BUILDING ENERGY EFFICIENCY & ENVIRONMENT RATING (BEEER) for DESIGN AND CONSTRUCTION OF BUILDINGS

Version-1, revised- 4
Date: 29 November 2020
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<th>Abbreviation</th>
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<tr>
<td>AC</td>
<td>Air Conditioner</td>
</tr>
<tr>
<td>AHU</td>
<td>Air Handling Unit</td>
</tr>
<tr>
<td>ASHRAE</td>
<td>American Society of Heating, Refrigerating and Air-Conditioning Engineers</td>
</tr>
<tr>
<td>ATM</td>
<td>Automated Teller Machine</td>
</tr>
<tr>
<td>BED</td>
<td>Building Envelope Design</td>
</tr>
<tr>
<td>BEEER</td>
<td>Building Energy Efficiency and Environment Rating</td>
</tr>
<tr>
<td>BFRI</td>
<td>Bangladesh Forest Research Institute</td>
</tr>
<tr>
<td>BMS</td>
<td>Building Management System</td>
</tr>
<tr>
<td>BNBC</td>
<td>Bangladesh National Building Code</td>
</tr>
<tr>
<td>BOD</td>
<td>Biological Oxygen Demand</td>
</tr>
<tr>
<td>BRT</td>
<td>BUS RAPID TRANSIT</td>
</tr>
<tr>
<td>BRTA</td>
<td>Bangladesh Road Transport Authority</td>
</tr>
<tr>
<td>BUET</td>
<td>Bangladesh University of Engineering and Technology</td>
</tr>
<tr>
<td>CH</td>
<td>Construction Health</td>
</tr>
<tr>
<td>CM</td>
<td>Construction Material</td>
</tr>
<tr>
<td>CNG</td>
<td>Compressed Natural Gas</td>
</tr>
<tr>
<td>COP</td>
<td>Coefficient of Performance</td>
</tr>
<tr>
<td>CSR</td>
<td>Corporate Social Responsibility</td>
</tr>
<tr>
<td>DAP</td>
<td>Detailed Area Plan</td>
</tr>
<tr>
<td>DD</td>
<td>Demand Draft</td>
</tr>
<tr>
<td>DOE</td>
<td>Department of Environment</td>
</tr>
<tr>
<td>DU</td>
<td>Dhaka University</td>
</tr>
<tr>
<td>EAA</td>
<td>Energy Audit and Accreditation</td>
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<td>EE&amp;C</td>
<td>Energy Efficiency and Conservation</td>
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<tr>
<td>EECMP</td>
<td>Energy Efficiency and Conservation Master Plan</td>
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<td>EM</td>
<td>Energy Management</td>
</tr>
<tr>
<td>EMS</td>
<td>Energy Monitoring System</td>
</tr>
<tr>
<td>EPD</td>
<td>Environmental Product Development</td>
</tr>
<tr>
<td>ETP</td>
<td>Effluent Treatment Plant</td>
</tr>
<tr>
<td>GPS</td>
<td>Global Positioning System</td>
</tr>
<tr>
<td>GWP</td>
<td>Global Warming Potential</td>
</tr>
<tr>
<td>HBRI</td>
<td>Housing and Building Research Institute</td>
</tr>
<tr>
<td>HCFC</td>
<td>Hydrogen Chloro- Fluro Carbon</td>
</tr>
<tr>
<td>HVAC</td>
<td>Heating Ventilation and Air Conditioning</td>
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<tr>
<td>IAB</td>
<td>Institute of Architects Bangladesh</td>
</tr>
<tr>
<td>IE</td>
<td>Indoor Environment</td>
</tr>
<tr>
<td>IFC</td>
<td>International Finance Corporation</td>
</tr>
<tr>
<td>LCA</td>
<td>Life Cycle Assessment</td>
</tr>
<tr>
<td>LED</td>
<td>Light Emitting Diode</td>
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<tr>
<td>LPD</td>
<td>Light Power Density</td>
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<tr>
<td>MAP</td>
<td>Management and Planning</td>
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<tr>
<td>MGC</td>
<td>Maximum Ground Coverage</td>
</tr>
<tr>
<td>MJ</td>
<td>Mega- Joule</td>
</tr>
<tr>
<td>MRT</td>
<td>Mass Rapid Transit</td>
</tr>
<tr>
<td>Acronym</td>
<td>Description</td>
</tr>
<tr>
<td>---------</td>
<td>--------------------------------------------------</td>
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<tr>
<td>NFPA</td>
<td>National Fire Protection Association</td>
</tr>
<tr>
<td>NOC</td>
<td>No Objection Certificate</td>
</tr>
<tr>
<td>ODS</td>
<td>Ozone Depleting Substances</td>
</tr>
<tr>
<td>PV</td>
<td>Photo Voltic</td>
</tr>
<tr>
<td>RAJUK</td>
<td>Rajdhani Unnayan Kartripakkha</td>
</tr>
<tr>
<td>REHAB</td>
<td>Real Estate and Housing Association of Bangladesh</td>
</tr>
<tr>
<td>RE</td>
<td>Renewable Energy</td>
</tr>
<tr>
<td>RMC</td>
<td>Ready-Mix Concrete</td>
</tr>
<tr>
<td>RWTP</td>
<td>Recycled Water Treatment Plant</td>
</tr>
<tr>
<td>SC</td>
<td>Shading Coefficient</td>
</tr>
<tr>
<td>SHGC</td>
<td>Solar Heat Gain Coefficient</td>
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<tr>
<td>SM</td>
<td>Site Management</td>
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<td>SREDA</td>
<td>Sustainable and Renewable Energy Development Authority</td>
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<tr>
<td>SRI</td>
<td>Solar Reflectance Index</td>
</tr>
<tr>
<td>STP</td>
<td>Sewage Treatment Plant</td>
</tr>
<tr>
<td>TOR</td>
<td>Terms of Reference</td>
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<tr>
<td>TR</td>
<td>Ton of Refrigeration</td>
</tr>
<tr>
<td>UPVC</td>
<td>Unplasticised polyvinyl chloride</td>
</tr>
<tr>
<td>VFD</td>
<td>Variable Frequency Drive</td>
</tr>
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<td>VLT</td>
<td>Visible Light Transmittance</td>
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<tr>
<td>VOC</td>
<td>Volatile Organic Compounds</td>
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<tr>
<td>VRF</td>
<td>Variable Refrigerant Flow</td>
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<tr>
<td>VRV</td>
<td>Variable Refrigerant Volume</td>
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<tr>
<td>VVVF</td>
<td>Variable Voltage and Variable Frequency</td>
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<tr>
<td>WPC</td>
<td>Wood Plastic Composite</td>
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<tr>
<td>WWR</td>
<td>Window-Wall Ratio</td>
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<tr>
<td>WWTP</td>
<td>wastewater treatment plant</td>
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1. **Background**

Bangladesh is a country highly prone to natural disasters and greatly exposed to the impacts of climate change (e.g. sea-level rise, cyclone, flood and rising temperatures) leading to increased stress on and vulnerability of various sectors. Particularly, the construction and building sector is seriously affected by rising temperatures and strongly determines the country's pathway towards sustainable development. A considerable amount of resources (energy, water, material etc.) is being consumed both during the construction and operations phase of buildings. Bangladesh's residential sector constituted more than 40% of the total electricity consumption, and the demand has increased ever since. Rising temperatures add further stress on the building sector resulting in higher energy demand and consumption in private and public buildings, as well as in increasing emission of GHG. Consequently, the saving of energy and resources during both the construction and consumption process in the building sector should be given high priority to cost-effectively reduce GHG emissions, ensure energy security and promote sustainable growth.

Experiences from neighbouring countries, such as India, rating or labeling systems for green buildings are an effective tool for incentivizing the construction sector and material suppliers to become greener by applying more sustainable building practices. In Bangladesh, green rating of buildings is still in a nascent stage due to the absence of a specific standard/ scheme that could help in promoting a wide-ranging application. The introduction of the green building concept is further hampered by the fact that the financial advantages of using more sustainable building practices and materials become only visible in the long run due to high investment costs. Conveying the immediate benefits and establishing a demand for green buildings thus requires a multi-dimensional approach. Aspects, such as raising awareness on pay-back periods, creating technical expertise of green building and their construction, or access to finance need to be considered and addressed. However, present construction systems in Bangladesh are not energy and water efficient which leads to high energy and water demand in the building sector. Electricity supply and consumption in the country has almost tripled in last decade. The main source of electricity is fossil fuels, accounting for 96% of the total output (Source Bangladesh Power Development Board (BPDB)), leading to high GHG and intensive power generation. The energy consumption projection also depicts the required energy generation to be used in different sector.

1.1 **Existing Policies:**

The Dhaka Mahanagar Imarat Nirman Bidhimala -2008 mainly enforcing the building set back, floor area ratio, maximum ground coverage, mandatory open space which are mostly passive approach to reduce the energy use in building. But the buildings are not regulated or inspected for any active energy or water saving measures to reduce the demand.

The following are some examples of how poor building design leads to higher energy and water consumption:

- Window selection is not based on the glass properties.
- The air conditioning units are not regulated.
- Lighting systems are not designed with energy efficiency. Some buildings have excessive lights installed with no daylight control, which leads to lights
remaining on in a day-lit room. Electric lighting generates heat which leads to more air conditioning load in buildings.

- Water fittings such as taps and toilet flushes are not water efficient and lead to high water consumption with no added value.
- In last decade the apartment units in Dhaka has increased almost 600%. The increase in the demand of new buildings mainly in the residential sector shows the potential impact of Energy and water use.

Presently there is no designated green building rating system for Bangladesh. Now a day’s developers and factory owners are intents to having a green and energy efficient building. USGBC LEED certification is becoming popular rating system for high-end commercial and compliance textile factory building. More than 100 buildings already registered under USGBC LEED certification. Bangladesh Bank is promoting energy efficiency in buildings with soft loan facilities under their refinancing scheme. Single digit loan (maximum 9%) facilities are available for LEED certified factories. On the other hand Bangladesh National Building Code (BNBC) is being updated. The BNBC is mandatory and legal document for Buildings construction firm and owners, Architect, Engineers. The BNBC provides regulation and/or minimum requirement of building type (office, residence, commercial building, etc.), size (height, floor area), structure strength, indoor condition, construction material, etc.

The updated version of BNBC is proposed with addition of energy efficiency requirement of buildings in near future BNBC will be the core program for promoting EE&C in Buildings and contain the following requirement on building energy efficiency:

- Heat insulation and/or ventilation performance of building envelope
- Energy efficiency of building equipment (HVAC, lighting, fans, hot water supply, lift, escalator, renewable energy options)
- Water efficiency and management and Sanitation
- Roof gardening and vegetation.

On the other hand, The Housing and Building Research Institute developed a Recommendation for Green Building Code at 2012 with the technical assistance of IFC. Its target is not only on energy/water use efficiency but also on reduction of environmental impact caused by building construction, use and decommissioning. The survey for the Recommendation of Green Building Code it is found that the baseline energy consumption of Dhaka is about 277 kw/h/m²/year. According to this study the Green Building Rating for upcoming new buildings will save 300MW energy per year which is equal to save setup of one power plant in each year.

1.2 SREDA:
In May 2014 the government has established the Sustainable & Renewable Energy Development Authority (SREDA) as a national nodal organization for promoting Energy Efficiency and Conservation (EE&C) in the country. As per the mandate, SREDA addressing the area of energy efficiency and renewable energies for the building sector, and is hence natural partner for the project and the activities. It is able to ensure access to relevant governmental bodies, as well as to financing institutions.

1.3 Sustainable and Renewable Energy Development Authority Act 2012:
The Sustainable and Renewable Energy Development Authority Act 2012 has provision for assisting the government in making and implementation of rules/codes relating to energy efficient building construction

1.4 EE&C Master Plan up to 2030
In 2016, SREDA has developed the Energy Efficiency & Conservation Master plan up to 2030. The Energy Efficiency & Conservation master Plan (EECMP) is a supreme plan of Bangladesh’s initiative on energy efficiency and conservation, of which preparation requirement is stipulated in the Energy Efficiency and Conservation Rules.
Under the EECMP, all the policies, programs, legal documents (Act, Rules, Regulations, Circulars or Standards etc.) and frameworks are to be established. The Master plan's aims to achieve this target through the adoption and implementation of EE&C regulatory measures: Energy Management Program (Energy Audit Program), EE Labeling Program and EE&C Buildings Program, and EE&C Financial Incentive Programs.

1.5 Energy Efficiency & Conservation Buildings Program:
To ensure the energy efficiency in buildings, SREDA has developed the rating system for buildings and act as the implementation and execution body for the Building Energy Efficiency & Environment Rating (BEEER). The rating system will be voluntary at the initial stage. Moreover, it is based on certain baselines and calculation procedures in order to evaluate their impacts and to compare them. The rating systems that has been designed as a holistic approach to green buildings by taking the entire environmental footprint of buildings (e.g. water waste, resources) into account. In addition, social standards and working conditions will be assessed and aspects of, for instance, gender equality and rights of minorities and low-skilled workers will be rated. At present, poor working and safety conditions are prevalent in the construction sector, which primarily employs low-skilled workers and forces women to carry out labour intense and physically demanding tasks on the construction side. Through the consideration of social standards and working conditions, the BEEER will help to counteract these practices and transform the construction sector in a sustainable manner. In addition, training sessions and information for architects, developers, as well as for construction companies and suppliers will be provided to address the existing lack of awareness and know-how and build capacity. To ensure a comprehensive “greening” of Bangladesh’s building sector the program will support the integration and mainstreaming of green building considerations into national and municipal policies as well as public procurement. Furthermore, dialogues and cooperation between policy makers and financial institutions will be facilitated and financial institutions will be advised on the provision of green loan products for buildings.

The objective to which the program aims to contribute is to:

- Promote green and sustainable building practices on the supply and demand side of Bangladesh’s construction sector;
- Contribute to climate change mitigation by saving resources in the building sector while enhancing economic prosperity and competitiveness, as well as alleviating poverty by considering both green and social standards;
- Establish a building energy efficiency and environmental rating systems serving as a standard/reference for green building construction practices;
- Enhance sustainable consumption in the building sector through a rating system, providing consumer information and a distinctive grade for sustainable buildings;
- Mobilize and capacitate key stakeholders to get involved in green building design and construction;
- Promote green equipment and construction materials, fixtures and make the market ready;
- Develop the capacity of architects and Engineers, Energy Managers & Energy Auditors in Green Construction;
- Provide access to soft and subsidize loan facilities for green building developer and consumers.
2. Methodology

- Data collection from existing buildings covering different typologies
- Current building stock data in Dhaka

- Analyzing current construction techniques and mechanical and electrical systems
- Analyzing current water and energy consumption

- Building the baseline energy model for each building typology
- Calibrating the baseline with collected data

- Review relevant international popular green building rating system
- Select the most effective measures, cost and perform the payback analysis

- Select the measures with early payback and feasible in Bangladesh
- A final model with all measures considered together establishing the saving potential for rating

3. Rating and reference Points and Label Design

<table>
<thead>
<tr>
<th>Certification level</th>
<th>Points</th>
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<tr>
<td>★</td>
<td>40-50</td>
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<tr>
<td>★★</td>
<td>51-60</td>
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<td>★★★</td>
<td>61-70</td>
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<td>★★★★</td>
<td>71-99</td>
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<tr>
<td>★★★★★</td>
<td>100-145</td>
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<tr>
<td>★★★★★★</td>
<td>145 points</td>
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4 Rating Guideline

বীর
Building Energy Efficiency & Environment Rating

<table>
<thead>
<tr>
<th>Name of the Building</th>
<th>SREDABhaban</th>
</tr>
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<tbody>
<tr>
<td>Location</td>
<td>Agargoan, Dhaka</td>
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<tr>
<td>Category</td>
<td>Office</td>
</tr>
<tr>
<td>Type</td>
<td>Air Conditioned</td>
</tr>
<tr>
<td>Built up area</td>
<td>42000 sq ft</td>
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<tr>
<td>Annual Energy Consumption</td>
<td>10 kWh/sq ft/year</td>
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<td>Validity Period</td>
<td>December 2021</td>
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Management and Planning
<table>
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<th>Credit Title</th>
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<td>Applicability</td>
<td>Building Type (Residential/Commercial/Factory/Industry) Building Stage (New/Existing)</td>
</tr>
<tr>
<td>Credit Number</td>
<td>MAP-1</td>
</tr>
<tr>
<td>Points for Credit</td>
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</table>

**Goal:** Proper Documentation, Submission, and Evaluation

**Eligibility:** At least One Professional Recognized to be involved in the rating application submission and Audit.

- Eligible Professional will have minimum graduation degree in Engineering (Civil, Electrical or Mechanical) or Architecture with 2 (two) years of Working Experience in Building Design and Construction field
- Should have Membership of Institute of Engineers or Institute of Architects of Bangladesh or Any International Similar Recognized Organization

**Required Documentation:** Enlistment Certificate

**Remarks:** Mandatory Credit Point

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<table>
<thead>
<tr>
<th>Credit Title</th>
<th>Management and Planning</th>
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<tr>
<td>Applicability</td>
<td>Building Type (Residential/Commercial/Factory/Industry) Building Stage (New/Existing)</td>
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<td>Credit Number</td>
<td>MAP-2</td>
</tr>
<tr>
<td>Points for Credit</td>
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</tbody>
</table>

**Goal:** To avoid unethical practice

**Eligibility:**

- All Design of the project must done by registered Professionals (Architects, Engineers, Planners, site supervisor) as per BNBC
- All Design must be approved by concerned development authorities or local bodies

**Required Documentation:**

- Membership certificates of Professional bodies
- Approved drawings by concerned authorities.
- Land Use Clearance

**Remarks:** Mandatory Credit Point
Project Site Management
### Credit Title: Project Site Management

**Credits Points**
- SM 1
- SM 2

**Points for Credit**
- 2

#### Credit 03

<table>
<thead>
<tr>
<th>Applicability</th>
<th>Building Type (Residential/Commercial/Factory/Industry) Building Stage (New/Existing)</th>
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<tbody>
<tr>
<td>Credit Number</td>
<td>SM 1</td>
</tr>
<tr>
<td>Points for Credit</td>
<td>2</td>
</tr>
<tr>
<td>Goal</td>
<td>To ensure proper utilization of site considering the surrounding context</td>
</tr>
<tr>
<td>Eligibility</td>
<td>Analysis of the Site condition for proper design (Ecology, Hydrology, Vegetation, Flora and Fauna, Flood level and intensity, Climatic condition, Topography, Soils, transportation facilities, all kinds of sources of pollution)</td>
</tr>
<tr>
<td>Required Documentation</td>
<td>Site Survey, Site Map, Drawings, Contour Map, Underground Water Quality Test, Climate Data, Observations from the adjacent properties, Photographs etc.</td>
</tr>
</tbody>
</table>

#### Credit 04

<table>
<thead>
<tr>
<th>Applicability</th>
<th>Building Type (Residential/Commercial/Factory/Industry) Building Stage (New/Existing)</th>
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<td>Credit Number</td>
<td>SM 2</td>
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<tr>
<td>Points for Credit</td>
<td>2</td>
</tr>
<tr>
<td>Goal</td>
<td>To encourage development in the planned area (Developed or Planned area means: Land developed by government or private development agency, company or by any person as per land development rule and approved by the concerned government organization)</td>
</tr>
<tr>
<td>Eligibility</td>
<td></td>
</tr>
<tr>
<td>Required Documentation</td>
<td>Project Plan, Approval Documents, Photo Proof, Site management Plan, Land Use Clearance.</td>
</tr>
<tr>
<td>Remarks</td>
<td></td>
</tr>
<tr>
<td>Credit Title</td>
<td>Project Site Management</td>
</tr>
<tr>
<td>--------------</td>
<td>-------------------------</td>
</tr>
<tr>
<td>Credits Points</td>
<td>Site Improvement &amp; Protect/Restore Habitat</td>
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<tr>
<td>Applicability</td>
<td>Building Type (Residential/Commercial/Factory/Industry) Building Stage (New/Existing)</td>
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<td>Credit Number</td>
<td>SM 3</td>
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<tr>
<td>Points for Credit</td>
<td>2</td>
</tr>
<tr>
<td>Point options</td>
<td>comply at least 2 options</td>
</tr>
<tr>
<td>Goal</td>
<td>To ensure proper utilization of site preserving the natural quality</td>
</tr>
</tbody>
</table>
| Eligibility | - Preserve Top Soil as per soil test report  
- Protect existing Plants and trees with barriers & Fence  
- Use Native or adapted vegetation  
- Restore at least 50% of existing site (except building footprint area) which are disturbed during construction |
| Required Documentation | Photo Proof, Site management Plan, Soil Test Report |
| Remarks | |

<table>
<thead>
<tr>
<th>Credit Title</th>
<th>Project Site Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Credits Points</td>
<td>Open Space Management</td>
</tr>
<tr>
<td>Applicability</td>
<td>Building Type (Residential/Commercial/Factory/Industry) Building Stage (New/Existing)</td>
</tr>
<tr>
<td>Credit Number</td>
<td>SM 4</td>
</tr>
<tr>
<td>Points for Credit</td>
<td>1</td>
</tr>
<tr>
<td>Point options</td>
<td></td>
</tr>
<tr>
<td>Goal</td>
<td>To ensure proper utilization of site considering more openness, that encourages interaction with the environment and physical activities</td>
</tr>
</tbody>
</table>
| Eligibility | Provide minimum 10% more of Mandatory open area at Ground (without having any basement) 
(50% of the mandatory open area must be green or permeable paving) |
| Required Documentation | landscape plan in detail, plant specifications submission |
| Remarks | |

<table>
<thead>
<tr>
<th>Credit Title</th>
<th>Project Site Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Credits Points</td>
<td>Rainwater Management During Construction at Site</td>
</tr>
<tr>
<td>Applicability</td>
<td>Building Type (Residential/Commercial/Factory/Industry) Building Stage (New)</td>
</tr>
<tr>
<td>Credit Number</td>
<td>SM5</td>
</tr>
<tr>
<td>---------------</td>
<td>-----</td>
</tr>
<tr>
<td>Point options</td>
<td></td>
</tr>
<tr>
<td>Goal</td>
<td>Manage the Rainwater during pre-construction</td>
</tr>
</tbody>
</table>
| Eligibility   | • Prepare Rainwater drainage plan for the site  
• Make drain and sedimentation tank for construction period  
• The construction site may cover with tent or Temporary shading during basement construction and Earth Cutting to reduce the Water pumping. | |
| Required Documentation | • Drawings  
• Photo Evidence  
• Periodic Inspection report by the enlisted consultants | |
| Remarks       |     |                  |   |

<table>
<thead>
<tr>
<th>08</th>
<th>Credit Title</th>
<th>Project Site Management</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Credits Points</td>
<td>Outdoor Light Control at Site &amp; Surrounding</td>
</tr>
</tbody>
</table>
|    | Applicability | Building Type (Residential/Commercial/Factory/Industry)  
Building Stage (New/Existing) |
|    | Credit Number | SM 7 |
|    | Points for Credit | 1 |
|    | Point options | |
|    | Goal | Reduction of Light Pollution |
|    | Eligibility | • Prepare Exterior lighting Layout plan  
• Manufacturing data of lighting fixture  
• Maintain LPD maximum 1.6 W/m² in open outdoor area (Except Signage & Security lighting)  
or  
• Lighting simulation report with the maximum LPD of 1.6 W/m² |
|    | Required Documentation | • Design and Drawings  
• Lighting Test report  
• Manufacturers Data sheet |
|    | Remarks | |

<table>
<thead>
<tr>
<th>09</th>
<th>Credit Title</th>
<th>Project Site Management</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Credits Points</td>
<td>Easy Access to the site</td>
</tr>
</tbody>
</table>
|    | Applicability | Building Type (Residential/Commercial/Factory/Industry)  
Building Stage (New/Existing) |
<p>|    | Credit Number | SM 8 |
|    | Points for Credit | 1 |
|    | Point options | |</p>
<table>
<thead>
<tr>
<th>Goal</th>
<th>To Reduce CO₂ foot print from daily life transportation</th>
</tr>
</thead>
</table>
| Eligibility | - Public transportation facilities (CNG auto Rickshaw Stoppage, Bus Stoppage, boat/ Ferry, Electrical vehicle stoppage) within 0.5 km walking distance from campus boundary.  
- Rail station, Water vehicle terminal, MRT or BRT station within 1 km walking distance from campus boundary.  
- Pedestrian access to the facility with provision for persons with special needs |
| Required Documentation | - Layout plan with surrounding transportation facilities (location and detail bus lines, numbers and frequencies)  
- Satellite Maps  
- Photo evidence |
| Remarks | |

| 10 | : |
| Credit Title | Project Site Management |
| Credits Points | Bicycle Parking |
| Applicability | Building Type (Residential/Commercial/Factory/Industry) Building Stage (New/Existing) |
| Credit Number | SM 9 |
| Points for Credit | 2 |
| Point options | |

<table>
<thead>
<tr>
<th>Goal</th>
<th>To Reduce CO₂ foot print from daily life transportation</th>
</tr>
</thead>
</table>
| Eligibility | - Provision of at least 50% bicycle parking facilities of regular car parking requirements of commercial or residential buildings  
Or  
Provision of bicycle facilities for * % of regular worker of a factory or industry *(30% for up to 1000 worker, 15% up to 5000 workers and 10% for 10000 or more workers)  
- Changing room with shower facilities (for both Male and Female) as per BNBC |
| Required Documentation | - Layout plan with demarcation of bicycle parking area  
- Floor plan with shower and changing room  
- Demarcation of bicycle network within the site  
- Occupancy details or Car parking details  
- Photographs |
| Remarks | |

| 11 | : |
| Credit Title | Project Site Management |
| Credits Points | Car Parking |
| Applicability | Building Type (Residential/Commercial/Factory/Industry) Building Stage (New/Existing) |
| Credit Number | SM 10 |
| Points for Credit | 1+1 = 2 |
### Point options
One point for each eligibility criteria

### Goal
To Reduce CO₂ footprint from daily life transportation and promote sharing of resources.

### Eligibility
- Keeping parking facilities within minimum requirements as set out in BNBC & Dhaka Mahanagar Imarat Nirman Bidhimala-2008
  - **A.** Provide 10% common parking area for Low Emission Vehicle / Electric Car (Charging option will be integrated with the BMS network)
  - **B.** Provide 10% parking area for Low Emission Vehicle at car pool (Low Emission Vehicle means Electric Vehicles which are approved by BRTA or electric vehicle of Industrial/commercial use)

### Required Documentation
- Drawings with Car parking layout for New Construction
- Photo Evidence for Existing Project

### Remarks

---

### 12

<table>
<thead>
<tr>
<th>Credit Title</th>
<th>Project Site Management</th>
</tr>
</thead>
</table>

**Credits Points**
- Community services

**Applicability**
- Building Type (Residential/Commercial/Factory/Industry)
- Building Stage (New/Existing)

<table>
<thead>
<tr>
<th>Credit Number</th>
<th>SM 11</th>
</tr>
</thead>
<tbody>
<tr>
<td>Points for Credit</td>
<td>1- 2</td>
</tr>
</tbody>
</table>

**Point options**
- 1 point for 5 facilities
- 2 points for 10 facilities.

**Goal**
Encourage to select the site near to the existing Community facilities to save transportation energy

**Eligibility**
- A) at least 5 different facilities within 0.5 km radius
  - Or
- B) at least 10 different facilities within 1 km radius

Facilities are:
- School, Health Facilities, Fire and Ambulance Service, swimming pool, ATM booth, Bank, Post office/ Courier service, Grocery shop, Medicine Shop, Medical Centre, Market Place, Super Mall, Park, Play ground, Child care, Mosque, Community Center.

**Required Documentation**
- site plan locating facilities
- Photo evidence
- Satellite images indicating distance.

**Remarks**
Building Envelope Design
### Credit Title
Building Envelope Design

### Credits Points
Daylight

<table>
<thead>
<tr>
<th>Applicability</th>
<th>Building Type (Residential/Commercial/Factory/Industry) Building Stage (New/Existing)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Credit Number</td>
<td>BED 1</td>
</tr>
<tr>
<td>Points for Credit</td>
<td>2-4</td>
</tr>
</tbody>
</table>

#### Point options

<table>
<thead>
<tr>
<th>Point</th>
<th>Window Opening [Percentage of Window Opening/Net Floor Area(Room Area)]</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>25%</td>
</tr>
<tr>
<td>4</td>
<td>50%</td>
</tr>
</tbody>
</table>

### Goal
To ensure optimum daylight performance and save energy

### Eligibility
Minimum 50 Lux level Natural daylight at regular workable area under clear sky. The daylight level should not create glare or over light.

- **Option 1:**
  Daylight Modeling through annual computer simulations that spatial daylight autonomy for regularly occupied floor area.

- **Option 2:**
  Data collection by using data logger in a existing space or building

#### Required Documentation
- Architectural Drawings
- Glazing Details or Manufacture data sheet
- Door window schedule
- Day Lighting simulation report
- Data logging Report

### Remarks

---

### Credit Title
Building Envelope Design

<table>
<thead>
<tr>
<th>Credits Points</th>
<th>Naturally Ventilated Spaces for Passive Design Building</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applicability</td>
<td>Building Type (Residential/Commercial/Factory/Industry) Building Stage (New/Existing)</td>
</tr>
<tr>
<td>Credit Number</td>
<td>BED 2</td>
</tr>
<tr>
<td>Points for Credit</td>
<td>6</td>
</tr>
</tbody>
</table>

### Goal
To maximize naturally ventilated spaces and comfortable indoor environment
Eligibility : Summer.
For Passive Design the indoor air temperature must maintain 4-3°C below outdoor temperature in summer with Relative Humidity Maximum 70%.

Winter
For Passive Design the indoor air temperature must maintain upper than 15 C

- Determine the outdoor air opening and space configuration requirements using the natural ventilation procedure – cross ventilation, stack ventilation, double opening ventilation, wind-induced ventilation, etc.
- Monitor CO2 concentrations within all densely occupied spaces. CO2 monitors must be between 3 and 6 feet above the floor

Required Documentation : • Natural ventilation design calculations.
• Measurement Data in Both Summer and winter/ Simulation Report
• Occupancy Information

Remarks : Optional Points and Only applicable For Passive Design

<table>
<thead>
<tr>
<th>15</th>
<th>:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Credit Title :</td>
<td>Building Envelope Design</td>
</tr>
<tr>
<td>Credits Points :</td>
<td>Building Orientation</td>
</tr>
<tr>
<td>Applicability :</td>
<td>Building Type (Residential/Commercial/Factory/Industry) Building Stage (New/Existing)</td>
</tr>
<tr>
<td>Credit Number :</td>
<td>BED 3</td>
</tr>
<tr>
<td>Points for Credit :</td>
<td>1</td>
</tr>
<tr>
<td>Point options :</td>
<td></td>
</tr>
<tr>
<td>Goal :</td>
<td>To emphasize on Building Orientation for maximum exposure to natural wind flow and daylight</td>
</tr>
<tr>
<td>Eligibility :</td>
<td>• Determine the building orientation. The general orientation is north-south, ensuring that all major openings are in line with</td>
</tr>
<tr>
<td>Required Documentation :</td>
<td>• Architectural Drawings</td>
</tr>
<tr>
<td>Remarks :</td>
<td>Optional Points and Only applicable For Passive Design</td>
</tr>
</tbody>
</table>
Water Management
<table>
<thead>
<tr>
<th>Credit Title</th>
<th>Water Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Credits Points</td>
<td>Water Metering</td>
</tr>
<tr>
<td><strong>Applicability</strong></td>
<td>Building Type (Residential/Commercial/Factory/Industry) Building Stage (New/Existing)</td>
</tr>
<tr>
<td>Credit Number</td>
<td>WM1</td>
</tr>
<tr>
<td>Points for Credit</td>
<td>1</td>
</tr>
<tr>
<td>Point options</td>
<td></td>
</tr>
<tr>
<td>Goal</td>
<td>To measure water consumption to reduce energy and resource footprint.</td>
</tr>
<tr>
<td>Eligibility</td>
<td>Install water meter/ prepaid water meter for the Building.</td>
</tr>
<tr>
<td>Required Documentation</td>
<td>Water Consumption data Monthly basis for at least 3 months.</td>
</tr>
<tr>
<td>Remarks</td>
<td>Mandatory</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Credit Title</th>
<th>Water Use Reduction in Outdoor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Credits Points</td>
<td>Water Use Reduction in Outdoor</td>
</tr>
<tr>
<td><strong>Applicability</strong></td>
<td>Building Type (Residential/Commercial/Factory/Industry) Building Stage (New/Existing)</td>
</tr>
<tr>
<td>Credit Number</td>
<td>WM2</td>
</tr>
<tr>
<td>Points for Credit</td>
<td>1-2</td>
</tr>
<tr>
<td>Point options</td>
<td>• 1 point for water use reduction • 2 points for using recycled water</td>
</tr>
<tr>
<td>Goal</td>
<td>To Reduce water use in Outdoor and reuse of water</td>
</tr>
<tr>
<td>Eligibility</td>
<td>• Provide proper drainage system • Prevent leakage during irrigation • Reduce water demand in 50% by using native and less maintenance plants &amp; landscape over the baseline case • Use recycle water from STP or WWTP • Minimize storm water run-off from site by reducing hard paving on site</td>
</tr>
<tr>
<td>Required Documentation</td>
<td>• Detail landscape plan • List of landscape species • Data of Drip irrigation system • Plumbing drawings showing the recycled water for Irrigation • STP/ETP/WWTP Design</td>
</tr>
<tr>
<td>Remarks</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Credit Title</th>
<th>Water Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Credits Points</td>
<td>Water Use Reduction in Indoor</td>
</tr>
<tr>
<td>----------------</td>
<td>-------------------------------</td>
</tr>
<tr>
<td>Credit Number</td>
<td>WM3</td>
</tr>
<tr>
<td>Points for Credit</td>
<td>1-8</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Point options</th>
<th>Percentage reduction</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>25%</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>30%</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>35%</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>40%</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>45%</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>50%</td>
<td>8</td>
</tr>
</tbody>
</table>

Goal: To reduce water use in Indoor

Eligibility: Water consumption reduction by % of total consumption from the baseline. Base calculations on the volumes and flow rates shown in Table

<table>
<thead>
<tr>
<th>Fixture or Fitting</th>
<th>Baseline (SI units)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toilet (water closet)</td>
<td>8/6 lpf (Duel Flush)</td>
</tr>
<tr>
<td>Urinal</td>
<td>4 lpf</td>
</tr>
<tr>
<td>Public Toilet faucet</td>
<td>3 lpm at 400 kPa</td>
</tr>
<tr>
<td>Private Toilet faucet</td>
<td>9 lpm at 400 kPa</td>
</tr>
<tr>
<td>Kitchen faucet</td>
<td>9 lpm at 400 kPa</td>
</tr>
<tr>
<td>Faucet for Ablution</td>
<td>3 lpm at 400 kPa</td>
</tr>
<tr>
<td>Shower head</td>
<td>12 lpm at 500 kPa per shower stall</td>
</tr>
<tr>
<td>Hand Shower</td>
<td>8 lpm at 415 kPa</td>
</tr>
</tbody>
</table>

* Standards for appliances: SREDA Rated Appliance / Equipments or equivalent
** Standards for appliances (Kitchen ware, Commercial washing Machine, Lavatory Equipments) Reference standards (Any Internationally Accepted Green Building Rating System)

Required Documentation:
- Manufacturers Cut Sheet indicating flow/flush rates
- Plumbing drawings showing the recycled water for Flushing
- STP / ETP / WWTP Design

Remarks: Mandatory

19
Credit Title: Water Management
Credits Points: Water Reduction in Cooling Towers & Air conditioners
Applicability: Building Type (Residential/Commercial/Factory/Industry)
<table>
<thead>
<tr>
<th>Building Stage (New/Existing)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Credit Number</td>
</tr>
<tr>
<td>Points for Credit</td>
</tr>
</tbody>
</table>

**Goal**: To reduce potable water in building services

**Eligibility**: Use a minimum 20% (of demand) recycled non potable water in cooling tower. The water quality must maintain as per the requirements of the building service system

**Required Documentation**:
- Plumbing drawings showing the recycled water for cooling tower
- STP/ETP/WWTP Design

**Remarks**: 20

---

<table>
<thead>
<tr>
<th>20</th>
<th>Water Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Credit Title</td>
<td>Rain Water Harvesting from Building and Recharging</td>
</tr>
<tr>
<td>Credits Points</td>
<td>Building Type (Residential/Commercial/Factory/Industry)</td>
</tr>
<tr>
<td>Applicability</td>
<td>Building Stage (New/Existing)</td>
</tr>
<tr>
<td>Credit Number</td>
<td>WM5</td>
</tr>
<tr>
<td>Points for Credit</td>
<td>3</td>
</tr>
</tbody>
</table>

**Goal**: To utilize naturally available water

**Eligibility**:
- Rain water harvesting system design with the consideration of runoff from the roof as well as the project site (hardscape). The run-off from a roof or concrete shall be a maximum of 80-90%

  Consider 80% of Rainwater Storage Facilities commensurate with the size of Roof Area
  Roof Area (*) % of collected rain (daily average for the whole year)

  *Roof Area
  Up to 5000 sft 10%, Upto 10000 sft 5%, Upto 50000 sft 2%, Up to 100000 sft 1%, more than 100000 sft 0.5%

- Use collected rainwater in Toilet flush, Gardening, Fire fighting water storage. and
- Recharge rain water to below ground with filtration or grease/oil trapping system

**Required Documentation**:
- Plumbing drawings showing the rain water collection and use in buildings
- RWTP Design
- Layout plan and Design of Recharge well/Rainwater Storage Tank

**Remarks**:
Energy Management
### Energy Management

**Credit Title**: Energy Management

<table>
<thead>
<tr>
<th>Credit</th>
<th>Points</th>
<th>Applicability</th>
<th>Credit Number</th>
<th>Points for Credit</th>
<th>Point options</th>
<th>Goal</th>
<th>Eligibility</th>
<th>Required Documentation</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>21</td>
<td></td>
<td>Building Type (Residential/Commercial/Factory/Industry) Building Stage (New/Existing)</td>
<td>EM1</td>
<td>1</td>
<td></td>
<td>To Measure the Energy Consumptions</td>
<td>Install smart Energy meter for the Building/ Unit/Tenant basis</td>
<td>Connection Certificate form Electricity Utility Agency/ Companies.</td>
<td>Mandatory</td>
</tr>
</tbody>
</table>
| 22     |        | Building Type (Residential/Commercial/Factory/Industry) Building Stage (New/Existing) | EM2           | 5                 |               | To perform minimum level of energy efficiency | Minimum Energy Saving of 5 % from building system and envelops. Compared with the baseline (Renewable Energy is Excluded). Comply minimum requirements of  BNBC preferably Or ASHRAE Standard 90.1-2010. | Mechanical, Electrical and Plumbing Design  
Power and Energy Load Calculation  
Single line Diagram for STP/ETP/WWTP  
Bus Bar energy saving comparative and calculation  
Chiller capacity and AHUs Capacity (if any)  
Steam Load calculation (if any)  
Chiller gas detail information  
Details of VFD installed on AHUs  
Calculation and backup for energy efficient process for machines equipment etc.  
Lighting floor plan and cut sheet of interior lighting fixtures  
Technical details/ manufacturer data sheet for chillers, AHU, Boiler etc  
Updated HVAC layout with details of the systems | Mandatory |
<table>
<thead>
<tr>
<th>23</th>
<th><strong>Credit Title</strong></th>
<th><strong>Energy Management</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Credits Points</strong></td>
<td>Heat Island Effect Reduction at Site / Roof</td>
</tr>
<tr>
<td></td>
<td><strong>Applicability</strong></td>
<td>Building Type (Residential/Commercial/Factory/Industry) Building Stage (New/Existing)</td>
</tr>
<tr>
<td></td>
<td><strong>Credit Number</strong></td>
<td>SM 6</td>
</tr>
<tr>
<td></td>
<td><strong>Points for Credit</strong></td>
<td>$1 + 1 = 2$</td>
</tr>
<tr>
<td></td>
<td><strong>Point options</strong></td>
<td>One point for A, One point for B &amp; 2 point for both A&amp;B</td>
</tr>
<tr>
<td></td>
<td><strong>Goal</strong></td>
<td>To reduce Heat gain from horizontal surfaces.</td>
</tr>
</tbody>
</table>
|    | **Eligibility** | Eligibility:  
A) Non roof  
- Use plants that provide shade over paving areas (including playgrounds)  
- Provide shade with solar PV/ Water Heater panels  
- Provide shade with architectural devices  
- Shade with vegetated  
- Use at least 50% of pavement area open-grid pavement system  
B) Roof  
- Use roofing materials or roof paint that have an SRI equal to or greater than 80.  
- 70% of open roof area should be vegetated roof or solar thermal collectors, photovoltaic Covering  
Or  
A minimum of 75% of outdoor parking area cover by energy generation systems, such as solar thermal collectors, photovoltaic, etc. |
|    | **Required Documentation** |  
- Submit the Lab Data sheet of Materials for SRI Value  
- Submit Drawings and Photo evidence of Vegetation or covered area |
|    | **Remarks** | |

<table>
<thead>
<tr>
<th>24</th>
<th><strong>Credit Title</strong></th>
<th><strong>Energy Management</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Credits Points</strong></td>
<td>Measurement and Verifications</td>
</tr>
<tr>
<td></td>
<td><strong>Applicability</strong></td>
<td>Building Type (Residential/Commercial/Factory/Industry) Building Stage (New/Existing)</td>
</tr>
<tr>
<td></td>
<td><strong>Credit Number</strong></td>
<td>EM3</td>
</tr>
<tr>
<td></td>
<td><strong>Points for Credit</strong></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td><strong>Point options</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Goal</strong></td>
<td>To ensure compliance of desired requirement of performance</td>
</tr>
<tr>
<td></td>
<td><strong>Eligibility</strong></td>
<td>Complete the commissioning process activities for mechanical, electrical, plumbing, and renewable energy systems and assemblies in accordance with BNBC, Part-8, Chapter-2 (Air-condition, Heating</td>
</tr>
</tbody>
</table>
and Ventilation) preferably

Or

ASHRAE Guideline 0–2005 and ASHRAE Guideline 1.1–2007 for HVAC & R systems, as they relate to energy, water, indoor environmental quality, and durability.

M&V agency must complete the following:
- Review contractor submittals
- Verify inclusion of systems manual requirements in construction documents
- Verify inclusion of operator and occupant training requirements in construction documents
- Verify systems manual updates and delivery
- Verify operator and occupant training delivery and effectiveness
- Verify seasonal testing
- Review building operations 6 months after substantial completion
- Develop an on-going commissioning plan

Measurement and Verification should be done by any third party Measurement and verification agency or SREDA Certified Energy Auditor and will check the following issues.

- Mechanical, Electrical and Plumbing Design
- Power and Energy Load Calculation
- Single line Diagram for STP/ETP/WWTP
- Bus Bar energy saving comparative and calculation
- Chiller capacity and AHUs Capacity (if any)
- Steam Load calculation (if any)
- Chiller gas detail information
- Details of VFD installed on AHUs
- Calculation and backup for energy efficient process for machines equipment etc.
- Lighting floor plan and cut sheet of interior lighting fixtures
- Technical details/ manufacturer data sheet for chillers, AHU, Boiler etc
- Updated HVAC layout.

<table>
<thead>
<tr>
<th>Required Documentation</th>
<th>:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M&amp;V Reports</td>
</tr>
<tr>
<td></td>
<td>Audit Reports</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

| 25 |
| : |
| Credit Title : Energy Management
| Credits Points : Advanced Energy performance
| Applicability : Building Type (Residential/Commercial/Factory/Industry) Building Stage (New/Existing)
| Credit Number : EM4 |
### Points for Credit: 6-20

**Point options:**

<table>
<thead>
<tr>
<th>Percentage</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>6%</td>
<td>6</td>
</tr>
<tr>
<td>7%</td>
<td>7</td>
</tr>
<tr>
<td>8%</td>
<td>8</td>
</tr>
<tr>
<td>9%</td>
<td>9</td>
</tr>
<tr>
<td>10%</td>
<td>10</td>
</tr>
<tr>
<td>15%</td>
<td>11</td>
</tr>
<tr>
<td>20%</td>
<td>12</td>
</tr>
<tr>
<td>24%</td>
<td>13</td>
</tr>
<tr>
<td>28%</td>
<td>14</td>
</tr>
<tr>
<td>30%</td>
<td>15</td>
</tr>
<tr>
<td>34%</td>
<td>16</td>
</tr>
<tr>
<td>38%</td>
<td>17</td>
</tr>
<tr>
<td>42%</td>
<td>18</td>
</tr>
<tr>
<td>46%</td>
<td>19</td>
</tr>
<tr>
<td>50%</td>
<td>20</td>
</tr>
</tbody>
</table>

Optimize the energy performance by:
- Interior and Exterior Lighting power Density (LPD) reduction
- Improvement of Thermal performance of building envelope
- Energy efficient HVAC systems

**Goal:** To achieve higher levels of energy performance.

**Eligibility:** Follow the criteria Minimum Energy Performance to demonstrate a percentage improvement in the proposed building performance rating compared with the baseline. Points are awarded according to Table.

**Required Documentation:**
- Reports of efficiency measures during the design process and account for the results in design decision making.
- Energy simulation Report of Efficiency
- Analyze efficiency measures, focusing on load reduction and HVAC-related strategies (passive measures are acceptable) appropriate for the facility.

**Remarks:** Only Applicable for Air Conditioned Space / Building

---

<table>
<thead>
<tr>
<th>Credit Number</th>
<th>EM5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Credit Title</td>
<td>Energy Management</td>
</tr>
<tr>
<td>Credits Points</td>
<td>Demand Response</td>
</tr>
<tr>
<td>Applicability</td>
<td>Building Type (Residential/Commercial/Factory/Industry) Building Stage (New/Existing)</td>
</tr>
</tbody>
</table>

---

30 | P a g e
Points for Credit : 5

Goal : To encourage the technologies and programs that make energy generation and distribution systems more efficient

Eligibility : Use BMS for day to day building monitoring (a Building Management System(BMS), otherwise known as a Building Automation System(BAS), is a computer based control system installed in buildings that controls and monitors the building’s mechanical and electrical equipment such as ventilation, lighting, power systems, fire systems, renewable energy and security systems.)

Required Documentation : • Real time BMS Data of performance • BMS manufacturer data sheet

Remarks : 

---

<table>
<thead>
<tr>
<th>27</th>
<th>Credit Title</th>
<th>Energy Management</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Credits Points</td>
<td>Renewable Energy Incorporation</td>
</tr>
<tr>
<td></td>
<td>Applicability</td>
<td>Building Type (Residential/Commercial/Factory/Industry) Building Stage (New/Existing)</td>
</tr>
<tr>
<td></td>
<td>Credit Number</td>
<td>EM6</td>
</tr>
<tr>
<td></td>
<td>Points for Credit</td>
<td>1-10</td>
</tr>
<tr>
<td></td>
<td>Point options</td>
<td>Generation Percentage of Demand Load</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5%-9%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>10%-19%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20%-29%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>30%-49%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>50% - 99%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>100% (Net Zero Building)</td>
</tr>
</tbody>
</table>

Goal : To reduce the environmental and economic harms associated with fossil fuel

Eligibility : Generate on site or Invest Energy using renewable sources (Solar PV, Wind, Bio gas, Hydro, Waste to Energy) by using roof top, Walls, Vacant land etc.

Required Documentation : • Annual energy usage and cost information • Proof of load sanction by utilities • Investment information and generation of energy from Renewable sources

Remarks : Mandatory
Credit Title: Management of Refrigeration & Air-conditioning system

Applicability:
- Building Type (Residential/Commercial/Factory/Industry)
- Building Stage (New/Existing)

Credit Number: EM7

Points for Credit: 3

Point options:
- To reduce the environmental and economic harms associated with GHG emission.

Eligibility:
- Air-conditioning accounts for more than 50% of the total electricity costs in a centrally air-conditioned building. Hence the efficiency of a HVAC system is of prime importance. The heart of the HVAC system is the chiller and hence it is important to procure an efficient chiller system. Refrigerant used for the cooling system should be non-CFC and non-HCFC and with low Global Warming potential (GWP).

The cooling equipment shall meet or exceed the minimum efficiency requirement as stated in the table below.

Table—Minimum energy efficiency requirements for chilling packages

<table>
<thead>
<tr>
<th>Description</th>
<th>Capacity</th>
<th>Input kW/TR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air cooled chillers including condenser</td>
<td>All Capacities</td>
<td>1.25</td>
</tr>
<tr>
<td>Air cooled chillers without condenser</td>
<td>All Capacities</td>
<td>1.13</td>
</tr>
<tr>
<td>Water cooled, electrical operated positive displacement (Reciprocating) chillers</td>
<td>All capacities</td>
<td>0.83</td>
</tr>
<tr>
<td>Water cooled electrical operated positive displacement (rotary screw and scroll) chillers</td>
<td>&lt;150 TR</td>
<td>0.79</td>
</tr>
<tr>
<td></td>
<td>≥150 TR and 300 TR</td>
<td>0.71</td>
</tr>
<tr>
<td></td>
<td>≥300 TR</td>
<td>0.64</td>
</tr>
<tr>
<td>Water cooled electrically operated centrifugal chillers</td>
<td>&lt;150 TR</td>
<td>0.70</td>
</tr>
<tr>
<td></td>
<td>≥150 TR and 300 TR</td>
<td>0.63</td>
</tr>
<tr>
<td></td>
<td>≥300 TR</td>
<td>0.57</td>
</tr>
<tr>
<td>Air cooled absorption single effect chillers</td>
<td>All Capacities</td>
<td>N/A</td>
</tr>
<tr>
<td>Water cooled absorption single effect chillers</td>
<td>All Capacities</td>
<td>N/A</td>
</tr>
<tr>
<td>Water cooled absorption double effect (indirect fired) chillers</td>
<td>All Capacities</td>
<td>N/A</td>
</tr>
<tr>
<td>Water cooled absorption double effect (Direct fired) chillers</td>
<td>All Capacities</td>
<td>N/A</td>
</tr>
<tr>
<td>Air-cooled air conditioner</td>
<td>&lt;5.4 TR</td>
<td>1.23</td>
</tr>
<tr>
<td></td>
<td>≥ 5.4 TR and &lt; 11.4 TR</td>
<td>1.10</td>
</tr>
<tr>
<td></td>
<td>≥ 11.4 TR and &lt; 20 TR</td>
<td>1.15</td>
</tr>
<tr>
<td>Evaporating water-cooled air conditioners</td>
<td>( \geq 20 ) TR</td>
<td>1.28</td>
</tr>
<tr>
<td>-----------------------------------------</td>
<td>------------------</td>
<td>-------</td>
</tr>
<tr>
<td></td>
<td>(&lt; 5.4 ) TR</td>
<td>1.04</td>
</tr>
<tr>
<td></td>
<td>( \geq 5.4 ) TR and (&lt; 11.4 ) TR</td>
<td>1.03</td>
</tr>
<tr>
<td></td>
<td>( \geq 11.4 ) TR and 20 TR</td>
<td>1.08</td>
</tr>
<tr>
<td></td>
<td>( \geq 20 ) TR</td>
<td>1.29</td>
</tr>
<tr>
<td>Air-cooled condenser units</td>
<td>( \geq 11.4 ) TR</td>
<td>1.18</td>
</tr>
<tr>
<td>Water-cooled or evaporating condenser units</td>
<td>( \geq 11.4 ) TR</td>
<td>0.911</td>
</tr>
</tbody>
</table>

For AC systems above 5.4 TR in capacity it is recommended that a refrigerant leakage check record book is kept and Maximum 10% of leakage per annum is allowable.

**Required Documentation:**
- Performance data sheet
- Catalogs
- Refrigerant leakage check record

**Remarks:**
- For AC systems above 5.4 TR in capacity it is recommended that a refrigerant leakage check record book is kept and Maximum 10% of leakage per annum is allowable.
- Performance data sheet
- Catalogs
- Refrigerant leakage check record
Indoor Environment Quality
**30**

<table>
<thead>
<tr>
<th>Credit Title</th>
<th>Indoor Environment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Credits Points</strong></td>
<td>Ventilation</td>
</tr>
<tr>
<td><strong>Applicability</strong></td>
<td>Building Type (Residential/Commercial/Factory/Industry) Building Stage (New/Existing)</td>
</tr>
<tr>
<td><strong>Credit Number</strong></td>
<td>IE 1</td>
</tr>
<tr>
<td><strong>Points for Credit</strong></td>
<td>1</td>
</tr>
<tr>
<td><strong>Point options</strong></td>
<td></td>
</tr>
</tbody>
</table>

**Goal**

To ensure proper ventilation and comfortable indoor environment.

**Eligibility**

All living space should have proper ventilation for Active mode.

1. For Active ventilation comply minimum requirements of BNBC, Part-8, Chaper-2 (Air-condition, Heating and Ventilation) preferably
   Or
   ASHRAE Standard 62.1, Sections 4–7, Ventilation for Acceptable Indoor Air Quality (with errata)

2. Monitor $CO_2$ concentrations within all densely occupied spaces. $CO_2$ monitors must be between 3 and 6 feet above the floor

**Required Documentation**

- Design and Ventilation Calculation Data
- Occupancy information

**Remarks**

---

**31**

<table>
<thead>
<tr>
<th>Credit Title</th>
<th>Indoor Environment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Credits Points</strong></td>
<td>Tobacco / Smoke Control</td>
</tr>
<tr>
<td><strong>Applicability</strong></td>
<td>Building Type (Residential/Commercial/Factory/Industry) Building Stage (New/Existing)</td>
</tr>
<tr>
<td><strong>Credit Number</strong></td>
<td>IE 2</td>
</tr>
<tr>
<td><strong>Points for Credit</strong></td>
<td>1</td>
</tr>
<tr>
<td><strong>Point options</strong></td>
<td></td>
</tr>
</tbody>
</table>

**Goal**

To ensure Tobacco pollution free indoor space

**Eligibility**

- Zero exposure to tobacco smoke for non-smokers
- Exclusive ventilation for smoking rooms with proper awareness and signage as per Government law and Policy

**Required Documentation**

- Put a signage of non-smoking at visual level
- Design and layout of smoke zone
- Photo evidence.

**Remarks**

---
32
Credit Title : Indoor Environment
Credits Points : Less Emitting Materials
Applicability : Building Type (Residential/Commercial/Factory/Industry)
Building Stage (New/Existing)
Credit Number : IE 3
Points for Credit : 1 - 2
Point options :

<table>
<thead>
<tr>
<th>Point</th>
<th>Percentage of Low Emitting Material Used out of total quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>50% - 79%</td>
</tr>
<tr>
<td>2</td>
<td>80% - 100%</td>
</tr>
</tbody>
</table>

Goal : To ensure Low VOC in Indoor Environment

Eligibility :
- All interior finishing products (Paint, Tiles, Veneer wood, Particle Board)
  - Paint - Maximum VOC level 10g/L
  - Veneer & particle board - Free of Added urea formal dehydrate
  - Adhesive/Sealants - Maximum VOC level 10g/L

All products must have the VOC free certification from any Internationally accredited lab.

Required Documentation :
- Manufacturer data sheet
- Lab report (VOC emission) of Product.
- Materials inventory

Remarks :

33
Credit Title : Indoor Environment
Credits Points : Lighting at Interior Space
Applicability : Building Type (Residential/Commercial/Factory/Industry)
Building Stage (New/Existing)
Credit Number : IE5
Points for Credit : 1
Point options :

Goal : To ensure minimum required light use and save energy

Eligibility :
- For at least 90% of individual occupant spaces, provide individual lighting controls that enable occupants to adjust the lighting to suit their individual tasks and preferences, with at least three lighting levels or scenes (on, off, midlevel).
  (Midlevel is 30% to 70% of the maximum illumination level)
- Day light contributions are excluded.
For all shared multi occupant spaces, meet the following requirements.

- Have in place multi zone control systems that enable occupants to adjust the lighting to meet group needs and preferences, with at least three lighting levels or scenes (on, off, midlevel).

<table>
<thead>
<tr>
<th>Required Documentation</th>
<th>Design information of lighting control- Location, specifications</th>
</tr>
</thead>
</table>

### Credit Title: Indoor Environment  
**Credits Points:** Acoustics Quality  
**Applicability:** Building Type (Residential/Commercial/Factory/Industry)  
Building Stage (New/Existing)  
**Credit Number:** IE 7  
**Points for Credit:** 1  
**Point options:**  
**Goal:** To Restrict noise generation from appliances  
**Eligibility:** BNBC, Part-8, Chaper-2 (Air-condition, Heating and Ventilation) and Chapter-3 (Building Acoustics)  
Or  
- Provide Proper Insulation for noise protection from Generator, Air-conditioning Unit, the maximum limit of noise is 15 dB for Indoor space.  
**Required Documentation:**  
- Noise level measurement data  
- Insulation design and Documents  
**Remarks:**  

### Credit Title: Indoor Environment  
**Credits Points:** Clean Cooking (Homes)  
**Applicability:** Building Type (Residential/Commercial/Factory/Industry)  
Building Stage (New/Existing)  
**Credit Number:** IE 8  
**Points for Credit:** 1  
**Point options:**  
**Goal:** To Restrict Indoor Environment Pollution
| Eligibility | • Use tire 4 cooking solution on Indoor space  
  • Use Fuel free of SOx and NOx  
  • For Gas and Fire Fuel, Use proper exhaust system both for cook stove and cooking place  
  • For Electric Cooker the maximum wattage for single burner will be less than 1.2 kw  
  • Comply the ventilation and thermal comfort requirements of BNBC, Part-8, Chaper-2 (Air-condition, Heating and Ventilation) |
| Required Documentation | • Manufacturer Data Sheet of Cook stoves  
  • Efficiency and pollution level lab test reports of the stove |
| Remarks | : |
Construction Materials Management
### Credit Title

**Construction Materials Management**

<table>
<thead>
<tr>
<th>Credits Points</th>
<th>Reuse of Existing Building Materials</th>
</tr>
</thead>
</table>

#### Applicability

**Building Type (Residential/Commercial/Factory/Industry)**

**Building Stage (New/Existing)**

<table>
<thead>
<tr>
<th>Credit Number</th>
<th>CM 1</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Points for Credit</th>
<th>1-5</th>
</tr>
</thead>
</table>

#### Goal

*Reuse or preserve construction materials to reduce energy footprint for materials production*

#### Eligibility

- **A.** Full Preservation / Restoration/ Revitalization of Existing Heritage Building which are declared Heritage Building by appropriate Authority (City Development Authorities, City Corporations, Municipalities, Department of Archeology.)

- **B.** Keep at least 70%, by surface area, of the existing building structure, envelop, and interior. The building must be renovated to a state of productive use

- **C.** Reuse or salvage building materials from off site or on site as a percentage of the surface area, as listed in Table.

<table>
<thead>
<tr>
<th>Percentage of Reused materials</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>25%</td>
<td>1</td>
</tr>
<tr>
<td>40%</td>
<td>2</td>
</tr>
<tr>
<td>60%</td>
<td>3</td>
</tr>
</tbody>
</table>

- **D.** For new buildings, conduct a life-cycle assessment of the project’s structure and enclosure that demonstrates a minimum of 10% reduction, compared with a baseline building, in following impact categories listed below, one of which must be global warming potential.

  Select at least three of the following impact categories for reduction:
  - global warming potential (greenhouse gases), in CO₂;
  - depletion of the stratospheric ozone layer, in kg CFC-11;
  - formation of tropospheric ozone, in kg NOx, kg O₃ eq, or kg ethane; and
  - depletion of nonrenewable energy resources, in MJ.
### Required Documentation

**A.**
- Evidence of Historic project
- Design & Drawings
- Photo evidence

**B.**
- Design & Drawings
- Photo evidence
- Calculation Sheet

**C.**
- Design & Drawings
- Photo evidence
- Calculation Sheet

**D.**
- LCA Documents

### Remarks

#### 37
**Credit Title:** Construction Materials Management  
**Credits Points:** Certified Building Materials  
**Applicability:** Building Type (Residential/Commercial/Factory/Industry) Building Stage (New/Existing)  
**Credit Number:** CM 2  
**Points for Credit:** $3 + 1 = 4$  
**Point options:**
- 2 points for eligibility A  
- 1 point for eligibility B  
- 1 point for compliance of both eligibility

**Goal:** To encourage Cleaner production of Construction materials  
**Eligibility**

**A.** For New Construction: At least Four main construction material itself have the life cycle Assessment or Environmental Product Development (EPD) Certified Materials Certification (at least 50 years life cycle) Brick, Tile, Cement, RMC, Steel, Wood, Particle Board, Glass  
**Or**

For interior space and Existing Building, 5 types of furniture (5 no each type) should have EPD certificate  
**B.** At least Four main construction material should be procured from BEEER or Similar International green rated Factory.

**Required Documentation**
- EPD Certificate evidence of the Materials or  
- Lifecycle assessment report of materials  
- B Certification proof of the Factory and materials porches agreement copy.

**Remarks**

#### 38
**Credit Title:** Construction Materials Management
<table>
<thead>
<tr>
<th>Credits Points</th>
<th>Energy Efficient Building Construction Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Applicability</strong></td>
<td>Building Type (Residential/Commercial/Factory/Industry) Building Stage (New/Existing)</td>
</tr>
<tr>
<td>Credit Number</td>
<td>CM 3</td>
</tr>
<tr>
<td>Points for Credit</td>
<td>2</td>
</tr>
<tr>
<td>Point options</td>
<td>Percentage of energy efficient material used (according to material type)</td>
</tr>
<tr>
<td></td>
<td>40%</td>
</tr>
<tr>
<td></td>
<td>60%</td>
</tr>
<tr>
<td><strong>Goal</strong></td>
<td>To encourage use of energy efficient environment friendly building construction materials</td>
</tr>
<tr>
<td><strong>Eligibility</strong></td>
<td>• Use of low energy/energy efficient technologies and construction materials. Alternative Bricks, Compressed Stabilized Earth Blocks, Thermal Blocks, Low Emission Glass, Photovoltaic Glass, etc.</td>
</tr>
</tbody>
</table>
| Required Documentation | • Manufacturer cut sheet  
• Lab test reports of the product  
• Quantity |
| Remarks | |

| 39 | |
| Credit Title | Construction Materials Management |
| Credits Points | Efficient Construction Technology |
| **Applicability** | Building Type (Residential/Commercial/Factory/Industry) Building Stage (New/Existing) |
| Credit Number | CM 4 |
| Points for Credit | 2 |
| Point options | 30% of total Material |
| **Goal** | To reduce the time of construction by adopting efficient technology |
| **Eligibility** | • Pre-cast construction  
• Ready mix concrete |
| Required Documentation | • Bill of Quantities (BOQ)  
• Schedule of Requirements  
• Measurement book |
| Remarks | |
### Credit Title
Construction Materials Management

### Credits Points
Construction and Demolition Waste Management

### Applicability
- **Building Type**: (Residential/Commercial/Factory/Industry)
- **Building Stage**: (New/Existing)

### Credit Number
CM 5

### Points for Credit
1-2

#### Point options
- 1 point for 50% waste Recycling
- 2 Points for 75% of Waste Recycling

### Goal
To encourage reduction in waste and use of recycled building materials during construction

### Eligibility
Recycle the Generated waste during construction of a project or Building.
(the generated construction waste must be less than 1000 kg/ft² of built up area)

### Required Documentation
- Inventory of the generated waste and recycling quantity
- Photo evidence

### Remarks

### Credit Title
Recycle Content of Materials

### Credit Number
CM 6

### Points for Credit
1 + 1 = 2

#### Point options
- 1 point for minimum 10% of Recycle content of total cost of the Construction Materials (cement, steel, glass, plastic materials, etc.)
  (Recycle content refers to the construction materials produced with 10% of recycled ingredients when it was produced. Example: Fly Ash based cement, rod with recycled steel raw materials, Glass with recycled raw materials, particle board with waste materials, etc.)
- 1 Point for 10% recycle materials of total construction materials should be used in construction (cost based)
  (use of construction waste materials i.e. Brick, Steel, Wood as recycled materials)

### Goal
To encourage use of recycle elements for construction materials production

### Eligibility
- Use Construction Materials Produced with Recycling Process or Content of Fly ash or similar materials
- Use waste construction material that produce during construction

### Required Documentation
- Manufacturer cut sheet
- Lab test reports of the product
- Document relating to cost of material

### Remarks
### Credit Title: Construction Materials Management

#### Mercury & Lead Pollution Reduction

**Applicability:** Building Type (Residential/Commercial/Factory/Industry)  
Building Stage (New/Existing)

**Credit Number:** CM 7

**Points for Credit:** 1

**Point options:**

**Goal:** To encourage use of non hazardous construction materials

**Eligibility:**
- Use of Mercury free Light and Bulbs and Lead free Paint materials.  
(90% of total lighting load  and all interior and exterior paint except heat proof coating and special paint and sealants)

**Required Documentation:**
- Manufacturer cut sheet  
- Lab test reports of the product  
- Quantity  
- Purchase document

**Remarks:**

---

### Credit Title: Construction Materials Management

#### Rapidly Renewable Materials

**Applicability:** Building Type (Residential/Commercial/Factory/Industry)  
Building Stage (New/Existing)

**Credit Number:** CM 8

**Points for Credit:** 1

**Point options:**

**Goal:** To encourage use of rapid growing plants and protect forest

**Eligibility:**
- Use materials with rapidly growing plants Particle Board, WPC, veneer boards etc made without Urea Formal de hydrate  
(Full quantity of particle or veneer boards with minimum quantity of 500 sft) and certified from Bangladesh Forest Research Institute (BFRI) or any International Similar Organization.

**Required Documentation:**
- Manufacturer cut sheet  
- Lab test reports of the product  
- Quantity

**Remarks:**

---

### Credit Title: Construction Materials Management

#### Certified Wood

**Applicability:** Building Type (Residential/Commercial/Factory/Industry)  
Building Stage (New/Existing)

**Credit Number:** CM 9

**Points for Credit:** 1
### Point options

**Goal**

To encourage use of wood which are supplied from wood firm and short life cycle and protect Natural Forest

**Eligibility**

- Wood Certified from Bangladesh Forest Research institute or any International Similar Organization (The Plant Maturity Life is within 15 Years) (80% of door / window frame plank)

**Required Documentation**

- Certificate form concerned authority
- Quantity

### 45

<table>
<thead>
<tr>
<th>Credit Title</th>
<th>Construction Materials Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Credits Points</td>
<td>Local and Regional Materials</td>
</tr>
<tr>
<td><strong>Applicability</strong></td>
<td>Building Type (Residential/Commercial/Factory/Industry) Building Stage (New/Existing)</td>
</tr>
<tr>
<td><strong>Credit Number</strong></td>
<td>CM 10</td>
</tr>
<tr>
<td><strong>Points for Credit</strong></td>
<td>1-2</td>
</tr>
<tr>
<td><strong>Point options</strong></td>
<td>1 point for 30% Regional Materials of total construction materials value 2 point for 60% Regional Materials of total construction materials value</td>
</tr>
<tr>
<td><strong>Goal</strong></td>
<td>To encourage use of regional and local construction materials to reduce the energy costs of transportation</td>
</tr>
<tr>
<td><strong>Eligibility</strong></td>
<td>Use Regional Construction Materials (materials manufactured / assembled within Bangladesh)</td>
</tr>
<tr>
<td><strong>Required Documentation</strong></td>
<td>Factory Location and Information</td>
</tr>
<tr>
<td>Remarks</td>
<td></td>
</tr>
</tbody>
</table>

### 46

<table>
<thead>
<tr>
<th>Credit Title</th>
<th>Construction Materials Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Credits Points</td>
<td>Whole Building Lifecycle Assessment</td>
</tr>
<tr>
<td><strong>Applicability</strong></td>
<td>Building Type (Residential/Commercial/Factory/Industry) Building Stage (New/Existing)</td>
</tr>
<tr>
<td><strong>Credit Number</strong></td>
<td>CM 11</td>
</tr>
<tr>
<td><strong>Points for Credit</strong></td>
<td>5</td>
</tr>
<tr>
<td><strong>Point options</strong></td>
<td>Ensure Less Environmental Impact of the Building from the Construction Period to the Demolition</td>
</tr>
<tr>
<td><strong>Goal</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Eligibility</strong></td>
<td>Perform LCA of The Building</td>
</tr>
<tr>
<td><strong>Required Documentation</strong></td>
<td>LCA Certificate</td>
</tr>
<tr>
<td>Remarks</td>
<td></td>
</tr>
</tbody>
</table>
Construction Health and Safety
### Construction Health and Safety

#### Credit Title

**Construction Health and Safety**

#### Credits Points

Safety Equipments, Signage and Emergency Equipments at Site

#### Applicability

**Building Type (Residential/Commercial/Factory/Industry)**  
**Building Stage (New)**

#### Credit Number

CH 1

#### Points for Credit

1-2

#### Point options

1 point for compliance of any one option  
2 points for compliance of both options

#### Goal

**Ensure Safety during the construction process**

#### Eligibility

**A**
- Provide all kinds of Safety vest, noise & **welding** protection equipment to all construction workers  
- Preserve instant firefighting equipment and first aid box at site  
- Arrange safety training for worker at least once in every 3 month  
- Mark with safety and quotation signage, emergency light, emergency exit during construction  
- Provide temporary railing or barrier to stair, lift core, parapet area.  
- Assign a Physician for regular health checkup once in a month and emergency response period.  
- Provide Fencing around the site of 3 m height  
- Provide safety **Net** both horizontal and Vertical direction for construction above 20ft height,

**B**
- Provide Group Insurance for all construction workers

#### Required Documentation

**A**
- Location and Layout drawings  
- Equipment lists

**B**
- Worker lists  
- Photo evidence  
- Proof of group Insurance policy documents

#### Remarks

MANDATORY

---

#### Construction Health and Safety

#### Credit Title

**Construction Health and Safety**

#### Credits Points

On site Accommodation during Construction

#### Applicability

**Building Type (Residential/Commercial/Factory/Industry)**  
**Building Stage (New)**

#### Credit Number

CH 2

#### Points for Credit

1-2

#### Point options

1 point for compliance of any one option  
2 points for compliance of any two out of the four option

#### Goal

**Ensure Less Environmental Impact of the Building from Construction Period to Demolition**
| Eligibility | : | • Provide separate accommodation for Regular Construction workers or 20% of Pick Required Construction Worker  
• Provide separate accommodation for female construction worker with separate latrines and urinals as per applicable standards (10% of Regular worker)  
• Provide onsite cooking and Dining facilities for workers  
• Provide clean drinking water |
|---|---|---|
| Required Documentation | : | • Worker lists  
• Photo evidence  
• Layout plan of accommodation, toilet and dining facilities |
| Remarks | : | Applicable for building floor area more than 20000 sft |

<table>
<thead>
<tr>
<th>49</th>
<th>:</th>
<th>Construction Health and Safety</th>
</tr>
</thead>
<tbody>
<tr>
<td>Credit Title</td>
<td>:</td>
<td>Operation and maintenance Safety</td>
</tr>
</tbody>
</table>
| Credits Points | : | Building Type (Residential/Commercial/Factory/Industry)  
Building Stage (New) |
| Applicability | : | CH 3 |
| Credit Number | : | 1+1= 2 |
| Points for Credit | : | 1 point for compliance of eligibility 1  
and  
1 point for compliance of eligibility 2 |
| Point options | : | Ensure Safety during the Operation Period of the building |
| Goal | : | 1. Design Fire Safety information (Drawings) as Per BNBC part 4 / NFPA  
2. Regular Fire Drill and Use non-ODS and non-HFC fire fighting equipments |
| Eligibility | : | Equipment Lists with Supplier Cut sheet  
Detail Drawings and Design of Safety  
Safety Signs as per Drawings and List with Photographs.  
Fire Drill Report (not more than 3 month old) from Fire Service and Civil Defense Department. |
| Required Documentation | : | MANDATORY |
| Remarks | : |  

Innovation
<table>
<thead>
<tr>
<th>Credit Title</th>
<th>Innovation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Credits Points</td>
<td>Innovation</td>
</tr>
<tr>
<td>Applicability</td>
<td>Building Type (Residential/Commercial/Factory/Industry) Building Stage (Existing)</td>
</tr>
<tr>
<td>Credit Number</td>
<td>1</td>
</tr>
<tr>
<td>Points for Credit</td>
<td>5</td>
</tr>
<tr>
<td>Point options</td>
<td></td>
</tr>
<tr>
<td>Goal</td>
<td>Ensure Safety during the Operation Period of the building</td>
</tr>
<tr>
<td>Eligibility</td>
<td>Innovative activities</td>
</tr>
</tbody>
</table>
| Required Documentation | a. Environmental Awareness Program at 5 Schools  
b. National and International Seminar and Workshop  
c. Display and of EE&C activities  
d. Use of Innovative Technique and Technology  
e. Innovation Transportation  
f. Information Collection and Discrimination  
g. ETC. |
| Remarks | |
Bonus Points
<table>
<thead>
<tr>
<th>51</th>
<th>:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Credit Title</td>
<td>Bonus Points</td>
</tr>
<tr>
<td>Credits Points</td>
<td>CSR</td>
</tr>
</tbody>
</table>
| Applicability | Building Type (Residential/Commercial/Factory/Industry)  
Building Stage (New/Existing) |
| Credit Number | BP |
| Points for Credit | 2 |
| Point options | |
| Goal | Encourage Social Responsibility |
| Eligibility | CSR activities on EE&C/RE |
| Required Documentation | 1. CSR Plan  
2. Activity Photo Proof  
3. Write-up |
| Remarks | |

**Total 145 points**
# BEEER Criteria and Points for Credit – At a Glance

The rating system is comprised of 51 credits divided in 10 categories. Each credit defines a specific requirement for the building and assigns credit points based on compliance level. The total value of aggregated credit points is 145. Score by category is the following:

<table>
<thead>
<tr>
<th>Category</th>
<th>Credit No.</th>
<th>Description</th>
<th>Points</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Management and Planning</td>
<td>1</td>
<td>Recognized Professional</td>
<td>2</td>
<td>Mandatory</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Planning, Design &amp; Approval</td>
<td>2</td>
<td>Mandatory</td>
</tr>
<tr>
<td>Project Site Management</td>
<td>3</td>
<td>Assessment of the Site and Surroundings</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>Site Selection</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>Site Improvement &amp; Protect/Restore Habitat</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>Open Space Management</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>Rainwater Management during Construction at Site</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>Outdoor Light Control at Site &amp; Surrounding</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>9</td>
<td>Easy Access to the site</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>10</td>
<td>Bicycle Parking</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>11</td>
<td>Car Parking</td>
<td>1+1=2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>12</td>
<td>Community services</td>
<td>1-2</td>
<td></td>
</tr>
<tr>
<td>Building Envelope Design</td>
<td>13</td>
<td>Daylight</td>
<td>2-4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>14</td>
<td>Naturally Ventilated Spaces for Passive Design Building</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td></td>
<td>15</td>
<td>Building Orientation for Passive Design Building</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Water Management</td>
<td>16</td>
<td>Water Metering</td>
<td>1</td>
<td>Mandatory</td>
</tr>
<tr>
<td></td>
<td>17</td>
<td>Water Use Reduction in Outdoor</td>
<td>1-2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>18</td>
<td>Water Reduction in Indoor</td>
<td>1-8</td>
<td>Mandatory</td>
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<td></td>
<td>19</td>
<td>Water Reduction in Cooling Towers &amp; Air conditioners</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>20</td>
<td>Rain Water Harvesting from Building and Recharging</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Energy Management</td>
<td>21</td>
<td>Energy Metering</td>
<td>1</td>
<td>Mandatory</td>
</tr>
<tr>
<td></td>
<td>22</td>
<td>Minimum Energy Performance</td>
<td>5</td>
<td>Mandatory</td>
</tr>
<tr>
<td></td>
<td>23</td>
<td>Heat Island Effect Reduction at Site / Roof</td>
<td>1+1=2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>24</td>
<td>Measurement and Verifications</td>
<td>3</td>
<td></td>
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<tr>
<td></td>
<td>25</td>
<td>Advanced Energy Performance</td>
<td>6-20</td>
<td></td>
</tr>
<tr>
<td></td>
<td>26</td>
<td>Demand Response</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>27</td>
<td>Renewable Energy Incorporation</td>
<td>1-10</td>
<td>Mandatory</td>
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<tr>
<td></td>
<td>28</td>
<td>Management of Refrigeration &amp; Air-conditioning system</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>29</td>
<td>Green power</td>
<td>1-2</td>
<td></td>
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<tr>
<td>Indoor Environment</td>
<td>30</td>
<td>Ventilation</td>
<td>1</td>
<td></td>
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<tr>
<td></td>
<td>31</td>
<td>Tobacco / Smoke Control</td>
<td>1</td>
<td></td>
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<tr>
<td></td>
<td>32</td>
<td>Less Emitting Materials</td>
<td>1-2</td>
<td></td>
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<tr>
<td></td>
<td>33</td>
<td>Lighting at Interior Space</td>
<td>1</td>
<td></td>
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<td></td>
<td>34</td>
<td>Acoustics Quality</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>35</td>
<td>Clean Cooking (Homes)</td>
<td>1</td>
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</tr>
<tr>
<td>Category</td>
<td>Credit No.</td>
<td>Description</td>
<td>Points</td>
<td>Remarks</td>
</tr>
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<td>----------------------------------</td>
<td>------------</td>
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<tr>
<td><strong>Construction Materials Management</strong></td>
<td>36</td>
<td>Reuse of Existing Building Materials</td>
<td>1-5</td>
<td></td>
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<tr>
<td></td>
<td>37</td>
<td>Certified Building Materials</td>
<td>3+1=4</td>
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<td></td>
<td>38</td>
<td>Energy Efficient Construction Materials</td>
<td>2</td>
<td></td>
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<tr>
<td></td>
<td>39</td>
<td>Efficient Construction Technology</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>40</td>
<td>Construction and Demolition Waste Management</td>
<td>1-2</td>
<td></td>
</tr>
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<td></td>
<td>41</td>
<td>Recycle Content of Materials</td>
<td>1+1=2</td>
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<td></td>
<td>42</td>
<td>Mercury &amp; Lead Pollution Reduction</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>43</td>
<td>Rapidly Renewable Materials</td>
<td>1</td>
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<tr>
<td></td>
<td>44</td>
<td>Certified Wood</td>
<td>1</td>
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<td></td>
<td>45</td>
<td>Local and Regional Construction Materials</td>
<td>1-2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>46</td>
<td>Whole Building Lifecycle Assessment</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td><strong>Construction Health and Safety</strong></td>
<td>47</td>
<td>Safety Equipments, Signage and Emergency Equipments at Site</td>
<td>1-2</td>
<td>Mandatory</td>
</tr>
<tr>
<td></td>
<td>48</td>
<td>On site Accommodation during Construction</td>
<td>1-2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>49</td>
<td>Operation and maintenance Safety</td>
<td>1+1=2</td>
<td>Mandatory</td>
</tr>
<tr>
<td><strong>Innovation</strong></td>
<td>50</td>
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<td>5</td>
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<tr>
<td><strong>Bonus Points</strong></td>
<td>51</td>
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<td></td>
<td></td>
<td><strong>Total</strong></td>
<td><strong>145</strong></td>
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10. **BEEER Certification Process**

<table>
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<tr>
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<th>Activity</th>
<th>Responsibility</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Registration</td>
<td>Applicant</td>
<td>Online registration</td>
</tr>
<tr>
<td>2</td>
<td>Design &amp; Documents Submission</td>
<td>Applicant</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Measurement and Verification report submission by 3rd Party</td>
<td>Independent SREDA Enlisted Auditor appointed by Applicant</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Certification Fees</td>
<td>Applicant</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Analysis and Review</td>
<td>SREDA Designated Institute</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Initial Point Award</td>
<td>BEEER Secretariat, SREDA</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Review Application (If any)</td>
<td>Applicant</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Review and Final Point Award</td>
<td>BEEER Technical Committee, SREDA</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td><strong>BEEER</strong> Certification Award with <strong>SREDA</strong></td>
<td><strong>BEEER</strong> Certification Award with <strong>SREDA</strong></td>
<td><strong>BEEER</strong> Certification Award with <strong>SREDA</strong></td>
</tr>
</tbody>
</table>
**B. For Existing Building or Certification Extension**

<table>
<thead>
<tr>
<th>SI</th>
<th>Activity</th>
<th>Responsibility</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Registration &amp; Certification Fees (If New Application) or Renewal Fees for Existing Certified Building</td>
<td>Applicant</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>1 (One) Day Training</td>
<td>Applicant</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Design &amp; Documents Submission</td>
<td>Applicant</td>
<td>New Application</td>
</tr>
<tr>
<td>4</td>
<td>Measurement and Verification report submission by 3rd Party</td>
<td>Independent SREDA Enlisted Auditor appointed by Applicant</td>
<td>Existing Building &amp; New Application</td>
</tr>
<tr>
<td>5</td>
<td>Analysis and Review for Certification</td>
<td>SREDA Designated Institute</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Initial Point Award</td>
<td>BEEER Secretariat, SREDA</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Review Application (If any)</td>
<td>Applicant</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Review and Final Point Award</td>
<td>BEEER Technical Committee, SREDA</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>BEEER Certification Award with Stars for next 5 Years Period</td>
<td>SREDA</td>
<td></td>
</tr>
</tbody>
</table>

**Evaluation Procedure:**

1. BEEER assessment team will have a preliminary meeting with the project team to brief on the assessment process and criteria.
2. Request for relevant reports and documentary proofs to substantiate the subsequent submissions.
3. Commence actual assessment which will include design and documentary reviews as well as site verification.
4. Documentary evidences are to be submitted at the end of the assessment.
5. Upon completion of the assessment, the Panel of Assessors will make recommendation to the BEEER Accreditation Board on the level of certification to be awarded to the project.
6. The BEEER Accreditation Board after making their own assessment and will recommend to the Board of Directors of the BEEER to award appropriate level of rating.

**Enlistment of Professionals:**

There will be two types of Professionals for BEEER

1. Certified Professional
2. Accredited Professionals

**Certified Professionals:**
Professionals from any discipline may have a short training on BEEER and sit for a 25 marks exam. Certified professionals will only take part the knowledge sharing and best practice.

**Accredited Professionals:** Professional from Engineering or Architecture Background

**Fees:**
1. 10,000.00 Registration Fees
2. 1 tk per sft. up to 2 lac sft floor area
3. 0.5 tk per sft floor area more then 2 lac sft.
4. Minimum certification fees 1lac taka.

**Steering Committee:**

**There shall be a Steering Committee for BEEER**

1. Chairman, Sustainable and Renewable Energy Development Authority (Chair)
2. Representative from Power Division
3. Representative from Ministry of Housing and Public Works
4. Representative from Ministry of Environment, Forest and Climate Change
5. Representative from Local Government Division
6. Representative from Bangladesh Bank
7. Representative Institute of Architects Bangladesh
8. Representative Institute of Engineers Bangladesh
9. Representative from Bangladesh Institute of Planners
10. Representative from REHAB
11. Director, Sustainable and Renewable Energy Development Authority (Member Secretary)

**TOR of Steering Committee:**

1. Decide a Fee Structure
2. Endorse the Rating
3. Recommend incentives and awards to the Government
4. Endorse modifications/upgrades periodically

**Technical Committee**

1. Member (EE&C), Sustainable and Renewable Energy Development Authority (Chair)
2. Representative from Department of Environment
3. Representative from Department of Architecture, Government of Bangladesh
4. Representative from Public Works Department, Government of Bangladesh
5. Representative from RAJUK, Government of Bangladesh
6. Representative from City Corporations
7. Representative from Institute of Energy, University of Dhaka
8. Representative from Department of Architecture, BUET
9. Representative from Mechanical Engineering Department, BUET
10. Representative from EEE Department, BUET
11. Representative from Housing and Building Research Institute (HBRI), Dhaka.
12. Representative from ASHRAE, Bangladesh, Chapter
13. Representative from SREDA (Member Secretary)

**TOR of Technical Committee:**

Provide technical advice on modification and upgradation of the BEEER Framework
Application Reviewers:
SREDA will prepare and Maintain a List of Reviewer, The Eligibility Criteria of Reviewer is same as the SREDA Accredited Professional. A Single Project will be Reviewed by at least Three and Maximum Five Professionals (Architect, Mechanical Engineer & Electrical Engineer)

Annexure 1: Project Registration Form

Building Energy and Environment Rating BEEER System: Project Registration

General Project Information

Project Name:
Address:

Post Code:
GPS Coordinate:

Project Details

Site Area:
Total Built-up Area
(excluding Parking Area):
No. of buildings within site:
Date of Construction Commencement:
Date of Construction Completion:
No. of Buildings:

Developer/ Owner’s Contact Information

Primary Contact

Name:
Designation:
Organization:
Office Address:
Post Code:  
Telephone Number:  
Mobile Number:  
Email ID:  
Membership No:  

---

**Project Coordinator Contact Information**

Name:  
Designation:  
Organization:  
Address:  

Post Code:  
Telephone Number:  
Mobile Number:  
Primary Email ID:  
Secondary Email ID:  

---

**Architect Contact Information**

Name:  
Organization:  
*Address:  
Telephone Number:  
*Mobile Number:  
*Email ID:  
Website:  
IAB Membership No:  

---

**Green Building Consultant Contact Information**

Name:  
Organisation / Company:  
Address:  
Telephone Number:  
Mobile Number:  
Email ID:  
Website:  

Annexure-2
Green Building Materials & Technologies (Examples):

<table>
<thead>
<tr>
<th>Equipment Name</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Conditioning System</td>
<td>Chillers with COP&gt;=5.</td>
</tr>
<tr>
<td></td>
<td><strong>Cooling towers and closed circuit fluid coolers:</strong> These shall have variable speed drives for controlling the fans.</td>
</tr>
<tr>
<td></td>
<td><strong>Hydronic System Design and Control:</strong> HVAC hydronic systems having a total pump system power exceeding 7.5 kW shall have variable speed drives.</td>
</tr>
<tr>
<td></td>
<td><strong>Air handling units:</strong> The air handling units which are more than 7.5 kW shall be designed with variable speed drives with variable air volumes boxes.</td>
</tr>
<tr>
<td></td>
<td><strong>VRV or VRF system</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Provision for Fresh air supply</strong></td>
</tr>
<tr>
<td>Low- E-Glass</td>
<td>* Double Glazing</td>
</tr>
<tr>
<td></td>
<td>* Solar Heat Gain Coefficient</td>
</tr>
<tr>
<td></td>
<td>* Visible Light Transmittance (VLT)</td>
</tr>
<tr>
<td></td>
<td>LCA Certificate</td>
</tr>
<tr>
<td>Lift / Escalator</td>
<td><strong>Escalator</strong>—the escalator must be fitted with controls to reduce speed or to stop when no traffic is detected. Escalators shall be designed with one of the energy saving features as described below:</td>
</tr>
<tr>
<td></td>
<td>1. Reduced speed control: The escalator shall change to a slower speed when no activity has been detected for a period of a maximum of three (3) minutes. Detection shall be by photocell activation at the top and bottom landing areas.</td>
</tr>
<tr>
<td></td>
<td>2. Use on demand: The escalator shall shut down when no activity has been detected for a period of a maximum of fifteen (15) minutes. Use on demand escalators must be designed with energy efficient soft start technology. The escalator shall start automatically when required; the activation shall be by photocells installed in the top and bottom landing areas.</td>
</tr>
<tr>
<td>B. Elevator (lift)</td>
<td>Elevator (lift) must be provided with controls to reduce the energy demand. To meet this requirement, the following features must be incorporated in traction drive elevators:</td>
</tr>
<tr>
<td></td>
<td>1. Use of AC Variable-Voltage and Variable-Frequency (VVVF) drives on non-hydraulic elevators.</td>
</tr>
</tbody>
</table>
|                         | 2. The lift car uses energy-efficient lighting and display lighting i.e. an average lamp efficacy, across all fittings in the car, of >55 lamp lumens/ circuit watt and lighting switches off after the lift has been
inactive for a period of a maximum of five (5) minutes.
3. The lifts operate in a stand-by condition during off-peak periods. For example, the power side of the lift controller and other operating equipment such as lift car lighting, user displays, and ventilation fans switch off when the lift has been inactive for a period of a maximum of five (5) minutes.

LCA Certificate

<table>
<thead>
<tr>
<th>Solar power system</th>
<th>Improved and Automated Sewerage treatment Plant</th>
</tr>
</thead>
<tbody>
<tr>
<td>STP</td>
<td>Improved and Automated Sewerage treatment Plant</td>
</tr>
<tr>
<td>Fresh air supply &amp; mechanical Vent</td>
<td>Mechanical ventilation and Blower in Basement Floors and Fresh air supply system in habitable floor *Variable speed derive fan &amp; motor unit</td>
</tr>
<tr>
<td>Hot Water system</td>
<td>Solar Water Heater</td>
</tr>
<tr>
<td>Water Fixture</td>
<td>Water efficient fittings include faucets, showerheads and flushes that use less water in order to perform the same function of cleaning as effectively as standard models. Water efficiency is an important aspect, especially as fresh water resources are increasingly getting depleted at a rate faster that they are replenished. Use of efficient plumbing fixtures, sensors, auto control valves, aerators, flow control and pressure-reducing devices can result in significant reduction in water consumption.</td>
</tr>
<tr>
<td>lighting</td>
<td><strong>LED lights</strong> Limitation of Lighting Power Density (LPD) will help to design the lighting system in the most efficient way and reduce the lighting and cooling load in the buildings.</td>
</tr>
<tr>
<td>Sensors</td>
<td>Occupancy Sensors , Day light sensors</td>
</tr>
<tr>
<td>Automation</td>
<td>*Building Monitoring System (BMS) or * Energy Monitoring System (EMS)</td>
</tr>
<tr>
<td>Masonry Materials</td>
<td>Concrete Hollow Blocks, Interlocking Concrete Block, light weight Cellular Concrete And with EPD Certification</td>
</tr>
<tr>
<td>Paint</td>
<td>Low Volatile Organic Compounds (VOC) paint (VOC level &lt;10g/L ) with EPD Certification</td>
</tr>
<tr>
<td>Steel</td>
<td>Reinforcement steel from the energy efficient factories • The Factory should have energy audit report from national / International Certifying agency • &lt;10% Recycle Materials content And with EPD Certification</td>
</tr>
<tr>
<td>Ready mix concrete</td>
<td>• Natural Stone chips as course aggregate • Gross emission level per kg of production should &gt; 1.5 kg of Carbone • The Factory should have energy audit report from national / International Certifying agency • Should have recycle content or fly ash. And with EPD Certification</td>
</tr>
<tr>
<td>Wood</td>
<td>Certified Wood (Plant life less than 15 years) From BFRI</td>
</tr>
<tr>
<td><strong>UPVC window frame</strong></td>
<td>Window frame made of UPVC (Curtain and Sliding windows) And with EPD Certification</td>
</tr>
<tr>
<td>-------------------------</td>
<td>----------------------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>Insulation</strong></td>
<td>Roof top Insulation &amp; heat reflective paint or insulation blokes&lt;br&gt;Solar Radiation Index value &gt;78&lt;br&gt;And with EPD Certification</td>
</tr>
</tbody>
</table>
## Annexure-3 General guideline for Construction

<table>
<thead>
<tr>
<th>ক্রম</th>
<th>কার্যক্রম (Activities)</th>
<th>চিত্র (Figure)</th>
</tr>
</thead>
</table>
| 1    | প্রকল্প স্থান নির্বাচন (selection of project Place)  
 ডায়াপ ও রাউটের কার্যকর হ্রাস ব্যবহারের নীতিমালা অনুসরন করতে হবে।Have to follow the rules of DAP and RAJUK                                                                                       |                 |
| 2    | প্রকল্প এলাকাতে বিদ্যমান ভবন সহ অন্যান্য স্থাপনার ধরন সহ বৃক্ষের বিবরণ সহ সাইট প্ল্যান প্রণালী করণ এবং এ সংক্রান্ত হ্রাস সংরক্ষণ।  
 Preparation of site plan containing the information of the existing buildings/establishments, trees of the project area and saving the related photos |                 |
| 3    | প্রকল্পের প্রবেশ পথ সহ রাস্তার অবস্থান সাইট প্ল্যান সংযোগ করতে হবে এবং প্রকল্পের নুনেকের ১০০ মিঃ রেডিয়েস সিদ্ধান্ত স্থাপনা ও প্রকৃতির লে আউট প্ল্যান দিতে হবে।  
 Layout of the roads with the entrance of the project area will be included in the site plan and Layout of the establishments situated within the minimum100 m radius of the project area will/should be included in the site plan |                 |
| 4    | প্রকল্প এলাকাতে মাটি খননের সময় উপরিভাগের উভয় মাটি সংরক্ষণ করতে হবে এবং তা দেখে রাখতে হবে। পরবর্তীতে বাগান করার সময় কাজে লাগাতে হবে।  
 During soil excavation in the project area, fertile soil should be preserved and covered properly for the future use of doing gardening in the site |                 |
| 5    | সাইটের জলবায়ু নির্দেশনা যোগ্য পানি নির্দেশনা ব্যবহার রাখতে হবে এবং এর্যাজেন সিদ্ধান্ত চ্যান্স নির্মাণ করতে হবে।  
 To resolve the water logging of the site, Water drainage system should be kept and sedimentation tank should be built if necessary |                 |
| 6    | সাইট হতে মাটি পরিববর্ণনের সময় ঢেকে পরিবহন করতে হবে এবং চাকা  
 পরিকাঠার করে পরিবহন করতে হবে যাতে রাস্তুর মাটি না পড়ে।  
 Soil from the site should be transported by covering it properly. To keep the road clean, during transit wheels of the vehicle should be properly cleaned up |                 |
<table>
<thead>
<tr>
<th>7</th>
<th>Construction materials should be kept at specific places not on the road and pavement sites. Security instructions should be kept in the site.</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>Reprocessable building materials should be kept separately for future use or sell. Information regarding those should be registered properly.</td>
</tr>
<tr>
<td>9</td>
<td>According to the garbage type, the garbage should be stored separately.</td>
</tr>
<tr>
<td>10</td>
<td>Environmentally friendly building materials, such as fuel saving fly ash mixed bricks, concrete hollow block, fly ash, mixed cement etc. should be used.</td>
</tr>
<tr>
<td>11</td>
<td>As far as possible, local (within about 500 km) building and construction materials should be used and the transportation cost should be reduced.</td>
</tr>
<tr>
<td>12</td>
<td>The security fence should be provided during construction period and all the workers should be provided with helmets, boots and safety belts.</td>
</tr>
<tr>
<td>13</td>
<td>Arrangements of healthy/ hygienic bathrooms and restrooms should be provided for construction workers and employees.</td>
</tr>
<tr>
<td>14</td>
<td>During the construction work, measures have to be taken for the purpose of preventing sound pollution and to be kept in standard level according to environmental law. (Necessary steps should be taken to reduce sound pollution during cutting tiles, rods etc.)</td>
</tr>
<tr>
<td>15</td>
<td>The outer open spaces must be covered by grass and local trees.</td>
</tr>
<tr>
<td>16</td>
<td>The basement of the building should be ventilated with proper lighting system &amp; the layout of the basement should be included in the design.</td>
</tr>
<tr>
<td>17</td>
<td>Building sanitation system should be attached to the drawing accordance with occupant load and the amount of fluid content should be kept within the BOD 50. (Septic tank / STP)</td>
</tr>
<tr>
<td>18</td>
<td>Parking for environment friendly vehicles (like Bicycle, electric car) should be provided in the building premise.</td>
</tr>
</tbody>
</table>
Window to Wall Ratio (WWR) and Solar Heat Gain Coefficient of Glass

Equation: Solar Heat Gain Coefficient and Shading Coefficient Calculations

\[
SHGC = SC \times 0.87
\]

In order to keep the flexibility with the design team with regard to WWR, show how the WWR and glazing performance must be selected in all building types.

For example if a building has 40% WWR then the corresponding Solar Heat Gain Coefficient (SHGC) of the glazing must be lower than 0.40.

The use of wood in the building should be as low as possible and the wood of trees having short life span should be used. Apart from this, particle board, veneer board, UPVC door, window frame can be used.
Rain water should be stored from the roof of the building and it can be used for irrigation, car wash and toilets. Detailed design related to this should be attached during the application.

Water saving fixtures should be used

<table>
<thead>
<tr>
<th>Type of fixtures</th>
<th>Quantity</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water closets</td>
<td>Dual</td>
<td>liters/flushing cycle (full/low)</td>
</tr>
<tr>
<td>Shower</td>
<td>9.5</td>
<td>liters/min at 500 kPa</td>
</tr>
<tr>
<td>Hand wash taps</td>
<td>6</td>
<td>liters/min at 400 kPa</td>
</tr>
<tr>
<td>Kitchen/pantry faucets</td>
<td>6</td>
<td>liters/min at 400 kPa</td>
</tr>
</tbody>
</table>

Low VOC contained Paint, Cement should be used

Energy Efficient lighting systems should be used and to avoid light pollution, downward canopy/shed may be used with the light.

- Occupancy sensor should be used if necessary
- LED lights should be used

Energy Efficient Air Conditioning system and Lift should be installed in the building and related information should be submitted before getting the environmental NOC from DOE

The heat resistant system should be kept in the ceiling of the building.

- Heat proof coating
- Water Roof
- Use of hollow block
| 27 | Gardening should be done in the open spaces of the rooftop of the building. |
| 28 | Preventive system should be kept to avoid sound and air pollution from generator system (for electricity). |
| 29 | If necessary, alternative fuel like renewable energy & solar energy can be used. |
Annexure 4: Application for the Reviewer

<table>
<thead>
<tr>
<th></th>
<th>Title</th>
<th>Reviewer</th>
</tr>
</thead>
</table>

2. Name of the Applicant: (FirstName)…………………………(MiddleName)…………………………(LastName)

3. Father's Name : ……………………...

4. Mother’s Name: ………………………………………………………………………………

5. Present Address : Village/House/ Flat No.________________________________________
Road/Block/Sector __________________________ Police Station __________________ Post Office
District __________________ Post Code __________________
Contact Number (land line) ___________________(cell phone) __________________ e-mail Address __________________

6. Permanent Address: Village/House/FlatNo._________________________Road/Block/Sector________________________ Police Station __________________ Post Office
District __________________ Post Code __________________
Contact Number (land line) ___________________(cell phone) __________________

7. Date of Birth ........../……/……(dd/mm/yyyy)

8. Nationality : ..........................

9. National ID number: ..................................

10. Sex: Male ( ) / Female ( ) / Other ( )

11. Employment Status: Employed ( ) Self Employed ( ) Unemployed ( )

12. Present Job information ( if any): Designation…………………………………………
Organization (Company) Name…………………..........................
Contact Telephone (Office)………………………………………………...
Fax……………………….., Office Address:…………………………

13. Total Work Experience: …………….Years ……….. Months …………………

14. Written Examination Centre preferred: ………………………

15. Academic Qualification:

<table>
<thead>
<tr>
<th>Sl.No.</th>
<th>Name of Degree</th>
<th>Subjects/Branch</th>
<th>Year of Passing</th>
<th>Board/ University</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

16. Work Experience (s):

<table>
<thead>
<tr>
<th>Sl.</th>
<th>Name of Employer/Designation</th>
<th>Year</th>
<th>Name of Work (Max.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
17. DD. No.: .................. Amount (Taka): .................. Date: .................. Bank Name: .................................................................

DECLARATION BY THE CANDIDATE

I hereby declare that all the information given in the application form and enclosures are true to the best of my knowledge. I agree to the condition that if any information or any statement is found to be incorrect, my admission to the examination would be cancelled or may liable to cancellation of my Certificate afterwards. I also abide by the examination rules and conditions as mentioned in the prospectus.

Date: .........................

Signature
Name

* Note: supporting duplicate documents must be enclosed with the Form

For Office Use Only

Received on:............................ S1.No:............................Received by (Signature):..................
Examined the Filled in Form and the attached documents and found correct or liable for rejection for the following reasons:
......................................................................................................................................................................................................

Examined by: (Name& Signature)
Annexure 5: Application for the Energy Auditors/ M&V Professionals

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Title</td>
<td>Energy Auditors/ M&amp;V Professionals</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Name of the Applicant:</td>
<td>(FirstName)………………………….(MiddleName)………………………….(Last Name)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Father’s Name:</td>
<td>………………</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Mother’s Name:</td>
<td>………………………………………………………………………………………</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Present Address:</td>
<td>Village/House/Flat No. ____________________________ Road/Block/Sector ____________________________ Police Station ____________________________ Post Office ____________________________ District ____________________________ Post Code ____________________________ Contact Number (land line) ____________________________ (cell phone) ____________________________ e-mail Address ____________________________</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>Permanent Address:</td>
<td>Village/House/Flat No. ____________________________ Road/Block/Sector ____________________________ Police Station ____________________________ Post Office ____________________________ District ____________________________ Post Code ____________________________ Contact Number (land line) ____________________________</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>Date of Birth:</td>
<td>………../…../…..(dd/mm/yyyy)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>Nationality:</td>
<td>…………………</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td>National ID number:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td>Sex:</td>
<td>Male ( ) / Female ( ) / Other ( )</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11.</td>
<td>Employment Status:</td>
<td>Employed ( ) Self Employed ( ) Unemployed ( )</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12.</td>
<td>Present Job Information (if any):</td>
<td>Designation………………………………………… Organization (Company)Name………….. Contact Telephone (Office)………………………………………… Fax………………………………………… Office Address:………………………………</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13.</td>
<td>Total Work Experience:</td>
<td>…………. Years …………. Months ………….</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14.</td>
<td>Written Examination Centre preferred:</td>
<td>…………………</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15.</td>
<td>Academic Qualification:</td>
<td></td>
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</tr>
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<tr>
<th>Sl.No.</th>
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<tr>
<th></th>
<th>Name of Employer/Organization</th>
<th>Designation</th>
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<th>Name of Work (Max. 50 characters Only)</th>
</tr>
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<tr>
<td></td>
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Date: ..................


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Received on:.................. Sl.No: ..................Received by (Signature): ..................
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........................................................................................................................................

Examined by: (Name & Signature)