheral maintenance projects been recorded, and appropriately compiled and made public?
1-5) Have development of tourism and increased visitor numbers had a serious impact on the conservation and management of historic sites?

2) Evaluation policies on historic site-related environment and landscape

2-1) What impact have the restoration and reconstruction of historic sites and preventive measures had on the surrounding environment and landscape?
2-2) Has maintenance of the facility around the historic sites been appropriate? What impact have the facilities had on the surrounding environment and landscape?

3) Evaluation policies on the modalities of cultural tourism to historic sites

3-1) Have interpretation services been adequately provided to help visitors to understand the value and importance of historic sites?
3-2) Is historic site tourism established as a means of facilitating cross-cultural understanding among people of different ethnicity, religion, and customs through the understanding of the value of historic sites?
3-3) How have the local communities been involved in policy making and implementation for tourism development?
3-4) What impact have tourism development and increased visitor numbers had on the lives and culture of local communities?

2 Components of evaluation

This yen-loan project is composed of sub-projects listed as (1) through (8) below. Of these, those to be evaluated in this report are: (1) which was implemented by Archaeological Survey of India (ASI), (2) which was implemented by Maharashtra Forest Department (MFD), and (7) which was implemented by Maharashtra Tourism Development Corporation (MTDC).

(1) Historic site (monument) conservation
(2) Improvement of surrounding peripheral natural environment (afforestation)
(3) Improvement and development of Aurangabad Airport facilities
(4) Road improvement and development
(5) Water supply and sewerage system improvement and development
(6) Power equipment development (installing electric lines and substation facilities)
(7) Tourist management system (tourism marketing and visitor management system)
(8) Consultation service

Further, (1) Historic site (monument) conservation comprises the following components: a) construction of protective fences around the Ajanta historic site; b) procurement of vehicles, measuring equipment, etc.; c) improvement of pathways at Ajanta historic site; d） restoration and improvement of driveways around the Ellora historic site; e) procurement of additional devices and instruments; f) geological survey for preservation measures and planning for both historic sites; g) restoration of caves at both historic sites (including measures against the surface water, and preservation through chemical treatment); h) installing bat-proof mesh on caves of both historic sites; i) improving parking lots and expanding roads at both historic sites; j) construction of pedestrian overpass and paved roads around the Ajanta historic site; k) installing a lighting system within the caves at the Ajanta historic site; l) installing optic fiber lighting system within the caves at the Ajanta historic site; m) setting up a fence around Daulatabad Fort; and n) geological survey of the Pitalkora historic site. Of these components, priority was placed on c), d), g), h), j), k), and l) for evaluation of the specific aspects, and other components were evaluated under the existing evaluation method based on the DAC five evaluation criteria.

"(2) Improvement of surrounding natural environment (afforestation)" refers to the afforestation of 700ha in the Ajanta region and 237ha in the Ellora region. With the exception of a certain portion, these areas are located away from the core compound of the historic sites, and therefore do not have direct impact on the preservation of the sites.

"(7) Tourist management system" is composed of the following: a) introduction of an eco-bus system in the Ajanta region; b) creating and printing posters and pamphlets; c) media PR; d) creating and setting up signboards; e) landscaping and beautification (Ajanta Viewpoint Forest Garden, area in front of cave 16 at the Ellora site, etc.); f) development of T-junction at Ajanta; and g) installing a drainage system at Ajanta historic site. Of these components, priority was placed on a), b), d), e), and

f) for evaluation of specific aspects, and other components were evaluated under the existing evaluation method based on the DAC five evaluation criteria.

II Overall Evaluation

Components to be evaluated were separated into two categories according to their objectives. First is to restore and/or reinforce the historic sites themselves to prevent deterioration and falling of rocks, and second is to implement measures for offering the historic sites to the public as tourism resources.

The first objective involves such work as restoration of mural paintings in the caves, restorations of sculptures; repair, reinforcement, and reconstruction of cave façade; installation of bat-proof meshes; pest control and fumigation to eliminate pests from the caves; and drainage maintenance to prevent rain water from entering the caves . Such works are extension of historic site preservation measures which had already been implemented within the scope of ASI's own limited budget. The yen-loan can be considered to have played the role of expediting such works. As explained in later sections, excessiveness can be found in the works involving the restoration and reconstruction of sculptures and cave facades, but overall, they were all necessary for the preservation of the historic sites, and can be evaluated as high-quality work. In particular, through the restoration of mural paintings, installation of bat-proof meshes, pest control in caves, and drainage maintenance at an early stage, the reduction of the value of internationally valuable sites was effectively prevented.

The second objective involves new construction, improvement, or expansion of roads and building of necessary retaining walls on the premise of the historic sites to allow visitors to tour around the caves; construction of new bridges required as new walkways were newly constructed; lighting system for viewing mural paintings and sculptures within the caves; landscaping and beautification of areas in and around the historic sites; construction of a tourist complex at the T-junction, introduction of an eco-bus system that connects the Ajanta historic site with the tourist complex; creating and setting up signboards for visitors; and creating and printing posters and pamphlets to promote tourism. These are necessary measures to ensure convenience and safety for visitors whose numbers are expected to increase. Also, the system of connecting the historic site with the tourist complex, which is constructed away from the historic site, with an eco-bus is a highly appropriate way to both protect the historic site and promote tourism, as it reduces the negative effects of car exhaust on the historic site and on the environment.

At the same time, however, the projects to be evaluated have also shown many problem areas.

Evaluation based on basic evaluation policy a):

The individual problem areas will be explained in later sections. One major existing issue is the lack of management planning which comprehensively oversees the historic sites in their entirety. For historic sites which comprise a number of elements lying within vast areas such as those at Ajanta and Ellora, it is recommended that rules and principles for conservation and management of the entire site, plans for restoration and management for public display and use, and safety measures for visitors be formulated prior to carrying out each individual work. In the case of the Ajanta and Ellora historic sites, however, such general management plan had not been prepared, with the exception of the traditional practice of implementing maintenance, management, restoration, and reconstruction work.

Therefore, the measures taken to preserve the historic sites and offer them to the public through this yen-loan project were not implemented based on a comprehensive management plan which determine the necessity or prioritization of individual projects or on expected results. This makes it difficult to clearly determine whether or not any unnecessary or excessive intervention has taken place on the historic sites. Further, while management of historic site preservation should be based on many years of experience and customs, because no modern manual has been created, there is uncertainty regarding the sustainability of the projects' effects.

Evaluation based on basic evaluation policy b) and c):

Cross-cultural exchanges and mutual understanding, which are top objectives of using cultural heritage sites as tourism resources, could not be discerned as far as this project was concerned. There was also no involvement or participation by the local community in tourism development worthy of evaluation. It was determined, however, that the tourism development has caused no damage to the local communities or traditional culture at this point.

From these viewpoints, it is clear that despite the many issues involved in the project planning and implementation, the implemented restoration and other forms of works were necessary for the appropriate conservation, management, opening and use of the historic sites, and are useful for the conservation of the world heritage sites, that is, the cultural heritage with outstanding universal value shared by all mankind.

III Evaluation based on Evaluation Policies

1 Evaluation of the Conservation and Restoration in the Historic Sites

1-1 Were the restoration and reconstruction, preventive measures, and peripheral maintenance of the historic sites appropriately carried out?

[Ajanta: Restoration and reconstruction of historic sites, preventive measures and peripheral maintenance] (photo1)

Path construction and repair work

Civil engineering work such as construction of retaining walls

Construction and repair work of the paths involved 1) the opening of the new approach path and the repair of the old steps on the hill starting at the entrance where the green bus stop is located and ending at the former booking office, and 2) the expansion and repair of the old path from the old booking office through to cave 1 and to the front of cave 7. Such engineering work involved the construction of retaining walls as a part of path construction and expansion work, and stabilizing the slope surface with sprayed concrete (photos 2-9).

The old stairs located at the entrance to the caves were too steep for those who are not physically strong, such as the elderly. Thus, the newly built path could be hailed a success in solving the problem. Previously, the path between the top of the old steps and the caves was narrow, only 2 or 3 meters wide except for some parts, creating obvious traffic problems at peak hours. Moreover, despite the guardrail and parapet installed on path side, the path was highly dangerous, as the outer side drops down to the valley in an extremely steep slope. This path expansion work has certainly and significantly improved convenience and safety for the visitors.

A commendable point in the path expansion work is that the work was conducted not as a whole, but by parts, only in areas in front of some frequently visited famous caves where the path would become particularly crowded. Through the on-site hearing, it was discovered that because the expansion of paths that are on a steep slope requires construction of high retaining walls, work was done only in areas that could be easily expanded. Judging from the result, in order to accommodate up to a certain number of visitors, and as long as areas for the visitors to linger are systematically provided at certain points, it is not necessary to uniformly expand all of the paths. Additionally, at caves which contain prominent mural paintings such as cave 1 and 2, where the number of persons that can enter at one time is restricted, long lines are expected to form at peak hours, and therefore, larger space is needed in front of such caves. This plan had a fortunate result, as mentioned in a later section, given the fact that the retaining wall construction, which is necessary for path expansion, created a great impact on the location, environment, and landscape of the historic site.

On the other hand, there are also some issues to be pointed out. Under ordinary circumstances, decisions with regard to the location and degree of expansion should be made based on, or in accordance with, a management plan, as well as series of basic research and analysis on such factors as fluctuation of visitor numbers per year, future predictions, behavior of visitors at the site, most

reasonable visitor capacity for the entire site, and evaluation of value and vulnerability of each cave in order to decide whether to make the caves available for viewing, to place restrictions and determine visitor capacity for the caves. However, the questionnaire and field study suggest that the construction was carried out based merely on statistics on number of visitors, without conducting any further analyses of aforementioned factors or undergoing a planning process. The path expansion and retaining wall construction works result in changing the state of the historic sites and reducing the value and integrity of the cultural heritage site. Thus, while full accountability with regard to the necessity and appropriateness of the work is expected to be taken, this cannot be done for this project. Moreover, the work may be subject to criticism that it was a stop-gap measure if further expansion or alterations becomes necessary in the future due to increase in the number of visitors.

Another issue which must be noted is the form and structure of the expanded paths and retaining walls. As the expanded paths were located on a slope, the shoulder of the paths must be made higher, requiring higher retaining walls than those of pre-expansion. The retaining walls at the entrance of caves 1, 2, and 7 where the path was expanded to create an open space were more than 10 meters high. The location and environment of a cultural heritage site are important factors to determine its authenticity. The high retaining walls made of concrete and the resulting loss of the natural rock surfaces diminishes the authenticity of the historic sites, as well as the value of the landscape (photos 10-12).

Thus, the planners and builders involved in such work must account for and guarantee that (1) the path expansion is unavoidable in order to improve convenience and ensure safety for visitors and the devaluation of the historic sites will be offset by the benefit of making the sites available for public viewing and use, and (2) the form and structure of the expanded path and retaining wall are the most appropriate. Points in (1) have been discussed earlier. Regarding the form and structure of the expanded paths and retaining walls mentioned in (2), assessment of their impact on the location, environment, and landscape, as well as various other considerations should have been made prior to implementation. While we were told in a hearing that on-site ASI engineers had held discussions on the matter, no documentation was offered to explain the process under which conclusions were reached. Furthermore, considering the internationally recognized value of the Ajanta historic site, discussions and decision making on such engineering work that would have great impact on the location, environment, and landscape of the historic site should not have been carried out by the on-site engineers only, but by setting up a committee involving internationally noted specialists.

For example, an alternative option may have been to build the expanded portion of the path using a concrete, steel or wooden deck and building support posts on the shoulder of the paths. Such structures would have a smaller or milder effect on the location, environment and landscape than a concrete-made retaining wall. Such structures would have created fewer burdens on the location, environment, and landscape, and would have the advantage in being easily removed if necessary. Some argue that to

support the deck by constructing braces on the shoulder of the paths, as suggested by the evaluation team, would be unsuitable because the supporting posts could not withstand the water current when the river water rose. Still, there is the option of constructing a cantilever structure. The decision to use the specifications that were implemented was not based on prior discussions concerning other possible options and because of this it has compromised the authenticity and landscape value of the historic site. In the questionnaire, we asked whether archaeological studies were conducted on the rock surfaces that were buried during retaining wall construction and the answer revealed otherwise. This is also problem from the perspective of historic site conservation.

Problems must also be pointed out regarding the reinforcement of slopes by spraying cement which was done as a part of new slope construction and the design of the parapet and guardrails on the shoulder of the paths (photos 13-16). The sprayed cement and parapet on the shoulder of the paths were made to look similar to the surrounding rock surface, but do not successfully harmonize with the surrounding landscape. If they are not chosen carefully, the use of artificial wood and rocks could compromise the scenic beauty at historic sites, and therefore, careful consideration is necessary. The guardrail built with H-shaped steel plate and steel pine had long been employed at the Ajanta historic site but, for the sake of creating a beautiful landscape and ensuring safety for visitors, the design should have been reconsidered.

Bridge construction work

During this phase, bridges were built at two points, next to the booking office on the foot of the site and at the bottom of cave 7 (photos 17, 18). In the past, the only way visitors could arrive at the caves was taking the road built to connect the caves with one another. They had to walk from cave 1 to the farthest cave 28 and return on the same road. The new bridges constructed during this phase have allowed visitors to descend a set of stairs from cave 9, pass cave 8, reach the bottom of cave 7 via a newly constructed road, cross a new bridge and take a new road on the opposite shore to return to the booking office. From the standpoint of management of the historic site, the two new bridges have proven to be highly useful facilities, effective in streamlining traffic at peak hours and ensuring safety of visitors. However, the area beyond cave 9 has remained the same, and therefore, not all problems have been solved.

Incidentally, on a river bank beyond cave 28 there is an iron bridge (photo 19). At present, it cannot be used as it is in significant disrepair. Restoring or reconstructing this bridge would help facilitate traffic at crowded times. However, according to an interview with ASI, because this old bridge is located within a territory controlled by Forest Department of Maharashtra (FDM), building and maintaining the bridge is also the responsibility of FDM, and therefore, it cannot be used by visitors of the Ajanta site. For this reason, construction of a circulating path using this bridge has not been considered nor has any consultation on this matter taken place between ASI and FDM. Despite the need for more

intimate cooperation among the related agencies including ASI, FDM, and MTDC in order to promote smooth and effective management of the Ajanta historic site, negative effects of sectionalism are preventing this from happening. The issue concerning this old bridge seems to signify this fact. According to the initial plan that existed at the time this project began, the circulating road was to be extended by constructing a bridge at the bottom of cave 26, but this had not been done at the point of phase I.

The structure of the bridges built during this phase in two locations is simple; main body with trusses composed of L-shaped steel and H-shaped steel members are fixed on top of two as-cast concrete piers. The choice of black-painted truss member and wooden plate deck as well as vine planting pots placed along the railing suggests the awareness regarding the visual influence of these bridges towards the landscape within the historic site. Yet, like the path expansion and retaining wall construction work, the fact that the design's impact on the location, environment, and landscape had not been assessed may result in negative feedback. Also, although the truss of steel members is simple enough to reduce the impact, the quality of the design cannot be considered high.

Drainage maintenance work

A drainage system was built on a flat surface in the upper part of caves, a portion at the bottom of the cliff, and right above each cave in order to reduce the amount of rain water flowing onto the rock surface and the cave facade and water going through the cracks in the rock (photos 20-22). The work for this phase involved the repair of these existing drainage systems. The depth and structure of the drainage ways were modified to improve draining capability (photos 23, 24). Our field study suggests that the modified drainages are effective enough to cope with the rainy season. In addition, the drainage channels are periodically cleaned and cleared of soil and rubble to maintain their drainage capability.

Cave restoration, reinforcement, and reconstruction work (caves 19, 21, 22, and 23)

The cave façades were restored, reinforced, and reconstructed at four caves, 19, 21, 22, and 23

At cave 19, the ruined shrine on the right was restored using reinforced concrete. The decision to restore this temple was based on the judgment that the tabernacle sculpture located on the end wall should be given a roof to prevent further deterioration caused by direct sunlight, rain, and wind. The restored form was decided taking into account the partially remaining sidewall on the end wall, the pillar body on the north side of the front wall, and the remains of the peristyle on the floor. The form and decoration of completely lost column capitals and corners were copied after the facing left shrine (photos 25-27).

We have two issues relating to this restoration: 1) Whether the restoration was kept at a minimum and was not excessive (or unnecessary), and 2) that the distinction between restored and original parts is not clearly visible. It is difficult to reach a consensus on the issue of excessive restoration, but, given today's international standards, alternatively, a simple roof covering could have been employed using contemporary materials and design. Regarding the issue of distinction between the original and restored parts, the restoration of decorative parts still lacks final touches and therefore one can decipher the restored portions if compared against the facing left shrine and carefully observed. It was found during the hearing at the field study that the work was suspended before completion upon instruction from the supervisor from ASI headquarters. The intention of the supervisor is unknown, but it seems to have been a wise decision.

In cave 21, the four columns of the cave façade which had been lost were restored using reinforced concrete (photos 28, 29). The decision to restore the columns was made based on the judgment that their support was necessary to prevent the rock plate lying above the façade from falling. The restoration was based on the remaining main architrave and corbels, as well as the traces of original columns on the floor. The form and decoration of the columns were based on the original columns that remain inside cave 21, and their positions were copied after the colonnades in cave 23.

While this restoration also entails issues related to the excessive degree of restoration work and difficulty in making a distinction between the original and restored parts, it also faces the question of whether the form, decoration, and formation of the columns' lineup are adequate. Though it is essential to undergo processes to examine and consider possible measures in order to prevent the fall of rock plate and further damage to the cave, such steps were not taken. Even if the ultimate conclusion were to restore the columns using concrete, all possible methods should have been explored.

ASI has a long history of using concrete for conservation, restoration and reinforcement of archeological sites in India. As a result of its efforts and technical know-how accumulated over the years, ASI has developed sophisticated technology for creating imitation stonework out of concrete. Many issues related to the difficulties in distinguishing the restored parts from the original parts lie in this sophisticated technology of ASI. Poor imitation would make for easy distinction from the original parts and, thus, would not become a significant issue. The restored rock pillars in cave 21 have been completed with detailed decoration, making it more difficult to distinguish them from the original parts in comparison to those in cave 19. At present, the new concrete columns can be distinguished from the original ones due to difference in color and extent of weathering, but, in a few decades, most visitors will misunderstand these restored columns as being original.

Cave 22 is a small one with a six-meter wide front. Rock plate on the upper part of its fallen facade and two ruined rock columns were restored (photo 30). The reasons for the restoration were to prevent

further collapse and to ensure the safety of visitors; however, similar to the two caves mentioned above, whether restoration to such an extent was necessary is questionable.

The restoration in cave 23 was done due to the collapsing rock plate on the frieze structure hanging over the facade (photos 31, 32). The restoration is considered necessary to prevent further collapse and due to the negative impact on the conservation of the historic site caused by rainwater flowing over the surface of the rock plate and down along the upper to lower parts of the facade due to the loss of the projection of the frieze.

During this work, iron anchor piles were inserted into the rock plate and a box-shaped frieze was formed out of reinforced concrete. The issues pointed out regarding caves 19 and 22 are not prominent in this restoration work. However, rain water collects inside the box-shaped concrete structure, leaks from the edges of the eaves and flows over the structure surface, causing efflorescence due to calcium-induced salt, components present in cement. Therefore, improvement is required.

Bat-proof mesh installation

Bat-proof mesh was installed in caves 1, 2, 9, 10, 16, and 17 (photos 33-35) by attaching wire mesh to wooden sashes. Bat-proof mesh had traditionally been installed in other caves as well. Questionnaire suggests that while other means were considered, the meshes were deemed most appropriate. Preventing bats from entering and nesting in the caves is important for protection of the mural paintings in the caves, and the adopted measure proves to be effective. However, as bats have been spotted entering some of the caves, this matter is in need of more adequate management. It should be noted that as bats are protected animals, an alternative nesting location may be needed.

Maintenance and monitoring

No management manuals were prepared for any of the works in this phase. Maintenance and management have been performed regularly only for the drainage facilities. However, no significant failure in management nor any damage or deterioration have been identified in the post-work phase.

[Ajanta: mural paintings conservation and restoration]

Treatment for conservation and restoration of mural paintings

Conservation and restoration measures done on mural paintings and sculptures mainly involve cleaning and reinforcement of deteriorated areas. Also, some of the sculptures have been partially reconstructed. As mentioned in a later section, some of the reconstruction work on the sculptures have

been found to be unnecessary or excessive. It also must be pointed out that the reconstructed parts cannot be distinguished from the original parts, which is problem.

Before cleaning the mural paintings or reinforcing the deteriorated parts, such areas must first be tested or treated with temporary reinforcement according to the surface condition. Based on the evaluation and analysis of the results, the actual treatment should be implemented. After the treatment is done, the results should be compared with the original condition of the treated areas. At the Ajanta historic site, the treatment was in fact implemented after studying the condition before the restoration, assessment of causes of deterioration, formulation of restoration method guidelines, and testing of restoration methods, and therefore, no problems were found. The formulated restoration method guideline is well made, as it includes references to basic research and old photographs of the mural paintings for reference purposes. Also, observation record, layout, photographs, test pieces, and material samples for each stage of the work process are well organized and ready to be used on site, which is highly commendable (photos 36, 37).

Prior to the restoration treatment, the mural paintings had been obscured due to soot and dust, as well as varnish and shellac applied in the past on the surface, reducing the value of the paintings. Because such soiling becomes a breeding ground for various contaminants, it is essential to clean it as an important first step to take in the preservation process. During the cleaning however, the cleaner must exercise restraint and stop right before the original surface layer becomes exposed. The cleaning at the Ajanta historic site, however, seems to have been done with the objective of uncovering the fresh surface layer as much as possible. We ask that restoration be carried out based on the fundamental rules for cultural properties preservation, which states that retouching of any of the original part of the cultural properties must be kept as minimal as possible.

For the actual cleaning, either of two types of organic solvent was used depending on the state of the objects being cleaned including cave walls, mural paintings, sculptures and decoration. Dust was removed using a feather duster. During cleaning, consideration was given to surrounding areas. For example, ethyl silicate was applied for enforcement to some vulnerable parts (photos 28-41). Also, minor changes have been made in the cleaning method according to the condition of the mural paintings to keep any damage caused by the cleaning to a minimum. Materials and methods used on site were checked, but no problems were found. However, the extent to which the residue from the solvent and chemicals used from the cleaning has been removed needs to be investigated. Safety of workers and visitors has been taken into consideration, and therefore, there are no particular issues in that area. Regarding pieces from the mural paintings and sculptures which have chipped off, they were reattached using such materials as resin after their original locations were first confirmed.

Since many of the on-site workers in charge of restoration have completed the training programs offered by overseas specialists, the methods taken were appropriate. However, caution is needed when

adopting technologies of the West on cave sites of this region where the climate and materials used differ. Effects of chemicals in particular, alter greatly depending on the restoration method and the environment in which the restoration is implemented. Therefore, workers must employ ingenuity and conduct basic research in keeping with the climate of the Ajanta region.

Salt removal

Salt deposition pulverizes on the surface of walls and sculptures, and in some cases creates scab-like incrustations. Accumulation of such salt deposition could weigh down the surfaces and cause them to fall off. The salt deposition occurs due to rainwater discharging from rock joints and changes in humidity in the cave. It is easily influenced by the slight changes in the environment. Along with the distribution range of the salt deposition, the temperature and humidity must be checked continuously. Simply removing the salt from the surfaces would unnecessarily promote their disintegration. The tools and chemicals were carefully used, showing some positive effect. No further salt formation has been found after the removal. An attempt to control the humidity in the caves is being made by restricting the number of entering visitors. The temperature and humidity data are being checked to verify the effect.

Lighting system

Two types of lighting were installed in this phase, 1) the conventional incandescent lighting system (photo 42) and 2) optical fiber lighting system developed and commercialized by a US company (photo 43). The former was installed mainly to light the display of sculptures and stone columns in 17 caves, 4, 6, 7, 9, 10, 11, 12, 13, 15, 20, 21, 22, 23, 24, 25, 26, and 27. The latter is used in caves 1, 2, 16, 17, and 19 where especially important mural paintings are kept. With reduced radiant heat, ultraviolet, and infrared radiations which have a deteriorating effect, optical fiber lighting system was selected to allow for the mural paintings to be displayed while protecting them. In addition, the intensity of illumination in the caves is adequately kept the lowest possible level for observation of mural paintings and sculptures.

To install these lighting systems, exclusive transformation and distribution equipment covered with a roof has been built far away from the caves near the entrance at the foot of the historic site. Power is distributed to each of the cave entrances through cables. At the entrance of each cave is a wooden box which contains 150 to250 watt incandescent bulbs for light source, a device to distribute the light to the end of optical fiber through a filter, and a fan used for radiating heat. From the boxes, batches of optical fiber (the largest number of batches is 287 at cave 17) run into the caves. On the ends of the optical fibers installed in the caves are (with some exceptions) special lenses to adjust the angle of light radiation. Special stands have also been positioned to support each of these devices.

It is certain that the landscape and environment at the historic site are to some degree being affected by the building of the structure for the transformation and distribution equipments, the cable network into the caves, and the noise from the wooden boxes and fans set up in front of the caves. Furthermore, when the incandescent lighting system is included, the cost of installing these devices account for 63% of the total expenditure for the historic site restoration and reconstruction, preventive measures, and peripheral maintenance projects at Ajanta and Ellora caves carried out by ASI in phase I. Additionally, figuring out ways to cover the maintenance costs, including repair and procurement of parts in case of failure of the optic fiber lighting system, remains an issue.

Despite the aforementioned issues, installing an appropriate lighting system was necessary in protecting and publicly displaying the historically and aesthetically valuable world famous Ajanta cave mural paintings. To this end, installing the optical fiber lighting system in particular is ideal, and therefore it is considered worthy of the significant investment.

Pest control and fumigation

The caves are inspected for pests and pest control is performed accordingly. ASI is responsible for planning, choosing method, and hiring a private specialist contractor to undertake the work. There are two methods of pest control, one of which uses pyrethrin insect spray. Pyrethrin is common called pyrethroid and is a widely used pesticide. It generally affects the nerve cells of insects but has very little effect on mammals and birds. Therefore, it is considered a very safe and effective insecticide. To store a large volume of it, however, there must be careful management and monitoring. The other method is gas fumigation using ethylene oxide. In 1982, USA-ACGIH (American Conference of Industrial Hygienists) advised that ethylene oxide be handled as carcinogenic material. As such, thorough safety measures must be exercised during its use. While no effects of it on the mural paintings and surrounding areas were found, the effects of its gas residue after treatment need to be monitored. Although ethylene oxide is effective in expelling a wide variety of pests, if the pests found in the caves are of particular type, the use of other forms of safer and effective fumigation methods that work on that type should be considered.

Maintenance and follow-up observations

The temperature and humidity in caves 1, 2, 16, and 17 are continuously and automatically measured using a monitoring device placed outside each cave. The data are gathered and analyzed, and are used for conservation and maintenance purposes. Although measurements are taken manually in other caves, it is worth noting that the importance of the temperature-humidity monitoring is being acknowledged. Follow-up observations of important mural paintings are being performed. However, no follow-up observation seems to have been performed for the areas treated for restoration and salt removal.

In preservation of cultural properties, changes in humidity are considered important as a major cause of deterioration. Humidity, needless to say, is affected by temperature, but is also influenced by changes in the overall environment including rainwater, wind direction, and sunshine. In the Ajanta region, in particular, annual precipitation varies greatly depending on the month. It is easy to assume that such drastic weather changes create a significant impact on the deterioration of the mural paintings and rock plate. As such, it is necessary to implement preventive measures that counteract such climate changes. For this purpose, there is much significance in appropriately collecting data on the effect the rainwater is currently taking and changes in humidity. Taking measurements manually effectively fosters interest of staff members working at the historic site toward methods of preventive preservation.

[Ellora: restoration and reconstruction of historic sites, preventive measures and peripheral maintenance] (Photo 44)

Path repair process
Engineering/construction work such as retaining walls

Path repair work involved the expansion of paths in front of caves 1 and 2 and between caves 5 and 15, where many visitors tend to gather (photos 45-48). In Ellora, the path that runs from cave 1 to the front of cave 11 is an extremely steep slope and therefore, construction of an approach path is needed for the safety and convenience of visitors. The path connecting to cave 12 and to subsequent caves, with exception of caves 25, 26, and 27, involves gentle slopes or flat surfaces, and as such, this path's maintenance is not an urgent matter.

The path expansion work in Ellora attracts the same comments as Ajanta caves in terms of the evaluation viewpoints, the lack of prior basic studies, analyses and comprehensive management plan, the issue of appropriateness of form and structure of the expanded path and retaining wall, the lack of archeological study, and the impact on location, environment, and landscape.

The path running in front of caves 3 and 4 is difficult to walk on due to unevenness, and maintenance has not yet been performed there. Path maintenance work has been suspended in accordance with advice given by a Japanese cultural heritage consultant who gives importance to the remains of stone columns and stairs of the caves which used to project out as far as the present position of the path.

Drainage maintenance work
Drainage repair work (cave 16)

Drainage maintenance work involved 1) the maintenance of drainage extending from the side of cave 1 to the south, and 2) the repair of drainage located on the hill top over caves 1 through 15 and laid

down toward the south side of cave16 (photo 49). As in the drainage maintenance work in Ajanta, the depth and structure of drainage ways were modified to improve drain capability.

Drainage system for cave 16 is a culvert covered with stone lids laid down in the floor of the cave. As foreign objects would block the subsurface drainage causing water to flood out onto the floor, the stone lids were removed and the culvert was cleaned to improve drainage capacity. Therefore, this maintenance work is considered to have been necessary (photo 50).

Bat-proof mesh installation

Bat-proof meshes were installed in caves 2, 3,5, and 11 (photos 51, 52). Wire mesh is attached across wooden sashes. As is true with the Ajanta historic site, the installation of these meshes was necessary to protect the mural paintings and other areas inside the caves, and it is considered effective.

Setup of fences around the historic site

A fence was set up along the border of the Ellora historic site, extending from the south of cave 1 to the ASI Ellora office. The old fence was simply formed of several layers of barbed wire running through thin iron poles. The newly established fence is solidly built with an iron grill attached to stone pillars and has dramatically improved the level of security to keep out intruders (photos 53, 54). The design of the fence, however, is intimidating, and could be reconsidered.

Maintenance and monitoring

No management manuals were prepared for any of the work in this phase. Maintenance and management have been implemented regularly only for the drainage facility. However, no significant failure in management nor any damage or deterioration has been identified in the post-work phase.

[Ellora: conservation and restoration of mural paintings]

Treatment for conservation and restoration of mural paintings

Like at the Ajanta historic site, conservation and restoration measures taken on mural paintings and sculptures mainly involved cleaning and reinforcement of deteriorated areas. The sculptures have been partially reconstructed as well (photos 55, 56). Explanation of evaluation and problem areas of such work is much the same as those of the Ajanta historic site, and therefore will be omitted in this section. Cleaning methods were selected depending on the state of the objects to be cleaned. Organic solvent was used for the mural paintings in caves 16 and 32, while clay pack was used to remove the dust and moss. This has proven to be quite effective.

Salt removal

The tools and chemicals used were carefully considered, showing some positive results. No further salt formation has been found after the removal. As we visited during the dry season, we were unable to confirm the impact of rainwater. Further observation is needed. Since rainwater is a major cause of salt deposition, it is important to know the amount of rainwater that falls and seeps through the rock plates and their location. Continuous observation is necessary.

Pest control and fumigation

Pest control is done by gas fumigation using ethylene oxide. Points of caution during and after the use of ethylene oxide have been explained in the pest control section for the Ajanta historic site.

Maintenance and follow-up observations

Monitoring devices are set up at appropriate locations in the caves for observation and record keeping. In addition, measurements are taken manually on an as-needed basis. Note that no follow-up observation seems to be performed for the areas that have been treated for conservation purposes or for salt removal.

1. 2 Has authenticity been maintained throughout the restoration and reconstruction of historic sites, preventive measures, and peripheral maintenance projects? (Conservation ethics and treatment principles)

[The restoration and reconstruction of historic sites, preventive measures and peripheral maintenance]

With respect to the work in phase I and the preservation of authenticity, the points of concern are 1) the impact of the high retaining wall built as a part of the work to expand paths in front of the caves on the location, environment, and landscape, and 2) the restoration of the cave facade.

As discussed earlier regarding these issues, heightening transparency of the decision-making process on the restoration work plan by first conducting various studies beforehand and creating a committee including specialists from various sectors to consider the possible options can help avoid criticisms by third parties. As far as the conservation of historic sites is concerned, the maintenance of authenticity is not always absolute and, at times, the issues of utilization and safety can take precedence over slight loss of authenticity.

[Conservation and restoration of mural paintings]

It is worth noting that the cleaning work on cave mural paintings at the Ajanta and Ellora historic sites was performed with care using highly sophisticated techniques. The authenticity of the mural paintings has not been compromised even after the cleaning.

Some sculptures in caves at the Ajanta historic site, however, appear to have been partially restored without persuasive scientific grounds, although the response maintains that reference materials such as photographs from the past were used. This shows the lack of research from the perspective of art history. Although we expressed our views regarding the need to utilize past achievements in the area of art history in performing reconstruction work, the person in charge of restoration did not seem to recognize the importance of doing so. On the other hand, restoration of the sculptures in caves at the Ellora historic site was based on scarce strong scientific grounds, as reference materials such as photographs from the past were not used. We recommend that restoration and reconstruction work be performed based not on past experience, but only when it can be based on scientific grounds.

In addition, it is difficult to distinguish between the original portions of the sculpture and those that have been added later, and therefore, a way to make visible such distinction is required (photos 57, 58). Current work focuses on the restoration of the abdomen and legs of the bodhisattva statue which had been damaged, but restoration has also been done on some of its weathered fingers. If the restoration continues and advances to areas which give a strong impression to the viewers such as the statue's face, this could possibly compromise the intrinsic value of the statue. The problem lies in the fact that although photographs of the statue were taken before and after the restoration, they do not always clearly reveal which areas have been restored.

To solve these aforementioned issues concerning the restoration of sculptures in the caves at the Ajanta and Ellora historic sites, we urge that an exploratory committee consisting of art historians and archeologists who are fully knowledgeable about the value of these historic sites be set up. The Venice Charter, which stipulates the regulations for conservation and restoration of monuments and historic sites, states that "Replacement of missing parts must integrate harmoniously with the whole, but at the same time must be distinguishable from the original so that restoration does not falsify the artistic or historic evidence."

1.3 Has the principle of minimum intervention been followed throughout the restoration and reconstruction of historic sites, preventive measures, and peripheral maintenance projects? (Conservation ethics and treatment principles)

[The restoration and reconstruction of historic sites, preventive measures and peripheral maintenance]

As with the issue of authenticity, the question that arises with regard to the principle of minimum intervention is whether or not the following were done in excess: 1) the path expansion and 2) the restoration of cave facade.

Regarding issue 1), our field study has established that the path expansion was necessary given the queue at peak hours, but, without formulating a management plan for tourism around the historic site visits, it is difficult to convincingly justify that the extent of path expansion was actually kept to a minimum, that is to say, whether it was minimum intervention.

Regarding issue 2), it is an undeniable fact that this has been part of the usual methodology of ASI for some time and ASI would not easily change it. However, the specialists at ASI are gradually taking into consideration the suggestions made on these issues by the panel of experts (POE) at different meetings, and through discussions with Japanese consultants (cultural heritage specialists) during phase II. Changes are expected to take place as the work progresses.

Asides from the aforementioned issues, the new gate in front of cave 1 built as a part of the expansion work done on the pathway leading to the Ajanta historic site poses a problem from the perspective of minimum intervention (photo 59). The existing gateway created by cutting out an opening in a rock plate is now used for entrance only, and a new gateway established next to it is used for exiting. The decision to create separate entrance and exit in order to control a large number of visitors is comprehensible. However, a wall surrounding the new gate is designed to appear much like a rock plate, as if it was made in a similar fashion as the first gateway.

Since having a gate and fence on either side of the gate would be sufficient to fulfill its function, the rock plate-like wall is considered a case of excessive intervention on the site. Additionally, creating a new wall to make it seen as if a rock plate had existed there is also a problem from the standpoint of maintaining the authenticity of historic sites.

[Conservation and restoration of mural paintings]

We have received notification about both Ajanta and Ellora historic sites reporting that excessive restoration has not been performed, but the criteria for determining what is excessive are not clear. According to the ASI, the materials used in past restorations have deteriorated over the years and cleaning is needed to remove such materials before they deteriorate further and agglutinate. We consider this to be an appropriate decision

Regarding the partial reconstruction of sculptures, there were parts found to have been unnecessarily or excessively reconstructed. If the restoration work would extend to areas such as the faces in the future, this would be considered a serious issue. This excessive restoration indicates that there is a lack

of understanding regarding the basic concept of restoration, which defines how reconstruction should be done for the purpose of conservation. The purpose of restoration is not to bring a structure back to its complete form, nor is it to reconstruct the artistic beauty of paintings and sculptures. During restoration work, those involved should constantly ask themselves whether the work at hand is absolutely essential.

1.4 Have restoration and reconstruction of historic sites, preventive measures, and peripheral maintenance projects been recorded and have those records been compiled and made public?

[The restoration and reconstruction of historic sites, preventive measures and peripheral maintenance]

Although budget estimation, drawings, and photographs taken before, during and after works related to this yen-loan project have been compiled, they do not provide detailed information. The records are filed according to each type of work and stored at the ASI Aurangabad Circle office (photo 60). Records have not been made into digital form and no back-up copies have been made. No record management rules or publication policies have been established.

The Venice Charter states, “In all work of preservation, restoration or excavation, there should always be precise documentation in the form of analytical and critical reports, illustrated with drawings and photographs. Every stage of the work of clearing, consolidation, rearrangement and integration, as well as technical and formal features identified during the course of the work, should be included,” and these have become commonly accepted principles in the world of cultural heritage restoration. From the perspective of these principles, the records kept by ASI are considered lacking, as they don’t keep any records of historic and technical knowledge gained during the work, as well as any analytical and critical reports. We recommend to ASI to issue a report compiled in accordance with the Venice Charter upon completion of phase II.

[Conservation and restoration of mural paintings]

At both historic sites, the condition of the mural paintings was studied and diagnosed before the restoration and repair works, a guideline on restoration method was drawn up, and the restoration method was tested. The documents compiled during this process were available for use on-site, and copies had also been made. The documents were prepared in English. We suggested that the results of the study be made public in order to receive evaluations from external sources. While no restoration / reconstruction work report was compiled, it should be done in the future. However, since this project is only a minor part of an extensive series of restoration works, it is perhaps unlikely that the reports can be prepared immediately.

1.5 Have development of tourism and increasing visitor numbers had a serious impact on the conservation and management of historic sites?

Construction of a tourist complex and introduction of a transit system using low-emission diesel buses

At the time this project began, souvenir shops were lined up around the entrance of the Ajanta historic site. As sellers would aggressively try to get visitors into their shops or carry around merchandise and follow the visitors around, they were a nuisance to the visitors. Also, cars and buses carrying visitors had to drive past them and park at the entrance of the Ajanta historic site.

The construction of the tourist complex at the T-junction has been successful in removing the chaotic hustle and bustle caused by the souvenir shops, parking cars, and aggressive sellers. It was also done to maintain an environment befitting of a globally valuable cultural heritage site. This can be commended for having achieved this goal (photos 61, 63)

The introduction of the eco-bus system that connects the tourist complex with the entrance of the Ajanta historic site was planned in order to keep vehicles from circulating near the historic site and to move the parking lot to an area away from the site. Thanks to the adoption of this system, the deterioration of the historic site and the environment caused by exhaust fumes and vibration of automobiles has been successfully stopped (photos 61, 62). This is highly praiseworthy.

As it is stated in the evaluation report on the DAC five evaluation criteria, number of visitors to the Ajanta historic site is steadily increasing. Had the past situation been left as it was, the environment in the historic site's vicinity would have deteriorated presumably. Therefore, giving priority to the introduction of the eco-bus system can be considered a wise decision.

Management plan for the historic site in dealing with the increasing visitor numbers

To prevent the development of tourism and increase of visitors from causing a serious impact on the conservation and management of the historic site, a comprehensive management plan for the entire site is needed. But, as mentioned earlier, no such plan has been prepared. However, as listed below, returned questionnaires and our field study confirm that several of the individual measures for the conservation of historic sites and the safety of visitors have been taken.

1) At the entrance of caves 1, 2, 16, and 17 of the Ajanta historic site, which contains important mural paintings, are sign boards listing the following rules: i) caves are open from 9:00 a.m. to 5:30 p.m., ii)visitors must remove their footwear at the entrance, iii) only 40 people are allowed to enter as a group at one time to stay for 15 minutes, iv) each visiting group of 40 people is to

enter the cave in intervals of 20 minutes (in other words, the cave should become completely vacated for a minimum of 5 minutes), v) visitors are prohibited from touching or standing in close range of the mural paintings, vi) smoking is not permitted, vii) visitors are not allowed to take photographs using a tripod or flash, viii) use of flood lamps is not permitted (flashlights used by tour guides are allowed). Guards are positioned at the cave entrances and inside the caves in order to enforce these rules. In addition, a fence is set up to keep visitors at a distance from the mural paintings (photo 64).

2) In cave 1 at the Ajanta historic site where visitors are exposed to the possible danger of falling rocks, guards are positioned to patrol and, if necessary, to warn the visitors. Furthermore, an iron-made bridge and handrails have been constructed over the crossing path between caves 20 and 21 where a waterfall develops at the time of rainfall.

3) Visitors are not permitted to touch the mural paintings or the surface of sculptures. Thus, the guards are positioned at critical points.

It is commendable that, with regard to the allowing visitors to view the important mural paintings, restrictions are put in place and based on them, thoroughly monitoring is done. However, there are no rules or restrictions, display of signboards to warn visitors thereof, nor any form of monitoring to prevent damages in other areas of the site. Touching any of the mural paintings or sculptures is not allowed, as listed under 3) above, but many visitors are seen rubbing the sculptures. Some parts of the sculptures have even turned shiny from constant rubbing, indicating that sufficient monitoring is not being performed (photo 65). Moreover, graffiti have been found written with pencil and other materials on the mural paintings and columns in the caves, or even those carved in deep grooves on rock surfaces. To our astonishment, during our visit to the Ellora site on May 29, 2007, for a review meeting in preparation for the evaluation workshop, which was held as a part of this project, we found a heart-shaped graffiti marked “25/05/07” on a column in cave 12. As it had been drawn only four days prior, none of the seminar participants, including experts from international agencies, could help feeling shocked.

Furthermore, the risk of collapsing rock plates or falling rocks is presumably high not only in cave 1 at the Ajanta historic site, but in virtually the entire area of both Ajanta and Ellora historic sites, however there are no warning signs posted, nor restriction of entry.
On the other hand, ASI requested the Geological Survey of India to conduct a risk assessment study regarding the possible collapse of rock plates, and based on their findings, scheduled reinforcement work is to be done in the caves and other areas. In addition, at the Ajanta historic site, cracks on rock plates and connecting loose rocks found at the edge of a flat section above the caves were examined, and removal of rocks posing high risk is scheduled to be done. These works are scheduled as part of the phase II project

Incidentally, as listed above under 1), visitor entrance is limited to a maximum of 40 persons at 20 minute intervals at caves 1, 2, 16, and 17 which contain valuable mural paintings, in order to protect such mural paintings. Supposing that 40 visitors entered the caves every 20 minutes between the hours available for viewing, which are between 9:00 a.m. and 5:30 p.m., the daily maximum capacity would be 1000 people. If this continued for a year, calculating that the number of Mondays (the regular closing day) per year is 52, number of visitors to these caves per year would be 313,000. In order to give every visitor to the site a chance to see the valuable mural paintings in these four caves, the maximum number of visitors to the Ajanta historic site could be limited to approximately 310,000 people. This number is based on a simple calculation, and therefore, because the visitor number fluctuates greatly depending on the season, day, and time, the maximum annual capacity should be estimated at a lower number. While the number may vary depending on the conditions for calculation, even at 20,000 people per year, it could be considered overestimated. If assumed that the visitors would be satisfied with being allowed to visit only one of the four caves, the maximum capacity, at most, would be 80,000. But it can be easily speculated that many would not be satisfied with seeing only one of the caves.

According to India's Ministry of Tourism (MOT), the predicted number of visitors to the Ajanta historic site for 2010 is little over 1,260,000. Taking into consideration the conditions mentioned above and visitor capacity, how should the site handle the visitors whose number is in excess of 1,260,000. Judging from on-site hearings and responses to our questionnaire, it can be presumed that no manner whatsoever of basic discussions for drawing up a management plan has been held. Only one-sided efforts by those involved in promoting tourism to increase of visitors are being put forth, while no management plans based on the number of visitors that can be adequately accommodated at the site is being formulated by those in charge of managing the site. If this condition continues, it could lead to loss of value of this globally important historic site.

2 Evaluation Policies on Historic Site-related Environment and Landscape

2.1 What impact have the restoration and reconstruction of historic sites and preventive measures had on the surrounding area and landscape?

Regarding the restoration, reinforcement, and reconstruction work on cave facades of caves 19, 21, 22, and 23 at the Ajanta historic site, as already mentioned, issues exist from the standpoint of maintaining authenticity and minimum intervention, but the work has not seriously affected the environment and landscape at the historic sites.

We did not receive a satisfactory response concerning the design of the bat-proof mesh at the Ajanta and Ellora historic sites. The impact of the meshes installed at the entrances and on the windows of the

caves on the landscape is not minimal. Although the choice of using wooden mesh frames and transparent coating over them to show wooden texture is viewed as appropriate, the same size wood pieces are used for all screens irrespective of the window size, making the width of some frames appear disproportionally large. We urge that more consideration be given to the landscape of the historic sites.

The mesh installed at the large entrance in cave 10 measuring more than 8-meter in height at the Ajanta historic site can be clearly seen from the distant observation deck, changing the historic landscape of the site (photo 67). These meshes at this cave, however, had been installed for some time and the work in this phase simply involved a replacement with a similar set of meshes (photo 68). Thus, this perhaps should be not considered an issue to be given particular attention, but it is regretful that their impact on the landscape was not assessed and the possibility of altering the design was not considered prior to implementing the work.

2.2 Has facility maintenance work around the historic sites been appropriate? What impact has it had on the surrounding environment and landscape?

Facilities maintenance work

As mentioned earlier, the path expansion work at Ajanta and Ellora historic sites required the construction of the high retaining walls resulting in loss of the original mountain surface, which in turn reduced the authenticity of the historic sites in terms of their location and environment, as well as the value of the site landscape. When constructing a new facility in a historic environment, it must integrate harmoniously with the environment and create a highly aesthetic landscape. However, the sprayed concrete applied on the slopes, parapets on the shoulder of the paths made to appear as real rocks, and the guardrails on the paths and newly built iron bridge do not contribute to creating such a landscape.

Landscaping and beautification work (in the area in front of cave 16 at the Ellora site)

Cave 16 or the “Kailasa temple” is the most important cave at the Ellora historic site. In the landscaping work in this phase, a park-like space with a stone-flagged promenade and lawn was created in front of the cave (photo 69). The border between the promenade and lawn area was lined with shrubs. There will be a need to examine whether this maintenance work was necessary and whether this park-like design was appropriate for a religious site.

Newly built observatory facility (Ajanta Viewpoint Forest Garden)

The construction of an observatory facility at Ajanta Viewpoint was carried out in conjunction with the improvement work on the road leading to the observatory facility (which detours to the north from the general road that connects Aurangabad to Ajanta T-junction) and maintenance work on the road connecting the observatory point and the Ajanta historic site. It was part of a landscaping work that also involved the installation of handrails on the side of the cliff (photo 71).

The observatory facility is located on top of a hill that can be reached from the Ajanta historic site by crossing the river in the gorge and climbing up the side of the hill for about 30 minutes. This location has historic significance, as it is where a British soldier on a tiger hunt discovered the Ajanta historic site in 1819. From the observatory facility, the entire historic site can be viewed from above without any obstructions such as trees getting in the way. As it allows one to fully enjoy the historic landscape of the site, it is also the best location for photographing. Meanwhile, from the historic site, though the observatory can be seen by the naked eye, this has not greatly affected the view of the historic site.

During the three on-site surveys conducted in January, February, and May of 2007, as only a few groups of tourists were seen at the observatory facility, it seemed as if it was not being utilized in an effective manner. However, according to an on-site hearing with MTDC, this observatory facility is most often used after the end of the rainy season during which around 20% of the total number of visitors to the Ajanta site use the observatory facility. It is often included as part of tourist route planned for after the rainy season by travel agencies, therefore becomes crowded with tourists brought in by large motor coaches.

Improvement of natural environment (afforestation)

The afforestation, which was implemented by FDM as part of the natural environment improvement work, was done on 700ha of land in the Ajanta region, and 237ha of land in the Ellora region (photos 72-74). Of it, except for the afforestation of the slope along the on bank opposite the Ajanta historic site (areas around the road connecting the observatory facility and the Ajanta historic site), the afforestation work was done in areas away from the historic sites and therefore has made no direct impact on the preservation or view of the historic sites. As such, the work is presumed to have no direct connection to the objectives of this yen-loan project which are historic site preservation and tourism infrastructure development. However, from the viewpoint of 1) contribution to the microclimate of the peripheral of the historic site, 2) maintenance and protection of the ecosystem including wild animals living around the historic site, 3) sustainment of the geological forms around the historic site, and 4) maintenance and improvement of landscape around the roads leading to the historic sites, the afforestation work does not deviate from the objective of this project, but rather, can be considered necessary.

"Contribution to the microclimate of the periphery of the historic site," includes improvement of soil-percolation capability of forests, equalization of daily variation of temperature, absorption of carbon dioxide and provision of oxygen. At the same time, because there is a possibility of the afforestation negatively impacting the historic site, phenomenon such as changes in the water environment around the caves, temperature changes within the caves, and impact on wild animals must be continuously monitored.

According to questionnaire responses from FDM and on-site hearings, no study of the peripheral natural vegetation was conducted prior to the afforestation work. A study was deemed unnecessary, as there are few briers shrubs, and shrubs related to obece used for agricultural use in the Ellora and Ajanta areas, respectively, and bramble shrub in the rest of the areas.

Moreover, at the planning and designing stage, a landscape simulation was conducted for both the Ajanta and Ellora regions. The species of trees selected were deciduous trees in which the leaves fallen from them would turn into fertilizer, and ones that could be found in the surrounding vegetation. Entrance and use of the plantation areas around the site managed by FDM are prohibited to those without permission.

Design codes or landscape guidelines for facilities, etc.

According to on-site hearings and responses to questionnaires given to relevant agencies, no design codes or landscape guidelines have been prepared to designate the type of structure, materials, design, or colors that would be most appropriate for each of the facilities scheduled to be newly constructed as part of the historic site maintenance work at Ajanta and Ellora, or landscape would be for the historic sites and their surrounding areas. As it is vital that a basic policy is formulated in order to maintain and create a favorable landscape, we urge that the relevant agencies work together to look into the matter.

At present, however, because the relation between ASI which controls the historic site regions and FDM and MTDC which control the peripheral regions, is not a close one, it is difficult to establish landscape guidelines that include the areas surrounding the site.

3 Evaluation policies on the modalities of cultural tourism to historic sites

3.1 Have interpretation services been adequately provided to help visitors understand the value and importance of the historic sites?

[Common issues in Ajanta and Ellora]

At present, there are insufficiencies regarding signboards, pamphlets, leaflets and guides, there is a lack in the framework to facilitate the understanding by visitors particularly within the historic sites. However, visitors have been observed touring the site using information they had acquired on their own, and therefore, the insufficiency of provided information does not necessarily mean that visitors are not understanding the significance of the site at this point.

In terms of attracting visitors and facilitating their understanding of historic sites, it is recommendable to send accurate and attractive information to outside sources, which is as important as providing sufficient information within the site. In the future, it is considered important for various organizations to cooperate to establish strategies for sending out such information.

As an additional note, although the signs indicating that the sites are world heritage sites were located at two points at each of the sites (one of which was made during this project), they are easily missed as they do not stand out.

Provision of information on overview, value, and importance of the historic sites

None of the responses on returned questionnaires or in interviews indicated that any policies on provision of information to visitors had been formulated.

At both sites, there is a signboard with simplified map and explanation of the site set up at the entrance during this project (photos 75, 76). Although notices on preservation of the historic sites made by ASI are similarly set up at the entrances of the sites, they are only written in English, Hindi, and Marathi, and therefore cannot be considered to have ensured that everyone is fully informed.

MTDC has prepared pamphlets, leaflets, and promotional videos to provide visitors with information on the overview, value, and importance of the historic sites, which offer general information to a certain degree. They are prepared in English, French, German, and Japanese, as well as Hindi and Marathi (photo 77). This is in keeping with the actual status of visitor statistics which show, according to the survey conducted by TATA, that the highest percentages of visitors to India come from England, followed by the United States, Sri Lanka, Canada, France and Germany. Phase II is said to have focused on the United States, England, France, Germany, and Japan as the target markets. It seems, however, that the leaflets created by ASI and handed out at the ticket booth are not necessarily given out to every visitor, and the pamphlets made by MTDC cannot be obtained at the site.

Tour course and the provision of information to tour guides and travel agencies

We received a response indicating that no particular tour routes have been created at Ajanta or Ellora historic sites because the arrangements of the caves are quite straightforward.

Tour guides are found soliciting customers individually as no organized system of providing guides have been set up at either of the sites (photo 78). According to the returned questionnaires, MOT has been offering training courses.

With regard to information provided by MTDC to travel agencies on the overview, value, and importance of the historic sites, it only distributes pamphlets created under this project, and has not been taking such measures as requesting the agencies to offer such information to visitors as points of caution upon tour of the sites. As such, their efforts can be considered insufficient.

3.2 Is the historic site tourism positioned as a means of facilitating cross-cultural understanding among people of different ethnicity, religion and customs through the understanding of the value of historic sites?

The response from the MTDC to the above inquiry was that this type of positioning "should be defined at the central level," indicating that it is not an issue taken into consideration in the local management of the sites.

3.3 How have the local communities been involved in the policy making and implementation of tourism development?

The returned questionnaire suggests that the voice of local communities were heard through the parliament; however, our interview with nearby souvenir shopkeepers indicates that understanding of interested parties has not been sufficiently achieved. Note that the nearest community to the Ajanta historic site, Ajanta village, is located about 10 kilometers away and may not consider the site a local attraction. Meanwhile, the Ellora historic site is often used as a park, and pupils from neighboring schools were seen visiting the site on excursions. As it was the case in Ajanta historic site, no community consultation seems to have been held around Ellora historic site prior to the development work in the area, which is currently taking place.

3.4 What impact have tourism development and increased visitor numbers had on the lives and culture of local communities?

While people directly involved in tourism, such as souvenir shopkeepers, are believed to have been significantly affected, the community in general seems to have benefited from the improved quality of living thanks to the maintenance of roads and the power transmission facilities.

Any possible impact on local communities would be based either on the increase in tourist number through this project or the change in quality of tourist behavior, but no significant changes were seen during phase I and it is difficult to determine the impact at the present stage.

IV Evaluation Summary

1 Evaluation from the viewpoint of necessity and effectiveness

As mentioned in "II Overall Evaluation" and "III Evaluation based on Evaluation Policies," this yen-loan project was extremely effective for the purpose of conservation of Ajanta and Ellora sites which are listed as World Heritage for their prominent and universal value, and allowing the general public to enjoy such treasured and valuable sites. Of the works carried out under this project, particular components that were evaluated are classified, listed, and rated from the viewpoint of their level of necessity and effectiveness.

[Evaluation rating]
a: particularly highly commendable
b: highly commendable
c: commendable
*: includes points that are problematic from other viewpoints

A: Projects considered to have been effective in preserving the historic site
- Cave restoration and reinforcement work (b)
- Bat-proof mesh installation (b)
- Drainage maintenance work (a)
- Treatment for conservation of mural paintings (a)
- Conservation and reconstruction of sculptures (c*)
- Removal of salt deposition on inner walls of caves (b)
- Pest control and fumigation treatment inside caves (b)

B: Projects considered to have been effective in maintaining and improving peripheral environments of the historic sites
- Introduction of the eco-bus system at the Ajanta region (a)
- Construction of the tourist complex at the Ajanta region (construction of a parking lot and a shopping plaza) (b)
- Afforestation project at Ajanta and Ellora regions (b)

C: Projects considered to have been effective in benefiting and ensuring safety of visitors and improving their understanding of the value of the historic sites
- Lighting system in the caves at the Ajanta historic site (conventional and optical fiber lighting systems) (a)

- Construction of a new observatory facility at the Ajanta region (a)
- New construction, expansion, and improvement of roads at Ajanta and Ellora historic sites (b*)
- Installation of information boards regarding the Ajanta and Ellora historic sites, and development and distribution of pamphlets (c)

2 Evaluation based on evaluation policy of the specific themes

As listed above, these works can all be evaluated as having been necessary and effective. However, when they are evaluated in light of the evaluation policy of specific themes that were established based on the global standard related to the preservation, management, and usage of cultural heritage sites, many issues have to be pointed out as listed below.

a) There are problems regarding the appropriateness of road expansion.
b) The retaining wall construction in connection with the development of new or expanded roads has caused a great impact on the location, environment, and landscape of the historic site.
c) No archeological studies were conducted on the rock surfaces that became buried under the retaining walls which were added when the new or expanded roads were constructed.
d) The design quality of newly established facilities is not high.
e) Portions of the reconstruction of cave facades are deemed excessive or unnecessary.
f) The reasons for forms and decorations chosen for the columns of the reconstructed cave facades are questionable.
g) It is difficult to distinguish between the original and reconstructed portions of the columns of the cave facades.
h) Some of the partial reconstruction done on the sculptures is considered unnecessary or excessive.
i) The reasons for the forms chosen for the reconstructed portions of the sculptures are questionable.
j) It is difficult to distinguish between the original and reconstructed portions of the sculptures.
k) Records kept of the various restorations and other types of work related to the historic sites, and no measures have been taken on their storage, management, or disclosure.
l) Measures to deal with the impact on the historic sites made by the increase in visitor number are insufficient.
m) Interpretation service to help visitors understand the value and importance of the historic sites is not being sufficiently provided.
n) The significant of tourism of historic sites is not fully understood by parties concerned.
o) The local communities have very little involvement in the formulation of tourism development policies.

The causes for these issues can be organized as follows:

A: There is insufficient understanding of the global standard regarding preservation and use of cultural heritage sites. While almost all of the issues listed above can be considered to have stemmed from this problem, but this is particularly true of b), c), e), g), h), j), k), n) and o). Of these, some are attributable

to the staff at MOT or ASI headquarters, and some are issues which could be avoided if ASI on-site staff had sufficient knowledge.

Documents on global standard related to this yen-loan project include *Operational Guidelines for the Implementation of the World Heritage Convention*, UNESCO, revised edition, 2005; *International Charter for the Conservation and Restoration of Monuments and Sites: The Venice Charter*, ICOMS, 1964; *Charter of Cultural Tourism*, ICOMOS, 1976; *International Cultural Tourism Charter*, COMOS, 1999; and *Management Guidelines for World Cultural Heritage Sites*, Bernard M. Feilden and Jukka Jokilehto,1998.

B: Lack of master plan and management plan for the preservation of cultural heritage sites
Issues stemming from this fact include a), d), e), h), l), and m). Master plan and management plan formulated based on clear and appropriate objectives; policies for keeping the loss of value of the historic sites to a minimum, and scientific reasoning behind them are useful in avoiding unnecessary or excessive intervention on the historic sites and eliminating apprehensions from external sources. Moreover, setting clear and appropriate objectives is necessary in impressing upon those in the local community involved in preservation of historic sites and promotion of tourism their respective roles and responsibilities, and the management plan can set the roadmap to achieving these objectives.

C: Lack of a management system to execute and regulate the project
Issues stemming from this fact include l) and m). The objectives of this yen-loan project are to develop a foundation for preserving the Ajanta and Ellora historic sites and use them as resources for tourism. The agencies which are to taken on the central and substantive role in carrying out this project are the ASI Aurangabad Circle office, Conservation and Scientific Research Office of ASI which is in charge of both historic sites, and MTDC. However, these three organizations do not have a close linkage or cooperative relationship, but rather, they do not seem to have much communication among them. This has not only diminished the efficiency and effectiveness of the specific issues listed above, but of this project also in indiscernible ways. At the same time, it has also made the sustainability and development of the effectiveness of this project quite fragile.

The local manager of ASI specializes in archeology, and therefore has knowledge and experience in the preservation and management of historic sites, but lack the knowledge related to their disclosure and utility. The local manager of MTDC, on the other hand, is a specialist on the tourism industry, but have no knowledge on historic site management. In other word, even though a project manager who has the ability to comprehensively promote this Historic Site Conservation and Tourism Infrastructure Development Project is needed, none exists.

D: Lack of transparency in the decision-making process

Issues stemming from this fact include a), b) and d). When performing acts that impact the preservation of a cultural heritage site, the reasoning and necessity behind the planning and implementation of such acts are questioned. Taking this project as an example, the questions would include, “When expanding the roads within the site, on what basis were the width of the expanded roads decided?,” “What were the considerations made to decide on the structure and design of the expanded parts of the roads in the historic site?,” and “Were simulations done to determine what type of impact would such work make on the landscape, location, and environment of the historic site?”

Those involved in the project are responsible for explaining based on such scientific evidences as future prediction of visitor number increase, that the widths of the expanded roads were appropriate, that the adopted structure and design were found to be the most suitable as a result of considering many different ideas, and they will create the least amount of impact on the landscape, location, and the environment of the historic site. Particularly with regard to historic sites such as those at Ajanta and Ellora which are listed World Cultural Heritage as “assets shared by all mankind,” acts that diminish the value of such assets cannot be decided upon only among countries in which the assets are located and aid-providing countries.

In order to handle such situations, important issues must be decided upon by forming a committee of specialists—or a committee of internationally recognized specialists in the case of a globally appreciated historic site—to make decisions on important issues by having that committee hold discussions. By disclosing, recording, and storing the content of such discussions, it can be verified by external specialists or those of future generations, ensuring process transparency and achieving accountability regarding the decision to perform an act that impacts the preservation of a cultural asset. For the phase II of this yen-loan project, ASI set up a POE which hold a meeting once a year. At the POE, progress and future plans are explained by ASI and other related agencies, and with the input from on-site inspection, the participants hold discussions, offer approval, request alterations, and give advice regarding their content. Therefore, for phase II of this project, it is anticipated that transparency of process of decision making for work to be implemented will be ensured.

While the causes of issues that arose have been listed above under A-D, it can be said that one of the reasons that such issues arose was that the most important preservation work on the Ajanta and Ellora historic sites were those added or implemented as a result of extra funds that were generated due to exchange fluctuation, and had not been part of the works to be evaluated selected before implementation.

V Significance of international cooperation projects on the conservation and use of cultural assets and other points of concern

1 Significance of international cooperation projects on the use of cultural assets

Tourism, and in particular the promotion of international tourism, utilizing cultural heritage sites is beneficial for developing countries in which such cultural heritage sites are located and for the international community for the reasons listed below:

(1) Values of cultural heritage sites should not only be enjoyed by specialists and concerned parties such as their owners or managers, but should be widely offered to the general public. Cultural heritage sites listed as World Heritage in particular should be open to the international community from the standpoint of their being “asset shared by all mankind.”

(2) The amount of foreign currency that is spent by foreign tourists at hotels and restaurants in a developing country is significant viewed from the economic level of that country. On the other hand, economic development based on cutting down forest resources or mining mineral resources and exporting such resources not only lead to destruction of the environment and to pollution, but also lead to a dead end eventually due to depletion of resources. Therefore, cultural assets which are used as international tourism can be considered high quality and sustainable resources.

(3) A cultural heritage site used as tourist resources evokes motivation of the country in which it is located and people in the local community toward conservation of the site as a resource that contributes to its economic development. Moreover, if a cultural heritage site closely linked to the history and culture of such country and people attracts international attention, it will help these people establish their collective identity.

(4) International tourism utilizing cultural heritage sites provides an opportunity for cross-cultural exchanges between the visitors and local community, promoting mutual understanding of each other’s history and culture. This is in keeping with a goal of UNESCO which is stated in the preamble of the UNESCO Charter: “Since wars begin in the minds of men, it is in the minds of men that the defenses of peace must be constructed.”

In these ways, tourism based on the use of cultural heritage sites has many benefits, and is an extremely effective way for the local communities of the location of such cultural heritage sites to develop in an independent manner. However, unplanned and disorganized tourism development has a high risk of greatly diminishing the value of the cultural heritage sites, with the danger of the profits gained through tourism not being appropriately returned to the local community. Therefore, preservation of the cultural heritage site as a high-quality, sustainable tourism resource requires superior and specialized management plan and system.

2 Points to consider regarding international cooperation projects on the conservation of cultural heritage sites

With regard to international cooperation aimed at the conservation of a cultural heritage site, the following points must be taken into consideration:

(1) Whether the recipient country has the specialists, technology, and system in order to appropriately conserve and restore, maintain and manage the historic site must be confirmed. In the case that these conditions are lacking, human resource development program and system development and improvement program must first be carried out, and works must be implemented with the understanding that they are part of the human resources development and technology transfer programs.
(2) In implementing works for the conservation and restoration of a cultural heritage site, efficiency, speedy progress, or adherence to the initially set timeframe are not necessarily factors that take priority in evaluation. Requiring efficiency, speedy progress, or adherence to the initially set timeframe in a country with few human resources who possess specialized knowledge and have little technical capabilities could lead directly to the destruction of a cultural heritage site.
(3) Amount of funds provided in loan must be determined by observing the human resources, technology, and systems available in the recipient country. For the purpose of conducting restoration, human resources development, and transfer of technology in an appropriate manner, it is safer and more effective to offer ¥10 million per year for 10 consecutive years rather than to offer ¥100 million in one year.
(4) The role of POE at the stage of formulating work plans and during work implementation period is extremely important. In particular, with regard to works on World Heritage site or cultural heritage sites of a similar caliber, setting up an international POE would be a prerequisite in winning the trust of the international community. In the case that the human resources, technology, or system of the recipient country are undeveloped, offering instructions and advice through long-term stay and on-site direction-giving by external specialists should be considered.
(5) Compilation of work records that includes analytical and critical notes, evidence, photographs, and technical drawings, as well as conservation maintenance and system of disclosure, should be placed as part of the project. It particularly advisable that a report on a project be published in English or language of the country in which the project has taken place. Further, holding a symposium involving internationally recognized specialists at appropriate or necessary times before, during and/or after the project would be effective in obtaining publicity for the project.

To promote the autonomous development of local communities around the cultural heritage sites, it is essential that such communities are involved in the formulation of the tourism development plan. Human resources development, and protection, cultivation, and promotion of traditional arts and handicrafts for this purpose must be included in the comprehensive plan.