



Indian Green Building Council

IGBC Green SEZ

IGBC Green SEZ Rating System

Pilot Version

Abridged Reference Guide



October 2010



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Abbreviations



Foreword from IGBC

India is witnessing tremendous growth in infrastructure and construction sector. The construction industry in India is one of the largest economic activities and is growing at an average rate of 9.5% as compared to the global average of 5%. As the sector is growing rapidly, preserving the environment poses a host of challenges. To enable the construction industry to be environmentally sensitive, CII-Sohrabji Godrej Green Business Centre has established the Indian Green Building Council (IGBC). IGBC is a consensus driven not-for-profit council representing the building industry, consisting of more than 1,000 committed members. The council encourages builders, developers and owners to build green to enhance the economic and environmental performance of buildings.

The Green Building Movement in India has been spearheaded by IGBC since 2001, by creating national awareness. The council's activities have enabled a market transformation with regard to green building concepts, materials and technologies.

IGBC continuously works to provide tools that facilitate the adoption of green building practices in India. The development of IGBC Green SEZ Rating System is another important step in this direction.

IGBC Membership

IGBC draws its strength from its members who have been partners in facilitating the Green Building Movement in India. The local chapters led by individual champions and committed members have been instrumental in reaching out the vision of the IGBC at the regional levels. IGBC is today seen as a leader in spearheading the Indian green building movement. The council is member driven and consensus based.

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Introduction

India was one of the first in Asia to recognize the effectiveness of the Export Processing Zone (EPZ) model in promoting exports, with Asia's first EPZ set up in Kandla in 1965.

The Special Economic Zones (SEZ) Policy was announced in April 2000 with an intention to make SEZ an engine for economic growth supported by quality infrastructure.

The Indian Green Building Council along with Ministry of Commerce & Industry has prepared the Green SEZ guidelines. The feedback and suggestions of several stakeholders were sought during interactions held at various major cities - New Delhi, Cochin, Mumbai, Hyderabad and Noida.

IGBC has developed green building rating programmes to cover commercial, residential, factory buildings, etc.,. Rating programmes would help projects to address all aspects related to environment and is an effective tool to measure the performance of the building/ project.

The IGBC Green SEZ Rating System (Pilot version) is an extension of the Green SEZ guidelines. The rating system encourages the projects to surpass the requirements of many codes and standards.

The rating programme is a tool which enables the designer to apply green concepts and criteria, so as to reduce the environmental impacts, which are measurable. The programme covers methodologies to cover diverse climatic zones and changing lifestyles.

I. National Priorities Addressed in the Rating System

The Green SEZ Rating System addresses the most important National priorities which include Site Preservation & Restoration, Reduced Use of Fossil Fuels, Energy Efficiency, Water Efficiency and Handling of Solid Waste.

Site Preservation & Restoration:

The construction process often effects site ecology. Considering this, the IGBC Green SEZ rating system is designed to address protection of vegetation and water bodies, resulting in preservation of habitat and reduction of heat island effect.

Reduced Use of Fossil Fuels:

Fossil fuel is a slowly depleting resource, world over. The use of fossil fuel for transportation is a major source of pollution. The rating system encourages the use of bicycles, public transport and alternate fuels for transportation.



Energy Efficiency:

The commercial and industrial sectors are large consumers of electrical energy. By adopting IGBC Green SEZ rating programme, energy consumption can be reduced through efficient building envelope, lighting, air conditioning systems, motors, pumps, renewable energy systems, etc., The energy savings that can be realised by adopting this rating programme can be to the tune of 20 – 30%.

Water Efficiency:

Most of the Asian countries are water stressed and in countries like India the water table has reduced drastically over the last decade. IGBC Green SEZ encourages use of water in a self - sustainable manner through reducing, recycling and reusing strategies. By adopting this rating programme green SEZ can save potable water to an extent of 30 – 50%.

Handling of Solid Waste:

Handling of solid waste is extremely difficult as most of the waste generated is not segregated at source and has a high probability of going to land fills. This continues to be a challenge to the municipalities which needs to be addressed. IGBC intends to address this by encouraging SEZ to segregate and divert the solid waste effectively for reuse and recycling.

II. Benefits of Green SEZ

National benefits:

- Reduction in energy use and connected load leading to savings in infrastructure investments
- Reduction in potable water savings and public investments related to waste water treatment
- Reduction in fuel use for transport, thereby saving on oil import bills
- Organised handling of waste and waste management
- Incubation of green building materials manufacturers, thereby leading to lower cost of creating green SEZ's.

Benefits at local level

- Encourage local economy
- Better quality of life for the occupants of SEZ's
- Optimum utilization of resources – Energy, Water
- Reduced operational cost for the occupants

III. Features of IGBC Green SEZ

IGBC Green SEZ Rating System is a voluntary and consensus based programme. The rating system has been developed based on materials and technologies that are presently available. The objective of IGBC Green SEZ is to facilitate the creation of energy efficient, water efficient, healthy, comfortable and environmentally friendly SEZ.

The rating system evaluates certain credit points using a prescriptive approach and other credits on a performance based approach. The rating system is evolved so as to be comprehensive and at the same time user-friendly.

The rating programme uses well accepted national standards and wherever local or national standards are not available, appropriate international benchmarks have been considered.

IV. IGBC Green SEZ Process

The guidelines detailed under each mandatory requirement & credit enables the design and construction of green SEZ of all sizes and types. IGBC Green SEZ addresses green features under the following categories:

- Site Preservation & Restoration
- Site Planning & Design
- Water Efficiency
- Energy Efficiency
- Materials & Resources
- Innovation & Design Process

Different levels of green building certification are awarded based on the total credits earned. However, every Green SEZ should meet certain mandatory requirements, which are non-negotiable.

IGBC Green SEZ Certification Levels

The threshold criteria for certification levels are as under:

Certification Level	Points	Recognition
Certified	51-60	Best Practices
Silver	61-70	Outstanding Performance
Gold	71-80	National Excellence
Platinum	81-100	Global Leadership



a. Documentation

The project team is expected to provide general information of the project including master plan, area statement, project brief stating project type, land use, etc., and supporting documents at each stage of submission for all the mandatory requirements and the credits attempted. Supporting documents are those which provide specific proof of meeting the required performance level, such as, filled-in master template (in excel format); narratives, drawings (in pdf format only), calculations (in excel sheet); declarations, contract documents, manufacturer's cutsheets/ letters / material test reports, purchase invoices , etc., for each mandatory requirement/ credit, as applicable. These details are mentioned in this guide, under each mandatory requirement and credit.

Documentation is submitted in two phases – design submittals and construction submittals:

- The design submission involves those credits which can be evaluated at the design stage. The abridged reference guide provides the list of design and construction phase credits. After the design submission, review is done by third party assessors and review comments would be provided.
- The next phase involves submission of clarifications to design queries and construction document submittal. The construction document is submitted on completion of the project. This review will also be provided, after which the rating is awarded.

It is important to note that the credits earned at the design review are only considered as anticipated and are not awarded until the final construction documents are submitted along with additional documents showing implementation of design features. If there are changes for any design credit anticipated, these changes need to be documented and resubmitted for the construction review phase.

IGBC will recognise SEZ that achieve one of the rating levels with a formal letter of certification and a mountable plaque.

b. Precertification

Projects by developers can register for Precertification. This is an option provided for projects aspiring to get precertified at the design stage. The documentation submitted for precertification must detail the project design features which will be implemented.

The rating awarded under precertification is based on the project's intention to conform to the requirements of IGBC Green SEZ Rating system. It is important to note that the precertification rating awarded need not necessarily correspond to the final certification.

Precertified projects are required to provide the status of the project to IGBC, in relation to the rating, once in every six months until the award of the final rating.

Precertification gives the developer/ owner a unique advantage to market the project to potential buyers.

Those projects which seek precertification need to submit the following documentation:

- General information of the project including master plan, area statement, project brief stating project type, land use, etc., and supporting documents at each stage of submission for all the mandatory requirements and the credits attempted.
- Supporting documents are those which provide specific proof of meeting the required performance level, such as, filled-in master template (in excel format); narratives, drawings (in pdf format only), calculations (in excel sheet); declarations, contract documents, manufacturer's cutsheets/ letters/ material test reports, purchase invoices , etc., for each mandatory requirement/ credit, as applicable. These details are mentioned in this guide, under each mandatory requirement and credit.

IGBC would review the first set of precertification documents. On receiving the clarifications posed in the first review, IGBC would award the precertification.

A certificate and a letter are provided to projects on precertification.

c. Credit Interpretation Ruling

In some instances the design team can face certain challenges in applying or interpreting a mandatory requirement or a credit. It can also happen in cases where the project can opt to achieve the same goal through a different compliance route.

To resolve this, IGBC uses the process of 'Credit Interpretation Ruling' (CIR) to ensure that rulings are consistent and applicable to other projects as well.



The following are the steps to be followed in case the project team faces a problem:

- Consult the Reference Guide for description of the credit goal, compliance options and calculations.
- Review the goal of the credit or mandatory requirement and self-evaluate whether the project satisfies the goal.
- Review the Credit Interpretation web page for previous CIR on the relevant credit or mandatory requirement. All projects registered under IGBC Green SEZ Rating System will have access to this page.
- If a similar CIR has not been addressed or does not answer the question sufficiently, submit a credit interpretation request. Only registered projects are eligible to post CIRs. Two CIRs are answered without levying any fee and for any CIR beyond the first two CIRs, a fee is levied. For further details on CIR, please visit www.igbc.in.

d. Appeal

Generally, credits get denied due to misinterpretation of the goal. On receipt of the final review, the project team has the option to appeal to IGBC for reassessment of denied credits or mandatory requirements. The documentation for the mandatory requirements or credits seeking appeal may be resubmitted to IGBC along with necessary fee. IGBC will review such documentation. These submissions would be reviewed by an assessor not involved in the earlier assessments. Documentation for appeals should include the following:

- i. Documentation submitted for design submission
- ii. Documentation submitted for construction submission
- iii. Clarifications along with supporting documentation

V. Updates and Addenda

This is the abridged reference guide (pilot version) of IGBC Green SEZ Rating System. As the rating system continues to improve and evolve, updates and addenda to the abridged reference guide will be made available. These additions will be incorporated in the next version of the rating system.

Checklist for IGBC Green SEZ Rating System		
		Points Available
Site Preservation & Restoration		
Mandatory Requirement 1	Local Regulations	Required
Mandatory Requirement 2	Soil Erosion	Required
Mandatory Requirement 3	Nurseries	Required
SPR Credit 1	Reduce Site Disturbance	4
SPR Credit 2	Landscape Open Areas, 50%, 75%	4
SPR Credit 3	Reduce impact on Microclimate: Non-Roof	2
SPR Credit 4	Reduce impact on Microclimate: Roof, 50%, 75%	4
SPR Credit 5	Night Sky Pollution Reduction	2
		16
Site Planning & Design		
Mandatory Requirement	Tobacco Smoke Control	Required
SPD Credit 1	Basic Amenities	3
SPD Credit 2	Vicinity to Public Transport	1
SPD Credit 3	Bicycle lanes	2
SPD Credit 4	Footpaths and Pathways	4
SPD Credit 5	Eco-friendly Transportation, 10%, 20%	5
SPD Credit 6	Parking Facilities	2
SPD Credit 7	Design for Differently Abled	2
SPD Credit 8	Green Buildings within the SEZ, 25%, 50%, 75%	6
		25
Water Efficiency		
Mandatory Requirement 1	Rainwater Harvesting, 25%	Required
Mandatory Requirement 2	Waste Water Treatment, 100% (Industrial & Non-Industrial)	Required
WE Credit 1	Lawn Design, 30%, 20%	2
WE Credit 2	Drought Tolerant Species, 25%, 50%	2
WE Credit 3	Efficient Irrigation Systems	2
WE Credit 4	Rainwater Harvesting, 50%,75%	4
WE Credit 5	Rain Water Filtration	1
WE Credit 6	Treated Waste Water Reuse, 50%, 75%	4
		15



Energy Efficiency		
Mandatory Requirement	Minimum Energy Efficiency	Required
EE Credit 1	Maximise Energy Efficiency, 10%, 12.5%, 15%, 17.5%, 20%, 22.5%, 25%, 27.5%, 30%	12
EE Credit 2	Onsite Renewable Energy, 5%, 7.5%, 10%, 12.5%, 15%	5
EE Credit 3	Energy Monitoring System	2
EE Credit 4	HCFC Free Air-Conditioning Systems	1
EE Credit 5	Off-Site Green Power, 25%, 50%	10
		30
Materials & Resources		
Mandatory Requirement	Segregation of Waste: Post Occupancy	Required
MR Credit 1	Waste Reduction: During Construction, 50%,75%	2
MR Credit 2	Organic Waste Management: Post Occupancy, 50%, 75%	2
MR Credit 3	Materials with Recycled Content, 10%, 20%	2
MR Credit 4	Local Materials, 50%, 75%	2
MR Credit 5	Low VOC Materials: Adhesives & Sealants and Paints & Coatings	2
		10
Innovation and Design Process		
ID Credit 1	Innovation & Design Process	3
ID Credit 2	IGBC Accredited Professional	1
		4
Total Maximum Points		100

IGBC Green SEZ Certification Levels

Levels of Rating	Credit points
Certified	51-60
Silver	61-70
Gold	71-80
Platinum	81-100

SITE PRESERVATION & RESTORATION



SITE PRESERVATION & RESTORATION

Local Regulations

Construction Submittal

SPR Mandatory Requirement 1

Goal:

Ensure that SEZ and buildings within SEZ comply with the statutory regulatory codes.

Compliance Options:

Design the SEZ and buildings within SEZ complying with local or SEZs byelaws, as applicable. The following approvals need to be ensured:

- SEZ status from MoCI
- Approval of the plan from the competent Government authority

Documentation Required:

- Provide an approved plan obtained from the competent Government authority.

Approach and Methodologies:

Survey the statutory requirements in the area of development. Ensure that these requirements are incorporated at the design stage.



Soil Erosion

Construction Submittal

SPR Mandatory Requirement 2

Goal:

Control soil erosion and thereby reduce negative impacts to the site.

Compliance Options:

Adopt the following measures as applicable:

- Soil erosion control measures shall conform to best management practices highlighted in National Building Code (NBC) 2009 of India. This is to be addressed during construction and post occupancy

AND

- Remove, stack & protect the top soil from the development areas and reuse for landscaping, wherever applicable

Documentation Required:

- Provide a description on the measures implemented/ provide the erosion control plan adopted during construction & post construction. Submit drawings showing erosion and sedimentation controls.
- Provide photographs to show stockpiling of topsoil.

Approach and Methodologies:

Evolve strategies to stockpile top soil and reuse later for landscaping purpose or stockpiled soil can be donated to other sites for landscaping purpose. Consider adopting measures such as temporary & permanent seeding, mulch-ing, earth dikes, silt fencing, sediment traps and sediment basins, as appropriate. Open areas can be landscaped with grass, trees, shrubs etc.,. Paved areas can be installed with permeable paving materials. For impermeable surfaces, direct all run off towards storm water collection pits.



SITE PRESERVATION & RESTORATION

Nurseries

Design Submittal

SPR Mandatory Requirement 3

Goal:

Set-up nurseries to effectively manage landscaping and promote bio-diversity within the zone

Compliance Options:

For Zones greater than 50 acres

The developer/ co-developer must set up their own nurseries for plantation of saplings.

For Zones less than 50 acres

The developer/ co-developer can share the neighbouring SEZs' nurseries or tie-up with established nurseries in the vicinity, if available.

Documentation Required:

- Provide site plan showing the nurseries.
- Provide a description on the strategies to be implemented on site to maintain the nurseries, during construction and post occupancy.

Approach and Methodologies:

Evolve strategies to maintain the nurseries, during construction and post construction. Open areas can be landscaped (eg., grass, trees, shrubs). Consider measures like transplanting existing trees, protecting existing trees during construction, etc.,



Reduce Site Disturbance

Design Submittal

SPR Credit 1

Points: 2-4

Goal:

Conserve existing areas, restore damage areas, provide habitat and promote biodiversity.

Compliance Options:

Preserve or transplant atleast 75%, 95% of existing trees within the zone (OR) preserve or transplant as per local byelaws/ MoEF guidelines, whichever is more stringent (2 points)

AND

Protect or restore atleast 50%, 95% of the existing water bodies (by area) to promote biodiversity (2 points)

Documentation Required:

Provide a site plan showing existing trees, water bodies within the zone. Also, support drawings with relevant photographs.

Provide a description on the strategies implemented on site to preserve or transplant existing trees and restoration measures taken for water bodies.

Approach and Methodologies:

Conduct a site survey to identify and adopt a master plan for development of project site. Locate the building to ensure minimum disturbance to existing eco-systems and design the building with minimum building foot print. Demarcate construction boundaries to minimise disturbance of existing site and restore previously degraded areas to their natural state.

SITE PRESERVATION & RESTORATION

Landscape Open Areas

Construction Submittal

SPR Credit 2

Points: 2-4

Goal:

Conserve existing areas, restore damage areas, provide habitat and promote biodiversity.

Compliance Options:

Landscape open areas to an extent of atleast 50% of the zone area (OR) in accordance with the local by-laws, whichever is more stringent. (4 points)

Points for Landscape Open Areas

Percentage of Landscape Open Areas	Points
≥ 50%	2
≥ 75%	4

Notes:

- Open area = Total area – Development foot print*
- Development foot print includes building foot print, multi-level car parking, service areas, roads and other similar areas.*
- Vegetated roofs can also be considered as landscaped areas.*
- Potted plants cannot be considered as landscaped areas.*

Documentation Required:

- Provide zone plans and calculations highlighting the landscape area.
- Provide a copy of local/ SEZ byelaws highlighting the landscape open area requirement.

Approach and Methodologies:

Design the building with a minimal footprint (by tightening design needs and stacking floor plans). Consider retaining the natural topography in the site or design landscape to the extent possible. In sites which have fully grown trees, avoid destruction. Avoid developing paved surfaces on the site, as much as possible.



Reduce Impact on Microclimate, Non-Roof

Construction Submittal

SPR Credit 3

Points: 2

Goal:

Reduce heat island effect to minimise impacts on urban climate.

Compliance Options:

For surface parking and other non-roof impervious areas (walk ways, etc.), provide shade (within 5 years) and / or open grid pavement for atleast 30% of such areas.

AND / OR

For covered parking, provide atleast 50% of the parking spaces in centralised multi-level car parking and / or building basement.

Documentation Required:

Provide drawings highlighting location of trees and areas covered with open-grid pavers or plans of multi-level or basement car parking.

Approach and Methodologies:

Provide shade to constructed surfaces on the site through landscape features and utilise high-reflectance materials for hardscapes. Consider replacing constructed surfaces (i.e., roof, roads, sidewalks etc.) with vegetated surfaces such as open grid paving or specify high-albedo materials to reduce the heat absorption.

SITE PRESERVATION & RESTORATION

Reduce Impact on Microclimate, Roof*Construction Submittal***SPR Credit 4****Points: 2-4**

Goal:

Reduce heat island effect to minimise impacts on urban climate.

Compliance Options:Install atleast 50% of the roof area with green roof or high reflective materials (SRI \geq 78).

Points are awarded as below:

Points for Reduce Impact on Microclimate, Roof

Percentage of green roof / high reflective material	Points
\geq 50%	2
\geq 75%	4

Note:*Exposed roof area does not include areas occupied by skylights and equipment such as HVAC, solar water heater, photovoltaic etc.,***Documentation Required:**

Provide roof drawings highlighting the extent of green roof/ high reflective roof materials installed.

Approach and Methodologies:

To minimise heat island effect and maximise energy savings, select materials that exhibit high reflectivity and high emissivity. Consider providing green roofs or using highly reflective materials over roof to reduce the heat island effect. Typical materials with high reflective properties include china mosaic, white cement tiles, paints with high Solar Reflective Index (SRI) values etc.,



Night Sky Pollution Reduction

Design Submittal

SPR Credit 5

Points: 2

Goal:

Reduce light pollution from exterior and façade lighting to increase night sky access and enhance nocturnal environment.

Compliance Options:

The lighting power densities should not exceed 80% for exterior areas and 50% for building facades and landscape features as defined in ASHRAE Standard 90.1-2007.

No external light should be upward looking.

Documentation Required:

Provide lighting drawings indicating the location and type of fixtures used in the Zone.

Approach and Methodologies:

Adopt site lighting criteria to maintain safe light levels while avoiding off-site lighting and night sky pollution. Survey energy efficient lighting fixtures available in the market. Also, consider the life of the lamps and evaluate the economic viability.

SITE PLANNING & DESIGN



Tobacco Smoke Control

Design Submittal

SPD Mandatory Requirement

Goal:

Minimise exposure of non-smokers to the adverse health impacts arising due to passive smoking, post occupancy.

Compliance Options:

Smoking should be prohibited in all common/ public areas.

Documentation Required:

Provide details on how the common/ public areas comply with the requirement. Also, provide details on how this would be implemented and identify the agency responsible to ensure compliance.

Approach and Methodologies:

Survey the statutory requirements in the area of development. Ensure that these requirements are incorporated at the design stage.



Basic Amenities

Design Submittal

SPD Credit 1

Points: 1-3

Goal:

Reduce the negative impacts from automobile use, thereby enhancing the overall quality of life by providing amenities.

Compliance Options:

Provide atleast ten amenities such as ATM/ Bank, Coffee Shop, Community Center, Day Care, Fire Station, Fitness Center, Hotel, Internet Centre, Library, Medical Clinic, Pharmacy, Place of Worship, Post Office, Restaurant, Sports Club, etc., within the zone. **(1 point)**

Provide Optical Fiber Communications (OFC) for efficient internet connectivity to the units **(2 points)**

Note:

This point can be earned only if the amenities are available before or at the time of project completion.

Documentation Required:

Provide a list of basic amenities provided within the zone.

Approach and Methodologies:

Provide basic amenities that are accessible by convenient pedestrian pathways or by use of bicycles. Restaurants can be counted twice and all other amenities are to be considered only once.



Vicinity to Public Transport

Design Submittal

SPD Credit 2

Point: 1

Goal:

Reduce pollution and land development impacts from automobile use.

Compliance Options:

Provide access to public transportation such as public bus station or railway station, within a distance of 1 km of any access entry to the zone. In the event of such facilities not being available, provide shuttle services to the nearest rail or bus service.

Documentation Required:

Provide an aerial map (to scale) indicating distances from any access entry of the zone to the railway station and bus stop.

Approach and Methodologies:

Select the site near the mass transit. Conduct a transportation survey of future building occupants to identify transportation needs. If private shuttle buses will be used to meet the requirement, ensure that these buses are connected to public transit and they will operate atleast during the most frequent commuting hours.



Bicycle Lanes

Design Submittal

SPD Credit 3

Points: 2

Goal:

Reduce pollution and land development impacts from automobile use.

Compliance Options:

Provide bicycle lanes (in all primary and secondary streets) to encourage occupants to commute in bicycles to and from work place (**2 points**).

Documentation Required:

Provide parking plan/ site plan highlighting bicycle parking in the proposed site. Also provide supporting calculations.

Approach and Methodologies:

Provide separate lanes for bicycle users and allot parking spaces provided for bicycles.



Footpaths and Pathways

Design Submittal

SPD Credit 4

Points: 2-4

Goal:

Reduce pollution and land development impacts from automobile use.

Compliance Options:

- Provide exclusive foot paths in primary streets for comfortable pedestrian street access (2 points)
- Provide pedestrian pathways across various blocks in the zone (2 points)

Documentation Required:

Provide an area map (to scale) indicating footpaths and pathways for the proposed site.

Approach and Methodologies:

Design footpaths and pathways for better pedestrian access.



Eco-friendly Transportation

Design Submittal

SPD Credit 5

Points: 2-5

Goal:

Encourage use of eco-friendly vehicles to reduce pollution from automobiles.

Compliance Options:

- Provide internal transportation facilities in the zone to cater to atleast 10% of the permanent occupants through low emission vehicles such as electrically driven vehicles or Compressed Natural Gas (CNG) or bio-diesel or any other environment friendly fuel driven vehicles. **(4 points)**

Points for Eco-friendly Transportation

Percentage of Eco-friendly Transportation	Points
≥ 10%	2
≥20%	4

- Provide alternate refueling stations for buses, four-wheelers, two-wheelers, etc., for 5% of parking capacity **(1 point)**

Documentation Required:

- Provide a description on the strategies to be implemented on site to use eco-friendly transportation.
- Provide parking plans showing provisions for electric charging facility / alternate refueling stations.
- Provide calculations demonstrating that eco-friendly refueling facilities provided in each zone meet the credit criteria.

Approach and Methodologies:

Survey the type of eco-friendly vehicles already plying on the roads and also survey the kind of vehicles which may come up in the future. Create facilities so as to recharge / refill these types of vehicles. Consider having adequate number of charging facilities / refueling stations based on the charging or refilling time.

While considering such facilities, ensure that all safety aspects have been addressed.



Parking Facilities

Design Submittal

SPD Credit 4

Points: 2

Goal:

Provide adequate parking within the zone to minimise disturbance caused due to parking on public roads and thereby enhance quality of life.

Compliance Options:

Provide parking facilities to meet but not exceed the local parking regulations / SEZs byelaws.

AND

Allocate atleast 10% of the parking capacity for carpooling vehicles (**2 points**).

Documentation Required:

- Provide parking plans indicating the car park spaces provided. Also, highlight the parking spaces allotted for carpooling vehicles.
- Provide calculations on parking provisions required as per local regulations.

Approach and Methodologies:

Design the building to ensure that parking provisions meet the local parking regulations. Parking provisions should take into account two wheelers, four wheelers and carpooling vehicles. While designing parking facilities consider basement / stilt parking to reduce the heat island effect. When surface parking is planned, consider permanent cover or other design strategies to address heat island effect as a result of such provisions.



Design for Differently Abled

Design Submittal

SPD Credit 7

Points: 2

Goal:

Ensure that the building can cater to differently abled people.

Compliance Options:

The design shall incorporate the following provisions for differently abled people:

- Design for easy access to all the common spaces
- Appropriately designed preferred car parking spaces in areas, which have easy access to the main entrance or closer to the lift
- Uniformity in flooring level / ramps
- Rest rooms (toilets) designed for differently abled people in common spaces

Documentation Required:

Provide drawings showing provisions for differently abled people.

Approach and Methodologies:

Identify all possible facilities required to cater to differently abled people. Design the building to ensure that certain basic provisions for differently abled people are incorporated.



Green Buildings within the SEZ

Design Submittal

SPD Credit 8

Points: 2-6

Goal:

Design and construct high performance buildings within the zone to minimise negative environmental impacts resulting from development.

Compliance Options:

Design individual buildings within the SEZ in accordance with appropriate IGBC rating system (eg., factories, homes, commercial buildings, etc.,)

Points for Green Buildings within the SEZ

Percentage	Registered (built-up area)	Certified (built-up area)
25%	1	2
50%	2	4

Note:

Certified built-up area must not be considered under Registered built-up area.

Documentation Required:

Provide documentation to show that the individual buildings are being designed and constructed as green buildings for certification.

Approach and Methodologies:

Select appropriate green building rating programmes to design and construct the buildings with the zone as green buildings.

WATER EFFICIENCY



WATER EFFICIENCY

Rainwater Harvesting, 25%

Design Submittal

WE Mandatory Requirement 1

Goal:

Increase the ground water table and reduce the usage of water through effective and appropriate rainwater management.

Compliance Options:

Provide rainwater harvesting or storage system to capture atleast 25% of 5-year average one day rainfall from non-roof & roof areas. Storage volumes must cater to atleast 2-3 days.

Note:

In areas where recharging the aquifer is not feasible, collection and reuse may be considered.

Documentation Required:

Provide details on the rainwater harvesting system specifying storage capacity and volume of water captured.

Approach and Methodologies:

Survey the water table in the zone. Design appropriate harvesting system based on the sub-surface characteristics. Factors to be considered include weathering, fractures & joints for rocky sites and thickness of aquifer for sedimentary sites.

Capture rainwater from roof & non-roof areas for reuse. The design should also include flushing arrangement to let out impurities in the first few showers. Such pollutants and impurities include paper waste, leaves, bird droppings, dust, etc.



Waste Water Treatment, 100% (Industrial & Non-Industrial) *Design Submittal*

WE Mandatory Requirement 2

Goal:

Reduce consumption of water by *in situ* treatment of waste water generated so as not to pollute the municipal streams.

Compliance Options:

Provide an on-site waste water treatment system to treat 100% of waste water generated (industrial & non-industrial) in the zone, to standards suitable for landscaping, flushing and cooling tower make-up purpose, as applicable.

Documentation Required:

Provide a detailed description of the on-site waste water treatment system. Provide drawings to support the description. Provide water balance (approximate) of the zone.

Approach and Methodologies:

Calculate the waste water volumes generated in the zone. Design appropriately the capacity of the on-site waste water treatment system. While designing the treatment system, ensure that the treated waste water meets the required quality standards based on its purpose of application. Have signages to caution occupants and housekeeping staff that this water is not potable.



WATER EFFICIENCY

Lawn Design, 20%

Design Submittal

WE Credit 1

Points: 1-2

Goal:

Limit the installation of such landscapes which consume large quantities of water.

Compliance Options:

Limit the use of lawn to an extent of 20% of the landscaped area (both ground and terrace) so as to conserve water. Points are awarded as below:

Points for Limited use of Lawn

Lawn area as a percentage of total landscaped area	Points
≤ 20%	2
≤ 30%	1

Areas planted with Lawn should not exceed a slope of 25 percent (i.e., 4 to 1 slope).

Note:

Landscape refers to soft landscaping which include only vegetative and pervious materials

Documentation Required:

Provide a landscape plan specifying the species used.

Approach and Methodologies:

During landscape design minimise lawn to the extent possible. Select ground covers, shrubs and trees which consume less water.



Drought Tolerant Species, 25%

Design Submittal

WE Credit 2

Points: 1-2

Goal:

Design landscaping to minimise consumption of water.

Compliance Options:

Design landscape with plant species which consume less water, to an extent of 25% of landscaped area (both ground and terrace) with drought tolerant species. Points are awarded as below:

Points for Drought Tolerant Species

Drought tolerant species as a percentage of total landscaped area	Points
≥ 25%	1
≥50%	2

Note:

Drought tolerant species are those species that do not require supplemental irrigation. Generally accepted time frame for temporary irrigation is one to two years.

Documentation Required:

Provide a landscape plan indicating the percentage of landscaped area which uses drought tolerant species. Also, provide a list of the species used and highlight their drought tolerant nature.

Approach and Methodologies:

Select species that are well-adapted to the site. Select those species which are drought tolerant. Consider xeriscaping (also referred as dry landscaping) as an approach for landscaping.



WATER EFFICIENCY

Efficient Irrigation Systems

Design Submittal

WE Credit 3

Points: 2

Goal:

Reduce the demand for irrigation water through water-efficient management techniques.

Compliance Options: (2 points for three features)

Provide highly efficient irrigation systems. The following measures can be adopted in each of the major landscaped areas:

- Provide a central shut-off valve
- Provide one or more central shut-off valves, as appropriate
- Provide moisture sensor controllers
- At least 50% of landscape planting beds must have drip irrigation system to reduce evaporation
- Install time based controller for the valves such that the evaporation loss is minimum and plant health is ensured
- Use pressure regulating devices to maintain optimal pressure to prevent water loss
- Any other innovative methods for watering

Documentation Required:

Provide a detailed description of water efficient features of the irrigation system installed. Provide landscape plans with irrigation systems. Provide manufacturer cut sheets of the systems installed.

Approach and Methodologies:

The irrigation management system must be designed based on the requirements of the landscape plan and installed as per the design. The designer and the installer must work together and ensure the planned performance of the system.



Rainwater Harvesting, 50%

Design Submittal

WE Credit 4

Points: 2-4

Goal:

Increase the ground water table and reduce the usage of water through effective and appropriate rainwater management.

Compliance Options:

Provide rainwater harvesting or storage system to capture atleast 50% of 5-year average one day rainfall from non-roof & roof areas. Storage volumes must cater to atleast 2-3 days.

Note:

In areas where recharging the aquifer is not feasible, collection and reuse may be considered.

Points are awarded as below:

Points for Rainwater Harvesting

Rainwater Harvesting System to capture / recharge	Points
≥ 50 % runoff from roof & non-roof area	2
≥75% runoff from roof & non-roof area	4

Documentation Required:

Provide details on the rainwater harvesting system specifying storage capacity and volume of water captured. Provide details of captured rainwater.

Approach and Methodologies:

Survey the water table in the zone. Design appropriate harvesting structure based on the sub-surface characteristics. Factors to be considered include weathering, fractures & joints for rocky sites and thickness of aquifer for sedimentary sites.

Capture rainwater from roof & non-roof areas for reuse. The design should also include flushing arrangement to let out impurities in the first few showers. Such pollutants and impurities include paper waste, leaves, bird droppings, dust, etc.



WATER EFFICIENCY

Rain Water Filtration

Construction Submittal

WE Credit 5

Point: 1

Goal:

Limit disruption of natural water flows by eliminating stormwater runoff, increasing on-site infiltration and eliminating contaminants.

Compliance Options:

Construct on-site stormwater treatment systems designed to remove 80% of the average annual post development total suspended solids (TSS) based on the average annual loadings from all storms less than or equal to the 5-year average one day rainfall.

Documentation Required:

Provide a detailed description of the rain water filtration techniques incorporated in the zone. Provide calculation showing the capacity of the filtration system.

Approach and Methodologies:

Use alternative surfaces (e.g., vegetated roofs, pervious pavement or open grid pavers) and non-structural techniques (e.g., vegetated swales, disconnection of imperviousness, rainwater recycling) to reduce imperviousness and promote infiltration, thereby reducing pollutant loadings.

Use sustainable design strategies (e.g., low impact development, environmentally sensitive design) to design integrated natural and mechanical treatment systems such as constructed wetlands, vegetated filters, and open channels.



Treated Waste Water Reuse, 50%

Design Submittal

WE Credit 6

Points: 2-4

Goal:

Reduce demand for water by using treated waste water.

Compliance Options:

Reduce atleast 50% of water requirement by using treated waste water for landscaping, flushing or cooling water make-up requirements within the zone.

AND

The treated waste water for reuse must conform to the quality standards as prescribed by central or state pollution control board.

Points are awarded as below.

Points for Reuse of Treated Waste Water

Percentage of Treated Waste Water reused	Points
≥ 50%	2
≥75%	4

Note:

This point can be claimed only, if the waste water that is reused is treated in situ.

Documentation Required:

Provide a detailed description of landscaping, flushing or cooling make-up water requirement and how the treated waste water will meet this requirement. Also, provide calculations on quantity and quality of waste water reused.

Approach and Methodologies:

Install an adequately sized waste water treatment plant. Ensure that the quality of the treated waste water is fit and safe for reuse. Prioritise the use of treated waste water based on the demand. Treated waste water can be used for irrigation, flushing and make-up water for cooling towers. Ensure periodic testing of the treated water to meet the quality standards as prescribed by central / state pollution control board.

ENERGY EFFICIENCY



ENERGY EFFICIENCY

Minimum Energy Efficiency

Design Submittal

EE Mandatory Requirement 1

Goal:

Establish minimum level of energy efficiency for the base building and systems to reduce environmental impacts from excessive energy use.

Compliance Options:

The project can choose any one of the following options:

Option 1 - Prescriptive Approach

Design building envelope, lighting & air-conditioning systems (those which are in developer's/ co-developer's scope) to meet ECBC 2008 or ASHRAE standard 90.1-2007 for each of the following:

- Wall and Roof – U values
- SHGC for glazing areas
- Lighting Power Densities (External lighting and lighting in common areas)
- Chiller efficiency (for air conditioned buildings)

OR

Option 2 – Performance Based Approach

The Performance based approach involves a building energy simulation and modeling. Tradeoffs are permissible. The project must perform a building energy simulation model taking into consideration building envelope, lighting & air-conditioning systems to meet ECBC 2008 or ASHRAE standard 90.1-2007 in developer's/ co-developer's scope.

Documentation Required:

For projects adopting the prescriptive measures, submit a narrative describing in detail the measures adopted in the project along with supporting documents such as manufacturer's cut sheets, purchase invoices.

For projects adopting the performance approach, submit the energy simulation report along with supporting documents such as manufacturer's cut sheets and purchase invoice.



Approach and Methodologies:

Consider a holistic energy efficiency approach to include the building orientation, envelope, systems, lighting and other equipment.

Identify the materials and equipment available in the market and their properties with regard to energy performance. While selecting these material and equipment, consider their associated environmental impacts.

Decision making with respect to selection of materials can be based on the life cycle assessment approach rather than the initial cost.

Determine the applications where automatic controls can help in energy savings. Obtain details of the controls and ensure proper installation.



ENERGY EFFICIENCY

Optimise Energy Performance, 10%

Design Submittal

EE Credit 1

Points: 4 - 12

Goal:

Optimise energy efficiency of the building and systems to reduce environmental impacts from excessive energy use.

Compliance Options:

The project can choose any one of the following options:

Option 1 - Prescriptive Approach

Demonstrate percentage improvement in the proposed building design compared to the baseline building performance as per ECBC 2008 or ASHRAE Standard 90.1-2007 by 10% (4 points).

Design building envelope, lighting & air-conditioning systems to meet the requirements of ECBC 2008 or ASHRAE Standard 90.1-2007 for each of the following which are under the scope of the developer:

- Wall and Roof – U values
- SHGC for glazing areas
- Lighting Power Densities (external lighting and lighting in common areas)
- Chiller efficiency (for air conditioned buildings)

OR

Option 2 – Performance Based Approach

The Performance based approach involves a building energy simulation and modeling. Tradeoffs are permissible. The project must perform a building energy simulation model taking into consideration building envelope, lighting & air-conditioning systems to demonstrate percentage improvement in the proposed building design compared to the baseline building performance as per ECBC 2008 or ASHRAE standard 90.1-2007.

Points are awarded based on percentage savings as detailed below:

Points for Optimise Energy Performance

Percentage Energy Cost Savings	Points
10 % above base case	4
12.5 % above base case	5
15 % above base case	6
17.5 % above base case	7
20% above base case	8



22.5% above base case	9
25% above base case	10
27.5% above base case	11
30% above base case	12

Documentation Required:

For projects adopting the prescriptive measures, submit a narrative describing in detail the measures adopted in the project along with supporting documents such as manufacturer’s cut sheets and purchase invoices.

For projects adopting the performance approach, submit the energy simulation report along with supporting documents such as manufacturer’s cut sheets and purchase invoices.

Approach and Methodologies:

Consider a holistic energy efficiency approach to include the building orientation, envelope, systems, lighting and other equipment.

Identify the materials and equipment available in the market and their properties with regard to energy performance. While selecting these material and equipment, consider their associated environmental impacts.

Decision making with respect to selection of materials can be based on the life cycle assessment approach rather than the initial cost.

Determine the applications where automatic controls can help in energy savings. Obtain details of the controls and ensure proper installation.

Format for reporting energy simulation results:

Energy savings

End Use	Proposed building			Baseline building		
	Energy Type	Energy (10 ⁶ kWh)	Peak (10 ⁶ kW)	Energy (10 ⁶ kWh)	Peak (10 ⁶ kW)	Energy (%)
Interior Lighting						
Exterior Lighting						
Space Heating						
Space Cooling						
Fans - Interior						
Plug loads & other miscellaneous loads						
Service Water Heating						
Total Building Consumption						100%



ENERGY EFFICIENCY

Cost savings

Type	Proposed building		Base Building		% Improvement	
	Energy Use (10 ⁶ kWh)	Energy Cost (Rs/yr)	Energy Use (10 ⁶ kWh)	Energy Cost (Rs/yr)	Energy %	Cost %
Regulated & Unregulated						
Electricity						
Natural Gas						
Steam or Hot Water						
Chilled Water						
<i>Sub-Total</i>						
Site generated renewable energy						
Exceptional Calculations Savings						
Total (excluding renewable energy & including exceptional calculations)						

Note:

The tables detailed are not exhaustive and only indicate the format for energy savings from the energy simulation results.



On-site Renewable Energy, 5%

Design Submittal

EE Credit 2

Points: 1 - 5

Goal:

Promote self sufficiency in energy through renewable technologies for on-site power generation and use within the building.

Compliance Options:

Install renewable energy systems to generate power through solar, wind, bio-mass/ bio-gas, or any other forms of renewable energy for atleast 5% of the annual consumption (in developer’s/ co-developer’s scope). Points are awarded as follows:

Points for Renewable Energy Power

Renewable Energy as a Percentage of annual consumption	Points
≥ 5%	1
≥7.5%	2
≥ 10%	3
≥2.5%	4
≥ 15%	5

Note:

As an incentive, developers will have flexibility to use 10% of non-processing area for any authorised operation beyond the limits prescribed for it as per MoCI directives.

Documentation Required:

Submit installation details for renewable energy source. Provide purchase invoice.

Approach and Methodologies:

Take into consideration the renewable energy feasibility while determining the power requirement from the local utility. The following are the sources of renewable energy that can be considered under this credit - Solar energy, Wind energy, Biomass, Bio gas etc.,



ENERGY EFFICIENCY

Energy Monitoring System

Design Submittal

EE Credit 3

Points: 2

Goal:

Verify and ensure that fundamental building elements & systems are designed, installed and calibrated to operate as intended.

Compliance Options:

Develop and implement, a Measurement & Verification (M&V) plan to monitor building performance and to provide ongoing accountability of building energy consumption over the time. The M&V period shall cover a period no less than one year of post construction occupancy.

Documentation Required:

Provide a Measurement & Verification (M&V) plan to monitor building performance along with technical data/ inputs.

Approach and Methodologies:

Develop M & V plan to evaluate building and/ or energy system performance. Characterise the building and/or energy systems through energy simulation or engineering analysis. Install the necessary metering equipment to measure energy consumption. Keep in record the performance by comparing predicted performance, broken down by component or system as appropriate. Evaluate energy efficiency by comparing actual performance to baseline performance.



HCFC Free Air-Conditioning Systems

Design Submittal

EE Credit 4

Point: 1

Goal:

Avoid the use of HCFC based refrigerants and ozone layer depleting gases which negatively impact the environment.

Compliance Options:

Option 1

Refrigerants used in Heating, Ventilation & Air-conditioning (HVAC) equipment and unitary air-conditioners installed which does not use HCFC based refrigerants.

OR

Option 2

Install HVAC and refrigeration equipment that uses refrigerants that comply with the following requirement:

$$LCGWP + LCODP \times 100,000 < 100$$

Where:

- $LCODP = [ODPr \times (Lr \times Life + Mr) \times Rc] / Life$
- $LCGWP = [GWPr \times (Lr \times Life + Mr) \times Rc] / Life$
- LCODP: Lifecycle Ozone Depletion Potential (lbCFC11/Ton-Year) LCGWP: Lifecycle Direct Global Warming Potential (lbCO₂/Ton-Year)
- GWPr: Global Warming Potential of Refrigerant (0 < GWPr < 12,000 lbCO₂/lbr) ODPr: Ozone Depletion Potential of Refrigerant 0 < ODPr < 0.2 lbCFC11/lbr
- Lr: Refrigerant Leakage Rate (% of charge per year) 0.5% < Lr < 3%/Year
- Mr: End-of-life Refrigerant Loss (% of charge) 2% < Mr < 10 %
- Rc: Refrigerant Charge (lbs refrigerant per Ton of cooling capacity) 0.9 < Rc < 3.3
- Life: Equipment Life (Years) 10 < Life < 35 Years

For projects with multiple units of base building level HVAC and refrigeration equipment, a weighted average of all base building level HVAC and refrigeration equipment shall be applied to the formula above:

$$[SUM (LCGWP + LCODP \times 105) \times Q \text{ unit}] / Q \text{ total} < 100$$

Where:

- Q unit = Cooling capacity of an individual HVAC or refrigeration unit (Tons)
- Q total = Total cooling capacity of all HVAC or refrigeration equipment (Tons)



ENERGY EFFICIENCY

Documentation Required:

Provide a declaration signed by a responsible party declaring that the building HVAC systems do not use HCFC based refrigerants.

Approach and Methodologies:

Survey the market for all HCFC. Such systems are also available in smaller capacities. Install HVAC which does not use HCFC based refrigerants.



Off-Site Green Power, 25%

Construction Submittal

EE Credit 5

Points: 5 - 10

Goal:

Encourage investments in off-site renewable energy technologies to be exported to the grid.

Compliance Options:

Demonstrate the project has invested in off-site green power for atleast 25% of the annual energy consumption in developer’s scope for atleast 2 years. Points are awarded as follows:

Points for Off-Site Green Power

Percentage for annual green power generation	Points
≥ 25%	5
≥50%	10

Documentation Required:

Provide documents indicating the green power provider with the contract details. Total annual energy consumption and total annual green power purchase need to be provided. The energy consumption values should be expressed in kWh.

Approach and Methodologies:

Estimate the energy needs of the building on annual basis. Install green power plants off-site which meet the 25 % of the total energy requirement of the building. Green power can be derived from solar, wind, geothermal, biomass, small hydel power plants, etc.,

MATERIALS & RESOURCES

MATERIALS & RESOURCES

Separation of Waste, Post Occupancy

Design Submittal

MR Mandatory Requirement 1

Goal:

Segregate waste generated, right at source (post occupancy) so as to prevent such waste being sent to landfills.

Compliance Options:

Develop a waste management plan and identify methods to segregate & dispose the waste efficiently. Identify local agencies/ recyclers to collect and dispose the segregated waste.

The following methods can be incorporated for solid waste segregation & disposal:

- Provide centralised collection & storage area for recyclable waste such as paper, glass, metal, cardboard, plastics, e-waste & organic waste, as applicable.
- Garbage segregation shall be as per Municipal Solid Waste (MSW) Management & Handling Rules, 2000

Note:

For MSW (Management & Handling) Rules, 2000 refer Research & Publications at www.green-ensys.org

Documentation Required:

Provide details on the waste management plan adopted in the zone. Submit detailed drawings showing the common waste collection area in the zone.

Approach and Methodologies:

Allocate suitable area for sorting out dry and wet wastes. Examine the scope for recycling items of waste collected from the zone. Identify local vendors/ recyclers of waste material such as paper, glass, plastic, cardboard, metal, organic wastes and 'e' wastes & batteries. Educate the occupant about recycling methods within the building and zone.



Waste Reduction, During Construction, 50%

Construction Submittal

MR Credit 1

Points: 1 - 2

Goal:

Minimise construction waste being sent to landfills, during construction.

Compliance Options:

Avoid atleast 50% of the waste generated during construction from being sent to landfills and incinerators. Segregate waste generated during construction and subsequent diversion for recycling or reuse. Calculate percentage either by weight or volume. Points are awarded as below:

Points for Waste Reduction, During Construction

Drought tolerant species as a percentage of total landscaped area	Points
≥ 50%	1
≥75%	2

Documentation Required:

Submit records tabulating the total waste material generated, quantities of waste which were diverted from landfills and means by which the waste is diverted.

Approach and Methodologies:

Collect all construction debris generated on site. Segregate these waste based on their utility. Examine means of sending such waste to manufacturing units which use them as raw materials. Typical construction debris generated during construction in the zone include broken bricks, steel bars, broken tiles, glass, wood waste, paint cans, cement bags, packing materials, etc.,

Develop local vendors to handle and divert the waste for recycling or reuse.

MATERIALS & RESOURCES

Organic Waste Management, Post Occupancy, 50% *Design Submittal***MR Credit 2****Points: 1- 2****Goal:**

Ensure effective organic waste management in the zone, post occupancy.

Compliance Options:

Install on-site treatment plant to treat atleast 50% of organic waste generated in the zone. The output from such systems like manure, power, etc., should be reused *in-situ*. Points are awarded as below:

Points for Organic Waste Management, Post Occupancy

Percentage of treated organic waste	Points
≥ 50%	1
≥70%	2

Note:

Organic waste includes household kitchen waste and garden waste.

Documentation Required:

Submit design details of the organic waste treatment plant installed.

Approach and Methodologies:

Calculate the quantum of organic waste generated in the zone. Design the waste treatment plant with suitable capacity to efficiently manage the waste and recover resources. Typical technologies recognised are vermicomposting, digesters, gasifiers, etc.,



Materials with Recycled Content, 10%

Construction Submittal

MR Credit 3

Points: 1 - 2

Goal:

Encourage the use of products which contain recycled materials to reduce environmental impacts associated with the use of virgin materials.

Compliance Options:

Select materials having recycled content such that the total recycled content constitutes atleast 10% (by cost; civil & interior materials only) of the materials used in the zone. Points are awarded as below:

Points for Materials with Recycled Content

Percentage of recycled content	Points
≥ 10%	1
≥20%	2

Notes:

- a. *Material Cost = Total Cost – (Labour Cost + Installation Cost)*
- b. *If Labour and Installation cost is not known, the default material cost can be considered as 60% of the total cost of the material*
- c. *Cost of mechanical, electrical and plumbing systems need not be considered in the total material cost*

Documentation Required:

Provide details on all materials (civil and interior only) used in the zone along with the material cost. Specify recycled content in the materials used. Submit letters from manufacturers specifying the recycled content of the materials used in the zone.

Approach and Methodologies:

Survey the materials with recycled content and identify local suppliers. Some of the materials with recycled content are steel, cement, fly ash blocks, tiles, glass, false ceiling, aluminium and composite wood.



MATERIALS & RESOURCES

Local Materials, 50%

Construction Submittal

MR Credit 4

Points: 1 - 2

Goal:

Encourage the use of building materials available locally, thereby, minimising the associated environmental impacts.

Compliance Options:

Ensure atleast 50% of the building materials (by cost; civil & interior materials only) to be sourced locally within a radius of 500 km. Points are awarded as follows:

Points for Local Materials

Percentage of local materials	Points
≥ 50%	1
≥75%	2

Documentation Required:

Provide calculations demonstrating that the zone uses the required percentage of local materials in terms of cost. Provide letters from the manufacturers indicating the distance from the place of manufacture to the zone.

Approach and Methodologies:

Set a project goal for utilisation of locally sourced materials from identified manufacturers. During construction, ensure that the specified local materials are utilised and quantify the total percentage of local materials used.



Low VOC Materials

Construction Submittal

MR Credit 5

Points: 1-2

Goal:

Encourage the use of materials with low volatile organic compounds so as to reduce adverse health impacts for building occupants.

Compliance Options:

For adhesives and sealants used within the interiors ensure that the volatile organic compounds (VOC) content does not exceed the limits as specified in the table below. **(1 point)**

AND

Use paints and coatings including primers with low or no VOC content to the extent of 90% of interior wall surface area. **(1 point)**

VOC Limits for Materials

Type of material	VOC Limits in grams/ litre (less water)
Adhesives & Sealants:	
Multipurpose construction adhesives	100
Panel adhesives	50
Sheet applied rubber lining operations	850
Structural glazing adhesive	100
Tile adhesives	65
Wood Adhesive	30
Paints Coatings:	
Anti-corrosive/ anti-rust paints	250
Flat paints (Mat)	50
Non-flat paints (Glossy)	150
Primers	50
Wood Varnish	350



MATERIALS & RESOURCES

Documentation Required:

Provide letters/ material safety data sheets (MSDS) from the manufacturer indicating the VOC limit of the paints used.

Approach and Methodologies:

Develop a project outline specification and include low or no VOC materials as a criterion for interior material selection. List all possible interior materials which can have low VOC content. Research and specify no or low VOC materials based on durability, performance and environmental characteristics.

INNOVATION AND DESIGN PROCESS



INNOVATION AND DESIGN PROCESS

Innovation and Design Process

Design / Construction Submittal

ID Credit 1

Points: 1 - 3

Goal:

Provide design teams and projects the opportunity to be awarded points for exceptional performance above requirements set by the IGBC Green SEZ Rating System and/or innovative performance in Green Building categories not specifically addressed by the IGBC Green SEZ Rating System.

Compliance Options:

Credit 1.1 : Innovation and Design Process

Identify the intent of the proposed innovation credit, the proposed requirement for compliance, and the proposed documentation to demonstrate compliance, and the design approach used to meet the required elements.

Credit 1.2 : Innovation and Design Process

Same as credit 1.1

Credit 1.3 : Innovation and Design Process

Same as credit 1.1

Documentation Required:

Provide narratives, drawings, photographs, calculations and manufacturers cut sheets, whichever applicable

Approach and Methodologies:

The following can be considered for credit points under innovation:

- Exemplary performance under any of the credits.
- Strategies or measures not covered by IGBC Green SEZ such as
 - Adoption of passive architecture techniques
 - Green education, etc.,



IGBC Accredited Professional

Design Submittal

ID Credit 2

Point: 1

Goal:

Support and encourage the involvement of IGBC AP accredited professionals in the green SEZ project.

Compliance Options:

Atleast one principal participant of the project team shall be an IGBC Accredited Professional (IGBC AP).

Documentation Required:

Submit IGBC AP certificate of principal participant.

Approach and Methodologies:

Educate the project team members about the green SEZ design & construction and application of the IGBC SEZ Rating System at the design stage of the project.



ABBREVIATIONS

ASHRAE

The American Society of Heating, Refrigerating and Air-conditioning Engineers

COP

Coefficient of Performance

ECBC

Energy Conservation Building Code

HVAC

Heating Ventilation and Air-conditioning

LPD

Lighting Power Density

NBC

National Building Code

SHGC

Solar Heat Gain Coefficient

SRI

Solar Reflective Index

VOC

Volatile Organic Compound

About CII-Godrej GBC

CII – Sohrabji Godrej Green Business Centre (CII – Godrej GBC), a division of Confederation of Indian Industry (CII) is India's premier developmental institution, offering advisory services to the industry on environmental aspects and works in the areas of Green Buildings, Energy Efficiency, Water Management, Renewable Energy, Green Business Incubation and Climate Change activities.

The Centre sensitises key stakeholders to embrace green practices and facilitates market transformation, paving way for India to become one of the global leaders in green businesses by 2015.

About IGBC (Indian Green Building Council)

The Indian Green Building Council (IGBC), part of Confederation on Indian Industry (CII) was formed in the year 2001. The vision of the council is to usher in green building movement in India and facilitate India to become one of the global leaders in green building by 2010.

The council offers a wide array of services which include developing new green building rating programmes, certification services and green building training programmes. The council also organises Green Building Congress, its annual flagship event on green buildings.

The council is committee-based, member-driven and consensus-focused. All the stakeholders of construction industry comprising of architects, developers, product manufacturers, corporate, Government, academia and nodal agencies participate in the council activities through local chapters.



For more information on Green Buildings, please contact



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