

Conservation and rehabilitation of historical and cultural heritage

3.1 Scope

Historical places, buildings, objects and manifestation of cultural, scientific, symbolic, spiritual and religious value are important expressions of the culture and heritage, identity and religious beliefs of societies. Their role and importance, particularly in the light of the need for cultural identity and continuity in a rapidly changing world, need to be promoted.

Buildings, spaces, places and landscapes charged with historical, cultural, spiritual and religious value represent an important element of stable and humane social life and community pride. Without appropriate restoration / conservation, the architectural evolution in relation to socio cultural concept of a country's heritage remains misinterpreted, and can lead to virtual disappearance.

3.2 Terminology and Conceptual Definitions

3.2.1 Conservation

National legislation and international treaties and regulations aim to strike a balance between the need for development and the need to conserve the environment for the future. Conservation can be defined by the following concepts:

- a) Planned management of a natural resource / ecosystem or particular built form or environment to prevent exploitation, pollution, destruction or neglect to ensure the future usability of the resource.
- b) Retention of existing buildings or groups of buildings, landscapes etc. taking care not to alter or destroy character or detail, even though repairs or changes may be necessary.

Conservation conventionally is concerned to preserve as much original fabric as possible.

3.2.2 Restoration

This is the process of carrying on alterations and repairs to a building with the intention of restoring it to its original form, often involving reinstatement of missing or badly damaged parts, so it usually includes replication. As far as possible, efforts are made to replicate the materials and construction techniques of the original in this endeavor.

While often necessary after a disaster, it is generally regarded as more drastic than conservation, which suggests retention, repair and maintenance.

3.3 General Guidelines for Heritage Buildings and Sites

3.3.1 Conservation, rehabilitation and culturally sensitive adaptive reuse of urban, rural and architectural heritage shall be in accordance with the sustainable use of natural and human made resources. Access to culture and the cultural dimension of development is of utmost importance, benefiting all the people who have such access.

3.3.2 In order to promote historical and cultural continuity and to encourage broad civic participation in all kinds of cultural activities, the Government at the appropriate levels, including the local authorities, should undertake the following:

- a) Identify and document, whenever possible, the historical and cultural significance of areas, sites, landscapes, ecosystems, buildings and other objects and manifestations
- b) Establish conservation goals relevant to the cultural and spiritual development of the society;
- c) Promote awareness of heritage in order to highlight its value and the need for its conservation and the financial viability of rehabilitation;
- d) Encourage and support the local heritage and cultural institutions, association and communities in their conservation and rehabilitation efforts and inculcate in children and youth an adequate sense of their heritage;
- e) Promote adequate financial and legal support for the effective protection of cultural heritage;
- f) Promote education and training in traditional skills in all disciplines appropriate to the conservation and promotion of heritage.

3.3.3 To integrate development with conservation and rehabilitation goals, the Government at appropriate levels, including Ministries, local authorities and municipalities, shall undertake the following:

- a) Recognizing that historical and cultural heritage is an important asset, strive to maintain the social, cultural and economic viability of historically and culturally important sites and communities;
- b) Preserve the inherited historical settlement and landscape forms, while protecting the integrity of the historical urban fabric and thereby guiding new construction in historical areas;
- c) Provide adequate legal and financial support for the implementation of conservation and rehabilitation activities, in particular through adequate training of specialized human resources;
- d) Promote incentives for such conservation and rehabilitation to public, private and non-profit developers;
- e) Promote community based action for the conservation, rehabilitation, regeneration and maintenance of neighborhoods;
- f) Support public and private sector and community partnership for the rehabilitation of inner cities and neighborhoods;
- g) Ensure the incorporation of environmental concerns in conservation and rehabilitation projects;
- h) Take measures to reduce acid rain and other types of environmental pollution that damage to buildings and other items of cultural and historical value;
- i) Adopt human settlement planning policies, including transport and other infrastructure policies, that avoid environmental degradation of historical and cultural areas;
- j) Ensure that the accessibility concerns of people with disabilities are incorporated in conservation and rehabilitation projects.

3.3.4 In the event that the owner of a site/ building needs to be compensated for curtailing development, the transfer of unused development rights shall be made as stipulated in Appendix E, Part 3.

3.4 Criteria for protection of a Heritage Building / monument

3.4.1 Identification

Heritage buildings are to be enlisted / identified by a responsible committee to be formed by the relevant departments of the Government, consisting of experts in history, culture, architecture, engineering and other relevant fields, in consultation with the Advisory Committee to the Department of Archaeology, Government of Bangladesh, as constituted under the Antiquities Act of 1968. Once identified, the Government may, by notification in the official Gazette, declare any heritage building to be a protected antiquity under this same Act.

3.4.2 Categorization

Heritage buildings are to be categorized in accordance with its degree of dilapidation / dilapidated conditions

3.4.3 Chronology

Heritage buildings under consideration will also be categorized chronologically in an attempt to determine their ancient character and age

3.4.4 Documentation

Before any conservation work is initiated, a thorough research and documentation is to be carried out on the heritage buildings under consideration by relevant technical experts on history, culture, architecture, engineering and material sciences, to ensure that the restoration work is faithfully carried out.

A site survey (preferably with digital equipments) shall be conducted before initiating the work of each and individual building / structure.

In order to understand the location, dimension and depth of foundation of columns / piers or similar structural components, part of the footing can be exposed by excavating the earthwork with the guidance of experienced technical persons executed by experienced workers.

Subsequently at every stage of the conservation work the technical aspects and process of various activities are to be documented

3.4.5 Community Participation

In order to ensure community participation in the conservation process, scaled drawings of the proposed conservation shall be appended to the site during construction so that the public may become accustomed to the proposal and have the option of registering their opinion regarding the same.

If necessary the proposals shall be amended if strong public opinion is found against the proposal for conservation / restoration.

Where possible, local youth groups shall be used for facilitating the conservation process.

3.4.6 Protection of the building / site

- 3.4.6.1 A clear space around each monument shall be formed as an immediate environmental protection to the monument. This area should follow, as the case may be, the original line of the enclosure wall.
- 3.4.6.2 In rural or suburban setting no new structures / built forms of any size, shape shall be allowed to develop within the UNESCO / UNDP suggested area of half a mile radius from the epicenter of the monument under consideration.
- 3.4.6.3 In rural or suburban settings, a parcel of land representing approximately a circular area of a half mile radius of the farmland immediately surrounding the heritage building / monument shall be acquired to protect it from encroachment
- 3.4.6.4 In urban areas or metropolitan cities an immediate buffer zone as set by the permitting authorities, but not less than 3 meters in width, adjacent to the heritage building, must be kept absolutely free of any structure or establishment of similar nature surrounding the heritage building or its part thereof. The adjacent buildings (proposed) should follow certain height restrictions to be imposed by the permitting authority as set forth in Sec 3.4.5.5 below.
- 3.4.6.5 In general, the height of any proposed buildings adjacent to heritage buildings shall be kept limited to within two times the height of the heritage building under consideration.
- 3.4.6.6 To protect the monument against human impact, movement of visitors within the structure and site shall be controlled. Climbing over the fabric of the monument shall be illegal and be prevented at all times.

- 3.4.6.7 Signages shall be installed within the site and building premises to guide visitors by creating circumambulatory path or circulation area around each of the heritage buildings / monuments.

3.4.7 Original Elements

- 3.4.7.1 Structures that impinge directly on the monument/s, identified to be additions, alterations or extensions of any form or kind on to the original monument/s, shall be removed/ relocated elsewhere, in an attempt to recognize the original form/feature of the monument.
- 3.4.7.2 All original structures and architectural elements are to be retained and restored.
- 3.4.7.3 In the event that such elements have to be repaired, their features are to be retained intact.

3.4.8 Use of building materials

- 3.4.8.1 All repairing, restoration and renovation work shall be done following the original design and details in every step with the same/similar building materials used
- 3.4.8.2 Selection and application of materials are to be made in harmony with the materials used in the past/ during the period of original construction of the monument/building under consideration

3.4.8.3 Sand

- 3.4.8.3.1 Sand used in the making of mortar, shall be coarse-grained, perfectly clean, sharp and yellowish color, in order that a successful result may be obtained for cement and lime mortar. Fine grained, dusty and dirty sand shall not be used and each fresh consignment shall be carefully inspected in order to see that it corresponds with the sample approved in the first case.
- 3.4.8.3.2 Sands, which would otherwise be of good quality, but containing lumps of foreign matter, or a quality of dusty particles may be used, only after it has been thoroughly washed and examined.
- 3.4.8.3.3 Sea sand contains a quantity of salt which will cause efflorescence when the mortar is set. If used for the mortar, the salt from this sand shall be eliminated by very thorough washing in clean water, the water being renewed at each washing.

3.4.8.4 Brick

- 3.4.8.4.1 No modern bricks are to be used on any old buildings without the approval of an appropriate technical person / expert of Conservation.
- 3.4.8.4.2 In repairing brickwork, bricks of the same size and fabric as the original shall be used. In absence of instructions, the bricks shall be laid in the same bond, and the mortar joints shall be of the same thickness and toned to the same color as in the original work. When desirable, the mortar joints may be recessed about 6.5mm - 12.5mm back from the face.

3.4.8.5 Cement

- 3.4.8.5.1 Cement shall be slow setting, complying with the standard specification of Portland cement. In the absence of specific instruction/s, the use of cement on any conspicuous part of a building for pointing, plastering or other purposes shall be avoided, as if visible, it will express a noticeably modern note to the structure.

3.4.8.6 Cement concrete mix

- 3.4.8.6.1 The Cement concrete shall be varied in accordance with local necessities.

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- 3.4.8.6.2 The mix for foundations shall be 1 part of Portland cement , 3 parts of sand and 8 parts of clean stone, brick or gravel broken to approximately one and half inch, mixed thoroughly.
- 3.4.8.6.3 The mix for flooring and terracing shall be, 1 part of Portland cement, 2 parts of sand and 5 parts of stone, brick or gravel etc. broken approximately to 1 inch ring.

3.4.8.7 **Lime mortar**

Lime mortar of which the tensile strength is less than 100 lbs. per sq. inch is not to be used in conservation works. A practical and quick way of testing lime mortar on the work itself is to take a handful of mortar from the trough and after a minute or two, to wash it off the hand. If the skin is left rough after washing, the mortar may be considered fit for use.

3.4.8.8 **Lime wash**

- 3.4.8.8.1 The use of lime wash or paint is strictly forbidden except under special circumstances when the permission shall be taken from an appropriate authority/ expert on conservation.
- 3.4.8.8.2 If it is important to remove lime wash from an old surface of a heritage establishment, extreme precaution shall be taken to prevent injury to any inscriptions, relief or painting underneath. Lime wash may often be removed by brushing with soap and water, but acid must not be used for the removal of lime wash from marble or limestone, the surface of which is liable to damage by the acid work.

3.4.9 Upgrading and adaptive reuse

- 3.4.9.1 Adaptive reuse shall follow logical consequence considering public requirements of the region, tourist influx and socio-cultural context of the region under influence.
- 3.4.9.2 The decision of including different functions shall be made only after thorough investigation by a committee working under the guideline of experts in archaeology and architecture of the region.

3.4.10 Repairing, consolidation and restoration

- 3.4.10.1 In order to prevent salt action on the buildings, all materials used in the mortar mixes shall be free of any impurities. The bricks shall be acquired only from the best brick kilns and tested to ensure they are also free from impurities. Any lime shall be pure slaked lime made from real limestone and not a substitute.
- 3.4.10.2 To protect the structures from penetration by rainwater, a waterproof membrane, such as thin layer of concrete, shall be placed between the archaeological structure and any grass coverings.
- 3.4.10.3 Major building features such as cornices, string courses, kiosks and/or cupolas etc. shall be reconstructed, so that the water running off the main built form of the structure is thrown clear of the brick wall or associated façade.
- 3.4.10.4 All replacement of external brick facades shall have a heavy layer of polythene sheet barrier placed between the old and the new brickwork in order to prevent the transfer of salts from the old brickwork to the new.
- 3.4.10.5 To protect and treat the bricks of various shapes and forms used in walls, columns, projected eaves / cornice used on external façade, those shall firstly be recorded chronologically, and then be cleaned of vegetation, particularly algae / weeds etc., prior to soaking them several times in clean water to remove any salt therein.

- 3.4.10.6 Treatment of decorative brickwork and terra cotta shall be carried out step by step; firstly by thoroughly washing in fresh water. Secondly, after all the salts have been leached out, the brickwork or the terra cotta shall be treated with a consolidant chemical recommended by conservation experts.
- 3.4.10.7 In order to secure the plaques, in situ, those shall be anchored to the main fabric with stainless steel clamps.
- 3.4.10.8 Surface drains shall be installed in order to discharge surface water from the large courts and also from the nooks and corners of the building premises and monument under consideration. Any repairing, restoration and renovation work that this entails shall be done following the original design and details in every step using the same building materials and techniques.

3.4.11 Grouting

Grouting is to put a thin layer of mortar, following the required technical specification, in the spaces between tiles, bricks or similar other materials used in conservation work.

- 3.4.11.1 A void which can not be thoroughly cleaned out with water can be satisfactorily filled under pressure, since there are bound to be dusty surfaces with which the grout will not make a solid joint.
- 3.4.11.2 Numerous holes must be left in the pointing for the escape of air and for the liquid grout.
- 3.4.11.3 The pointing must be fairly hard and set on the outer surface before grouting is commenced. A period of three to four week is usually necessary for this to take place.
- 3.4.11.4 Where cement has been used for filling the joints at the back of the lime pointing, then grouting may be started ten days afterwards.
- 3.4.11.5 The whole body of the wall to be treated (where grouting is to be performed) should be thoroughly washed out with water (forced under a pressure of about 15 lbs. to 20 lbs. per square inch) starting from the top of the wall and working downwards. The walls must, however, be thoroughly saturated before grouting is commenced.
- 3.4.11.6 The mixture in the machine is to consist of not more than three parts of sand to one of cement, or as near this ratio (in order to resist the nature of sand to flow in the machine)
- 3.4.11.7 The grouting of cavities should be started at the base of the wall. Each grouting point should be fed twice from the machine.
- 3.4.11.8 The pressure to be obtained in the machine should, as a rule, be not less than 25 lbs. nor more than 35 lbs. per square inch; air should be pumped into to compressor until 35 lbs. per sq. inch is attained, and the pressure should not be allowed to reduce below 25 lbs. per sq. inch for ordinary cases. However, where the wall is thin or weak the pressure may be reduced to 12 lbs. or 15 lbs per sq. inch. If the above precautions are taken, this should have no bad effect upon the lime pointing.

3.4.12 Hand Grouting

- 3.4.12.1 In hand grouting, the proportions of cement to sand will depend both upon the character of the voids to be filled and upon the degrees of fineness of the sand. If the voids are large, one part of cement to two parts of sand may be used, but if small, then the proportion of sand should not exceed one part.
- 3.4.12.2 It is important to keep the cement and sand thoroughly mixed by continually shaking the can in which the grout is held.

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- 3.4.12.3 It is necessary to leave, above the grouting hole, another small hole for the escape of air while grout is being poured in.
- 3.4.12.4 In cases where a wall is weak, or a thin skin of facing material is bonded to main wall, it must be efficiently boarded and strutted into position before the grouting work is started.

3.4.13 Underpinning

- 3.4.13.1 Underpinning is applied to the building of new work underneath an existing structure without disturbing its stability. Underpinning may be necessary when the foundation of a wall of an ancient / heritage building is to be replaced with new foundation or when the existing foundation of a wall is required to be strengthened for sustainability.
- 3.4.13.2 All excavations for underpinning must be carefully and adequately planked and properly strutted (to prevent tilting and buckling; in order to prevent this, the joists are strutted apart in the mid-span all along the length); All the masonry work etc., immediately above the proposed stretch of underpinning, must be adequately held by raking shores on a good solid foundation.
- 3.4.13.3 Where a long length of wall has to be underpinned, the work must be carried out in sections about 1m in width and to the depth indicated in the estimate; the masonry overhead and the earth at the sides must be thoroughly shored up and strutted.
- 3.4.13.4 If underpinning exceeds 1m in height, the masonry is to be built up in layers not exceeding 0.60m. Each layer is to be allowed to set before the layer above is added.
- 3.4.13.5 When two sections are to be carried out together, they must not adjoin. Generally, a minimum distance of 3.5m is to be maintained between two sections. The holes must be kept quite free from water by pumping.
- 3.4.13.6 All concrete must be well rammed into a dense solid mass when possible, and where the height of the hole is sufficient to ram vertically, the concrete must be well pumped in from the front face.
- 3.4.13.7 When the footings of the wall are very loose and disintegrated, the joints should be well washed out and filled with cement grout, if possible, before the underpinning is started.

3.4.14 Decoration and Details

3.4.14.1 Inlay work (Pietra dura)

In the repair of inlay work (pietra dura), the greatest care is necessary in order to ensure that the new stones are fixed exactly, and that the edges of the existing ground work are not scrapped. This should be done step by step following a conservation manual.

- 3.4.14.2 The fret cutting should be done by means of a plain soft iron wire mounted on a split bamboo bow. Solid patterns are cut by working the bow like a fret saw.
- 3.4.14.3 The inlay blocks are cut on the slant with an inward slope of about 15 degrees on the edges to facilitate the fitting.

3.5 Area Conservation for Historic Districts

3.5.1 Identifying Historic Districts:

When neighborhoods / regions of ancient heritage built forms are present in any urban/semi-urban/rural setting, these shall be identified as Historic districts by the Advisory Committee to the Department of Archaeology, Government of Bangladesh, as constituted under the Antiquities Act of 1968. Such districts will be considered as representing a historic period of the region. Principles of area conservation shall be applied for the protection and preservation of these historic districts.

3.5.2 Planning Parameters and Conservation Guidelines

- 3.5.2.1 An appropriate plan shall be drawn in order to show the boundary of conservation areas, the core areas, the buildings to be conserved, the residential and other functional areas to be retained / restored and the 'envelope control sites'.
- 3.5.2.2 The scheme shall include a rehabilitation plan for person/s displaced in the Conservation process.
- 3.5.2.3 For buildings to be conserved, each and every building of historical importance is to be conserved / restored in accordance with the conservation guidelines set forth in Sections 3.3 and 3.4 above.
- 3.5.2.4 Taking into consideration community needs, the area shall be assigned functions that can sustain its existence and contribute to the economic functioning of the area.
- 3.5.2.5 The plan and detailing of the entire area shall comply with energy efficient and sustainability guidelines set forth in Chapter 4: Energy Efficiency and Sustainability, Part 3 of this Code.