



CLEAN AND GREEN

# Green Rating Manual- 2019



Director General, Central Public Works Department, New Delhi

**CPWD Green Rating Manual**

**2019**

**Director General, Central Public Works Department, New Delhi**

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**2019**

**Director General, CPWD, Nirman Bhawan, New Delhi**

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**Developed by:**

- 1. Dr K M Soni, ADG(TD), CPWD**
- 2. Mrs Usha Batra, Spl DG(WR), CPWD**
- 3. Er D K Garg, CE, CDO, CPWD**
- 4. Er C K Varma, CE (E), CSQ, CPWD**
- 5. Er Harish Kumar, DDG(W), CPWD**
- 6. Dr B N Shrivastava, DDG(H)**
- 7. Ar Yogendra Pal Singh Yadav, Dy Architect, CPWD**
- 8. Ar Deepali Mishra, Dy Architect, CPWD**

## Director General's Remarks

CPWD has a long history dated back to 1854 when the Public Works Department was founded on 12<sup>th</sup> July in Bengal. Since then, CPWD has contributed to the Nation in development of various kinds of infrastructure which include Roads, Bridges, Buildings, Flyovers, Towns, Sport stadia, Urban services, Border Roads, lighting and various E&M services.

CPWD has Architects, Civil engineers, Electrical & Mechanical engineers and Horticulture officers and takes up works of various central government departments and organisations funded by the central government from conceptual to maintenance stage as per requirement of the client. It has large inventory of government houses and offices across the country ranging from small house for an employee to Rashtrapati Bhawan and small office to Parliament House.

CPWD has always been instrumental in carrying out works with quality, energy efficiency, water conservation and safety. Being technical adviser to Government of India, CPWD has also been bringing out important documents like CPWD Specifications, Schedule of Rates, Plinth Area Rates for Civil, E&M services and Horticulture works for the benefit of CPWD officers, also used by engineers, architects and horticulture officers from various public and private organisations.

Though CPWD has been designing the buildings as energy efficient, water efficient and functional suiting to the environment with the concept of sustainable development, this publication has been brought out for rating of CPWD Buildings for qualifying as "Green".

(Prabhakar Singh)

Director General

## Preface

CPWD, having the in house expertise in Architectural planning, Civil Engineering, Electrical and Mechanical Engineering and Horticulture has been conceptualizing, constructing and maintaining buildings from smallest size like residential unit to large buildings like institutional buildings, universities and offices.

Keeping in view the initiatives of Government of India for sustainable development, speedy and timely construction, quality and safety, and public welfare measures, CPWD has decided to develop its own green rating manual giving due weightage to sustainability, new technologies, quality and safety, and welfare measures as they affect sustainability.

The manual has been prepared considering green building and sustainability approach and CPWD being a premier construction agency and technical advisor to government of India is committed to enhance quality of life of people by planning and constructing green and sustainable buildings.

I hope that the manual will prove to be very useful and CPWD will be able to rate its buildings to ensure that they perform the function as well as fulfil the aimed purpose of sustainability at national level.

(Usha Batra)

SDG(WR), Mumbai

## Prologue

Sustainable development is the necessity for the very existence of human beings. Buildings consume large resources, both during construction and their operational period. Therefore, sustainable approach must be considered while planning, constructing and maintaining the buildings.

Green building concept is not new now. The concept generally includes energy efficiency, water efficiency and comfort level for the occupants. This is defined through efficient architectural design, sustainable building materials, energy efficient equipments, indoor air quality, water conservation and prevention of wastage. Such concept does not include quality and safety of the structure, green construction processes, timely completion of projects, and welfare measures for common people though important for durability of structures, preventing air pollution, conserving natural resources and for well being of citizens related to sustainable development. Therefore, this manual has been prepared based on green building concept considering sustainable criterion. As the government is committed for improving quality of citizens, policies related to their welfare are also included in the rating system.

Rating is proposed under nine broad criteria such as Architectural Planning and Design, Quality and Safety, Sustainable Building Materials, Green Construction Measures, Water Conservation Measures, Energy Efficiency and Conservation, Waste Management, Welfare Measures, and Landscape and Horticulture. Rating shall be done considering maximum 100 marks. The buildings/projects are to be rated as Green, Green plus, and Super Green based on the score obtained by them.

Rating criteria include steps to be taken during pre construction stage, execution and post construction stage by the architects and engineers involved in various stages hence the evaluation shall be required from the concept stage to completion stage of the buildings.

The Engineer in Charge will be required to register online for the rating. Necessary documentation will also be done by the site engineers either online or physical form. A team of officers drawn from Architects, E&M engineers and Civil engineers will be visiting the site as per the requirements or the instructions issued by the Directorate from time to time. The rating will be awarded once the building is complete, occupied and operational. It is assumed that once the building is planned and executed as green and sustainable, it will remain so during its life cycle to the extent planned. Hence, final rating shall be awarded within 3 months of the occupancy.

In few criteria, a clear cut approach has been given which is just mathematical or pre determined but all criteria cannot be defined in such a way and also it is not desirable like innovation criterion. Innovation has to be defined by the architects and engineers responsible for planning and executing the work and the team will then assess it, rate it and award the marks.

Marks will not be given in whole numbers and not in decimals. Approval from local bodies like Municipal corporations, fire and environment or as applicable is the prerequisite for award of green rating.

Your suggestions for its improvement will always be welcomed and highly appreciated.

(Dr K M Soni)

ADG(TD)

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## Basic Philosophy

- Green building concept is for the welfare of people and welfare measures are important for all stakeholders i.e. workers, site staff, users and public.
- Energy efficient architectural design, use of energy efficient equipments, generation of non conventional energy and conservation of energy all lead to green building concept.
- Quality and safety lead to durable structures which in turn lead to green buildings. Unsafe structures lead to non durable structures hence structural safety is of paramount importance for green building concept.
- Time overrun generally leads to deterioration of quality due to cost overrun and low productivity and thus adversely affects green building concept. It also leads to more pollution.
- Early completion of work leads to savings of resources, reduction of pollution and early use of assets thus resulting in conservation of resources hence contributing significantly to green building concept.
- Non preparation of plans and non availability of drawings in time lead to delay in completion of work, which is against green building concept.
- Integration of services and their easy maintenance during life cycle of the buildings without generation of waste leads to green building concept.
- Building materials consume large energy in their creation /manufacturing, transportation and use in buildings. Hence their judicious selection is important for green building concept.
- Construction of Energy net plus buildings need to be encouraged as they contribute in generation of energy for use in other buildings also besides their own use.
- Use of products from waste resources and non toxic/non hazardous products contribute significantly to green building concept.
- Air, water and noise pollution adversely affects green building concept.
- Conservation of water and use of waste water through recycling effectively contributes to green building concept.
- New and emerging technologies lead to speedy construction which in turn leads to early completion of work. This contributes to green building concept.
- Tools, equipment and technologies not generating C&D waste are very much desirable for green building concept.
- Innovation leads to out of box thinking and thus needs to be encouraged for green building concept.
- Trees take longer time in growing hence should be protected by all means. Felling of trees should therefore be avoided and transplantation encouraged in case removal is unavoidable.

## **General Points**

1. 50% marks are to be scored in each criterion before considering for Rating.
2. The rating once awarded shall remain valid for 5 years.
3. For buildings constructed by CPWD, no fee shall be levied for processing of application, assessing and awarding the rating.
4. For buildings not constructed by CPWD, initial fee of Rs.10000/- as registration fee shall be charged. In addition, actual expenditure on account of travelling and stay arrangement incurred on site visit by the assessing officers shall be payable by the building owner.

## **Ratings**

The buildings will be rated by a committee of CPWD officers drawn from Architecture, Civil, Electrical and Horticulture cadres. The constitution of the committees for different regions will be decided separately.

Same criteria will be adopted for all types of buildings i.e. residential, office or institutional buildings. The rating will be made for the grades given below;

### **Rating Grades**

Rating grades are divided in three groups as given in Table 1. The buildings will be graded as Green, Green Plus and Super Green based on qualifying marks. In case a building scores less than minimum marks required for "Green" certification, no rating will be awarded.

**Table 1: Ratings**

<b>Certification</b>	<b>Qualifying marks</b>
Green	55-70
Green Plus	71-85
Super Green	86-100

The buildings will be rated under the following criteria as given in Table 2.

**Table 2: The Criteria for Ratings of Buildings**

<b>Criterion Subhead</b>	<b>Criterion No.</b>	<b>Criterion name</b>	<b>Weightage</b>	<b>Maximum Marks</b>
1. Architectural Planning and Design	1.1	Passive architectural design strategy	16	4
	1.2	Accessibility in built environment		2
	1.3	Availability of integrated Civil, E&M, and landscape drawings before invitation of bids		5
	1.4	Layout/ site planning		3
	1.5	New and innovative approach		2
2. Quality and Safety	2.1	Availability of safety plan before invitation of bids	12	4
	2.2	Availability of quality assurance plan before award of work		4
	2.3	Availability of Structural drawings before award of work		4
3. Sustainable Building Materials	3.1	Use of flyash based/recycled C&D waste products	16	2
	3.2	Use of waste products/alternatives to natural timber in woodwork		2
	3.3	Use of cement manufactured from waste products		2
	3.4	Use of local materials		2
	3.5	Use of recycled materials		3

	3.6	Adherence to Make in India Policy		2
	3.7	Use of non toxic and non hazardous materials		3
4. Green Construction Measures	4.1	Air pollution and noise control measures	14	2
	4.2	Trenches for integrated services		2
	4.3	New construction technologies for green construction		3
	4.4	Use of equipment to avoid generation of C&D waste		3
	4.5	New construction technologies for speedy construction		4
5. Water Conservation Measures	5.1	Recycling water	7	3
	5.2	Rain water harvesting		2
	5.3	Use of water efficient fixtures		2
6. Energy efficiency and conservation	6.1	Energy efficient building envelope	22	4
	6.2	Energy efficient lighting, fans, air conditioners and controls		4
	6.3	Energy efficient pumps, lifts and other equipments		2
	6.4	Integration of controls with IBMS and sensors for lighting fixtures		3

	6.5	Generation of renewable energy		8
	6.6	Innovation in energy efficiency		1
7. Waste Management	7.1	Waste management policy	4	1
	7.2	Organic waste converter/compost pits		2
	7.3	Waste segregation facilities		1
8. Welfare Measures	8.1	Toilet facilities during construction	4	2
	8.2	Welfare measures during construction		2
9. Landscape and horticulture	9.1	Trees protection and transplantation	5	3
	9.2	Irrigation features		1
	9.3	Reuse of excavated soil		1

In case, any specific criterion is not applicable, the same will not be considered and the marks will be proportioned based on total marks excluding the marks of such criterion/criterion from 100 marks. For example, if after excluding a particular criterion, marks obtained are 65 out of maximum marks 95, the same will be proportioned as  $65 \times 100 / 95 = 68.42$  rounded off to next full number i.e. 69.

## Criterion 1: Architectural Planning and Design

**Total Marks: 16**

**Synopsis:** Architectural planning and design strategy has to be based on permanent features of sustainable and energy efficiency from life cycle concept simultaneously giving regard to its aesthetics and innovation. For this, passive architecture, landscape minimising hard areas, preserving existing sustainable site features, design according to existing topography and micro climate, and providing adequate shafts for better and effective maintenance are essential along with provisions made in design conforming to accessible norms, integrated services, and innovation.

**Compliance Procedure and Award of Marks:**

### Criterion 1.1: Passive architectural design strategy

**Maximum marks – 4**

- a) Orientation of building and window to wall ratio (WWR) including design of openings / fenestration: 2 Marks
- The design should adopt the most favourable orientation in North-South for hot & dry, hot & humid and in cold zone , long axis of the building having an angle of 30 degree with E-W direction. This is required to minimise heat gain from the building envelope(facade). In case where it is not possible to achieve, shading devices be used to minimise heat gain. 1 Mark
  - For all climatic zones, the window Wall Ratio (WWR) should be in the range of 20 to 40 %. 1 mark
- b) Zoning and massing as per solar path analysis and prevailing wind direction: 1 point
- c) Any other climate responsive passive architecture design strategy: 1 point

### Criterion 1.2: Accessibility in Built Environment

**Maximum marks – 2**

- a) All the norms of barrier free built environment ( 1.Main Entrance 2. Ramps 3. Doors 4. Corridors 5. Lifts 6. Stairs 7. Handrails 8. Toilets 9. Drinking Water 10. Signage 11. Emergency Exit 12. Public Telephone 13. Resting Facilities 14. Parking 15. Reception and Information Counters 16. Canteen) followed: 2 Marks
- b) More than 60% (physical not to be measured in financial terms) norms followed: 1 point
- c) Less than 60% (physical) norms followed: Nil

**Criterion 1.3: Availability of integrated Civil, Mechanical Electrical and Plumbing (MEP) Services and landscape drawings before invitation of bids**

**Maximum marks – 5**

- a) All drawings available with BIM: 5 Marks
- b) Only Building drawings available without services and detailing(**WITHOUT BIM**): 2 Marks
- c) Only architectural drawings available with services and detailing **UPTO IST FLOOR**: 1 Mark

**Criterion 1.4: Layout/site planning**

**Maximum Marks: 3**

- (a) Minimization of roads and hard area ( if green area is minimum 60% of plot area minus building footprint area): 1 Mark
- (b) Segregation of pedestrian and vehicular traffic: 1 Mark
- (c) Minimum disturbance to land/site topography: 1 Mark

**Criterion 1.5: Innovation:**

**Maximum marks – 2**

New & innovative architectural planning and design approach shall be awarded maximum 2 marks. The assessment will be made by the team making the assessment.

## **Criterion 2: Quality and Safety**

**Total Marks: 12**

**Synopsis:** Safety and quality are supplementary to each other in construction works and part of sustainability. Safety and quality plans are essential to be prepared before commencement of works so that execution is carried out with safety and quality from day one. Availability of structural designs is also essential before award of work so that they are adequately correlated with architectural drawings and green concept is implementable from architectural and structural considerations.

**Compliance Procedure and Award of Marks:**

### **Criterion no. 2.1: Quality Assurance**

**Maximum Marks: 4**

1. (a) Quality assurance plans available before commencement of work: 2 Marks  
(b) Available after commencement of work: 1 Mark  
(c) Quality assurance plan not prepared: Nil
2. (a) 100% execution/implementation of quality assurance plan as prepared in 1 (a) above: 2 Marks  
(b) Part implementation or no implementation of quality assurance plan: Nil

### **Criterion no. 2.2: Safety Assurance**

**Maximum Marks: 4**

1. (a) Safety assurance plan available before commencement of work: 2 Marks  
(b) Available or made available after commencement of work: 1 Mark  
(c) Safety assurance plan not prepared: Nil
2. (a) Implementation of safety plan as per the policy of the Department: 2 Marks  
(b) Part implementation of safety plan or not being implemented: Nil

### **Criterion no. 2.3: Structural Drawings for Structural Safety Assurance**

**Maximum Marks: 4**

3. (a) All structural designs and drawings available before commencement of work in EPC contracts and before award of work in other contracts: 4 Marks  
(b) Partly available but available before commencement of activities but no hindrance leading to delay in completion of work: 2 Marks  
(c) Hindrance due to structural drawings leading to delay in completion of work: Nil

### **Criterion 3: Sustainable Building Materials**

#### **Total Marks: 16**

**Synopsis:** Waste has to be converted into resource and to be used as building materials ensuring quality and sustainability. Therefore, use of materials manufactured from waste is considered in this criterion.

Apart from this, use of local materials provides employment opportunity to local people and also contributes to green concept due to less transportation involved. Therefore use of local materials is also included in this criterion. Use of "Make in India" products and non toxic and non hazardous materials is also included.

#### **Compliance Procedure and Award of Marks:**

##### **Criterion no. 3.1: Use of Recycled Waste Products in Masonry Work**

###### **Maximum Marks: 2**

1. (a) Use of flyash bricks/AAC blocks or recycled C&D waste blocks in full brick/block masonry: 2 Marks

(b) In case more than half brick/block masonry work but not full with flyash bricks/AAC blocks/recycled C&D waste blocks = 1 Mark

(c) If no fly ash bricks/AAC blocks/recycled C&D waste blocks used in masonry works = Nil

##### **Criterion no. 3.2: Use of Waste Products/alternatives to natural Timber in Wood Work**

###### **Maximum Marks: 2**

1. (a) Use of alternate materials of natural timber in full wood work: 2 Marks

(b) If more than half alternate materials used in woodwork = 1 Mark

(c) If no alternate material used in wood work = Nil

##### **Criterion no. 3.3: Use of Cement Manufactured from Waste Products**

###### **Maximum Marks: 2**

1. (a) Use of flyash in 100% cement concrete with OPC or PPC in cement concrete and PPC/blended cements in all other works: 2 Marks

(b) Use of flyash in 50 to 100% in cement concrete with OPC or 50 to 100% PPC/blended cements in cement concrete and in all other works: 1 Mark

(c) Use of flyash/PPC/blended cements less than mentioned in (b) above: Nil

### **Criterion 3.4: Use of Local Materials**

#### **Maximum Marks: 2**

1. (a) Use of local material/items (Available within 100 kms) to the extent of minimum 5% or more of the cost of construction: 2 Marks

(b) Use of local material / items (Available within 100 kms) to the extent of minimum 2 to 5% of the cost of construction: 1 Mark

(c) Use of local material / items (Available within 100 kms) less than 2%: Nil

### **Criterion no. 3.5: Use of Recycled Materials**

#### **Maximum Marks: 3**

1. (a) Use of recycled sand, aggregates or manufactured sand: Minimum 25% of the total quantity used: 1 Mark

(b) Use of recycled sand, aggregates or manufactured sand: Less than 25% of the total quantity used: Nil

2. (a) Use of recycled materials in flooring and false ceiling: 1 Mark

(b) Use of recycled materials in landscape/art works: 1 Mark

### **Criterion no. 3.6: Adherence to Make in India Policy for Civil, E&M and all other products**

#### **Maximum Marks: 2**

1. (a) Full adherence to Make in India policy: 2 Marks

(b) Non adherence fully: Nil

### **Criterion no. 3.7: Use of Non Toxic and Non Hazardous Materials**

#### **Maximum Marks: 3**

1) (a) Use of low VOC primer and paint (less than 50 grams/litre) in 100% applications: 2 Marks

(b) Use of primer and paint having VOC 50 grams/litre or more: Nil

2) (a) Following hazardous waste management Rules/policy during construction and operation: 1 Mark

(b) Not following (a) above: Nil

## **Criterion 4: Green Construction Measures**

### **Total Marks: 14**

**Synopsis:** Building construction involves large numbers of methods, equipments and technologies to be adopted during construction. These are to be environmental friendly to avoid pollution and wastage to make construction “Green”.

These green construction measures are required during storage and placement of materials, installation of equipments and carrying out during execution of work.

### **Compliance Procedure and Award of Marks:**

#### **Criterion No.4.1: Air Pollution and Noise Control Measures**

##### **Maximum Marks: 2**

1. (a) Use of air pollution control measures like washing tyres of material carrying vehicles, sprinkling of water and other measures to reduce air pollution: 1 Mark

(b) Not abiding condition (a) above: Nil

2. (a) Use of barricading minimum of 3 m height and as per the norms of the local body: 1 Mark

(b) Not abiding condition (a) above: Nil

#### **Criterion No.4.2: Trenches for Integrated Services**

##### **Maximum Marks: 2**

(a) Construction of trenches for integrated utility services like fire, water supply, air conditioning, telephones, electric cabling etc.: 2 Marks

(b) Construction of trenches for part utility services: 1 Mark

(c) No construction of trenches for services: Nil

#### **Criterion No.4.3: New Construction Technologies for Green Construction**

##### **Maximum Marks: 3**

(a) Adoption of green construction technologies for building/roadwork, flooring, plastering, tile work, laying utility services (trenchless technologies) or other construction works: 3 Marks

(b) If adopted partly: 1 Mark

(c) If not adopted: Nil

**Criterion No.4.4: Use of Equipment/techniques to avoid Generation of C&D wastage**

**Maximum Marks: 3**

(a) Use of small equipments to make chases and avoiding breakage by chiselling or making arrangements of “no cutting” for water supply lines in the walls: 1 Mark

(b) Use of small equipments to make chases or making arrangements of “no cutting” for laying electrical conduits and avoiding chiselling in the walls: 1 Mark

(c) Use of small equipments to drill holes and avoiding chiselling/hammering or making arrangements of “no cutting” in walls to take out services: 1 Mark

**Criterion no. 4.5: New Construction Technologies for Speedy Construction**

**Maximum Marks: 4**

(a) Completion of work as per scheduled period mentioned in Preliminary Estimate: 2 Marks

(b) Before 1/16<sup>th</sup> period = 3 Marks

(c) Before 1/8<sup>th</sup> period = 4 Marks

## Criterion 5: Water Conservation Measures

**Total Marks: 7**

**Synopsis:** Use of water efficient fixtures, rain water harvesting, recycling of waste water and conservation of treated water need to be adopted in building construction and operation during its life cycle hence this criterion.

**Compliance Procedure and Award of Marks:**

### Criterion No.5.1: Recycling water

**Maximum Marks: 3**

- (a) Recycling to the extent of 80% water or above = 3 Marks
- (b) Recycling to the extent of 50-80 % water = 2 Marks
- (c) Recycling to the extent of 20-50 % water = 1 Mark
- (d) Recycling less than 20% = Nil

### Criterion 5.2: Rain Water Harvesting

**Maximum Marks: 2**

- (a) Use of rain water harvesting to the extent of 50-100% of the rainfall on the rooftop of the building (s) **OR 100% GROUND WATER RECHARGING** = 2 Marks
- (b) **NO GROUND WATER RECHARGING BUT** Use of rain water harvesting to the extent of 20 to 50% of the rainfall on the rooftop of the building (s)= 1 Mark
- (c) Use of rain water harvesting to the extent of less than 20% of the rainfall on the rooftop of the building (s) = Nil

### Criterion 5.3: Use of Water Efficient Fixtures

**Maximum Marks: 2**

- (a) Use of low flow water supply fixtures = 1 Mark
- (b) Use of low flow/waterless flushing fixtures/urinals = 1 Mark

## Criterion 6: Energy Efficiency Measures

**Total Marks: 22**

**Synopsis:** Energy required in a building is very high both during its construction and its life cycle. Comfort level and indoor air quality are also related to energy requirements of the buildings hence energy efficiency through conservation and on site generation are very essential for reduction of carbon emissions.

**Compliance Procedure and Award of Marks:**

In case a building is designed and constructed as net zero/100% onsite energy producing building, full 16 marks will be awarded to such building without any further analysis in this criterion. In case, net plus (to the extent of 20% or more) onsite energy efficient building is constructed, additional 4 Marks will be awarded (Total 26 Marks) and for other conditions, procedure mentioned below is to be adopted.

**Criterion No.6.1: Energy Efficient Building Envelope**

**Maximum Marks: 4**

- (a) Super ECBC compliant = 4 Marks
- (b) ECBC+ compliant = 3 Marks
- (c) ECBC compliant = 2 Marks

**Criterion 6.2: Energy Efficient Lighting, Fans, Air conditioners with Controls**

**Maximum Marks: 4**

1. (a) Use of 100% LED lights (indoor and outdoor)= 2 Marks  
(b) Use of 75 to 100% LED lights = 1 Mark  
(c) Use of less than 75% LED lights = Nil
2. (a) Use of all energy efficient 5 star - fans and unitary ACs = 2 Marks  
(b) use of 75-100% energy efficient 5 star - fans and unitary ACs = 1 Mark

In case of HVAC/VRV system;

(a) Energy efficient, 5 star fans and unitary ACs (if provided) and for HVAC/VRV system, minimum coefficient of performance (COP) and integrated part load value (IPLV) as per ECBC norms: 2 Marks

(b) Only energy efficient HVAC/VRV system as above but not fans and unitary ACs as per (a) above: 1 Mark

**Criterion 6.3: Energy efficient Pumps, Lifts and other Equipments**

**Maximum Marks: 2 Marks**

1. (a) Providing energy efficient pumps and DG set: 1 Mark
2. (a) Providing energy efficient/regenerative lifts: 1 Mark

**Criterion 6.4: Integration of controls with IBMS and sensors for lighting fixtures**

**Maximum Marks: 3**

- (a) Providing Integrated building management system (IBMS): 2 Marks
- (b) Providing sensors for lighting fixtures: 1 Mark

**Criterion 6.5: Generation of Renewable Energy**

**Maximum Marks: 8**

On site solar power or other non conventional power generation:

1. (a) 10% generation of required power for operation of the building/equipment provided in the building = 2 Marks
  - (b) 100% generation of required power for operation of building/equipment provided in the building i.e. net zero or positive energy building = 8 Marks
  - (c) For other conditions marks will be given on pro-rata basis between 2 and 8.

**Note: - In case of net plus Building to the extent of 20% or more, additional 4 Marks to be awarded i.e. 12 Marks against 8.**

**Criterion 6.6: Innovation in Energy Efficiency: 1 Mark**

The assessment of innovation measures considered in energy efficiency will be made by the team making the assessment.

## **Criterion 7: Waste Management**

**Total Marks: 4**

**Synopsis:** Waste has to be managed during construction, and after occupancy of the building for hygiene, human comfort, welfare, energy efficiency and sustainability.

**Compliance Procedure and Award of Marks:**

**Criterion 7.1: Waste Management Policy**

**Maximum Mark: 1**

(a) Availability of waste management plan conforming to Solid Waste Management (SWM) Rules/policy before award of work: 1 Mark

(b) If not available: Nil

**Criterion 7.2: Organic Waste Converter/Compost pits**

**Maximum Marks: 2**

(a) Providing organic waste converter: 2 Marks

(b) Providing compost pit: 1 Mark

(c) None of above: Nil

**Criterion 7.3: Waste segregation**

**Maximum Mark: 1**

(a) Providing segregation facilities for C&D waste, wet waste and dry waste = 1 Mark

(b) If not provided: Nil

## **Criterion 8: Welfare Measures**

**Total Marks: 4**

**Synopsis:** The objective of green building and sustainability is to improve the quality of life of present and future generations. Welfare measures of workers, engineers and other personnel working at construction site therefore become part of green building concept.

**Compliance Procedure and Award of Marks:**

### **Criterion 8.1: Toilet Facilities during Construction**

**Maximum Marks: 2**

1. (a) Toilets for workers and staff as per norms at site with signage = 1 Mark
2. (a) Separate toilet facilities for ladies (workers and staff) as per norms at site with signage = 1 Mark

### **Criterion 8.2: Welfare Measures during Construction**

**Maximum Marks: 2**

1. (a) Welfare measures for workers, staff and their children like shelter, canteen, crèches etc with proper signage= 1 Mark
2. (a) Construction of office, conference room and display arrangements for architects, engineers and other staff with signage = 1 Mark

## **Criterion 9: Landscape and Horticulture**

### **Total Marks: 5**

**Synopsis:** Proper landscape and horticulture helps in environmental protection, bringing down the surrounding temperature around building leading to reduction in energy requirements during summer, reduction in air pollution, ground water recharging and in improving indoor air quality.

### **Compliance Procedure and Award of Marks:**

#### **Criterion 9.1: Trees Protection and Transplantation**

##### **Maximum Marks: 3**

(a) No cutting (felling) of trees due to planning and construction of building(s) avoiding cutting of trees = 3 Marks

(b) 80-100% transplantation of existing trees = 2 Marks

(c) 60% transplantation of existing trees and plantation of trees in lieu of trees cut as per local bye-laws subject to minimum 5% of native species = 1 Mark

#### **Criterion 9.2: Irrigation System**

##### **Maximum Mark: 1**

(a) Efficient irrigation system like micro, drip or sprinkler irrigation = 1 Mark

(b) Not as per (a) above: Nil

#### **Criterion 9.3: Reuse of Excavated Soil**

##### **Maximum Mark: 1**

(a) 100% reuse of excavated soil at the site: 1 Mark

(b) Not as per (a) above: Nil

# CERTIFICATE



Government of India  
Central Public Works Department



## Central Public Works Department (CPWD)

hereby certifies that

.....(Name of Building)

**GHAR Registration No.....**

has successfully achieved the Green Building Standards required for  
the following level of certification

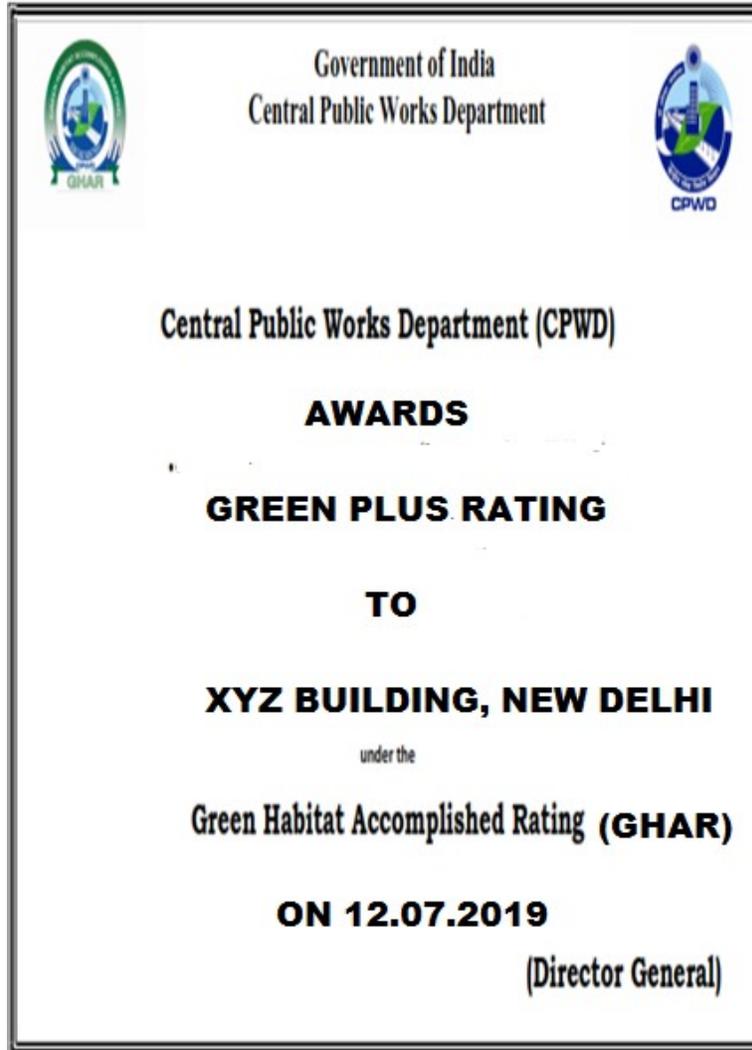
**Green/Green Plus/Super Green**

under the

**Green Habitat Accomplished Rating**

**(Director General)**

## Plaque





Govt. of India

Central Public Works Department  
O/o Chief Engineer (E) CSQ  
Room No- 229, 2<sup>nd</sup> Floor, A-wing  
Nirman Bhawan, New Delhi- 110011

No. 9035898/36(1)/CE(CSQ)E/2018/191

Dated 13/05/2019

**OFFICE MEMORANDUM**

**Sub:- GHAR assessment under CPWD Green Rating Manual-2019**

Green Rating Manual-2019 for the ratings of the buildings constructed by CPWD has been prepared and got released from the Secretary, Ministry of Housing and Urban Affairs at Vigyan Bhawan, New Delhi on 26/04/2019. The same is available on CPWD website at the following link:

[https://www.cpwd.gov.in/Publication/Green\\_rating\\_manual\\_april\\_2019.pdf](https://www.cpwd.gov.in/Publication/Green_rating_manual_april_2019.pdf)

The acronym given to this rating is **GHAR** which is Green Habitat Accomplished Rating. The assessment for green rating should now be carried out based on CPWD Green Rating Manual wherever registration has not so far been made with other authorities.

This issues with the approval of DG, CPWD.

  
(C.K. Varma)

Chief Engineer CSQ(E)

13/5/19

To,

All SDGs/ ADGs/ CEs/ CPMs/ SEs/ PMs/ EEs, CPWD for information and necessary action. **(Through CPWD Website only)**



Govt. of India

Central Public Works Department  
O/o Chief Engineer (E) CSQ  
Room No- 229, 2<sup>nd</sup> Floor, A-wing  
Nirman Bhawan, New Delhi- 110011

No. 9035898/36(1)/CE(CSQ)E/2019/२०१

Dated ०३/06/2019

**OFFICE MEMORANDUM**

**Sub:- Green Rating Cell in CPWD Regions/ Project Regions.**

Please refer to this office OM of even file No. 191 dated 13/05/2019 vide which it was directed that assessment of green rating for Buildings to be taken up for construction by CPWD and which have not been registered with any other authorities should now be carried out based on CPWD Green Rating Manual-2019. This manual provides that the buildings will be rated by a committee of CPWD officers drawn from Architecture, Civil, Electrical and Horticulture cadres.

Accordingly Green Rating Cell will be established in every Region/Project Region of CPWD consisting of following committee members:-

**A. For Works of Delhi NCR & Buildings Not Constructed By CPWD:-**

- (i) One CE(C)/SE(C) of CPWD Training Academy, Ghaziabad.
- (ii) One CE(E)/SE (E) of CPWD Training Academy, Ghaziabad.
- (iii) One CA/SA of CPWD Training Academy, Ghaziabad.
- (iv) One Dir.(H)/DDH/AD(H) of CPWD Training Academy, Ghaziabad.

**Note:** The members of the committee shall be nominated by SDG(Trg & Research), CPWD Training Academy, Ghaziabad.

**B. For Project Regions/Regions:-**

- (i) One CE(C)/SE(C)/EE(C)
- (ii) One CE(E)/SE (E)/EE(E)
- (iii) One CA/SA/Arch
- (iv) One DD(H)/AD(H)

**Note:** The members of the committee shall be nominated by the respective head of the Project Region. The committee will have jurisdiction over the Project Region and the Regions in that project region area.

The format of Certificate to be issued after accomplishment of Rating is also enclosed.

Encl.: As above.

This issues with the approval of DG, CPWD.

  
(C.K. Varma)  
Chief Engineer CSQ(E)

3/6/19

To,  
All SDGs/ ADGs/ CEs/ CPMs/ SEs/ PMs/ EEs, CPWD for information and necessary action. **(Through CPWD Website only)**



Government of India  
Central Public Works Department



**Central Public Works Department (CPWD)**

hereby certifies that

.....(Name of Building)

**GHAR Registration No.....**

has successfully achieved the Green Building Standards required for  
the following level of certification

**Green/Green Plus/Super Green**

under the

**Green Habitat Accomplished Rating**

**(Director General)**



**CPWD**

**Committed for  
Sustainable Development**



Government of India  
Ministry of Housing & Urban Affairs  
Central Public Works Department