Confederation of Indian Industry

IGBC Health & Well-being Rating
for Occupants

Pilot Version

Abridged Reference Guide

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IGBC

IGBC Health & Well-being Rating

Foreword from the Indian Green Building Council (IGBC)

India is witnessing tremendous growth in construction sector. The sector is growing at a rapid pace owing to the awareness and importance of good health and well-being. As the sector continues to grow, it would pose host of challenges including environmental sustainability.

The Green Building movement in India triggered when CII-Sohrabji Godrej Green Business Centre (IGBC Head Quarters) building in Hyderabad was awarded with the first Platinum rated green building rating in India. To sensitise various forms of built environment, CII established the Indian Green Building Council (IGBC) in 2001. Since then, Green Building movement in India has gained tremendous impetus over the years. Today, more than 4000 green building projects are implementing various green strategies.

The Council encourages, builders, developers, owners, architects, doctors, consultants and several other stakeholders to embrace green, thereby contributing to the National goals on sustainability. The Council's activities have enabled a market transformation with regard to green building materials and technologies. IGBC continuously works to provide tools that facilitate the adoption of green building practices in India.

As a next chapter of the green building movement in India, it is vital to understand the relation between occupant's health & well-being and built environment. The development of IGBC Health & Well-being Rating System® is another important step in this direction. The rating would further strengthen the area of well-being and would guide facilities to be healthy and add to the overall happiness of the occupants.

Acknowledgement

The IGBC Health & Well-being Rating has been made possible through the efforts of many dedicated volunteers, staff members and others in the IGBC community. This rating has been developed by core committee members and other professionals. We extend our deepest gratitude to all these members.

Introduction

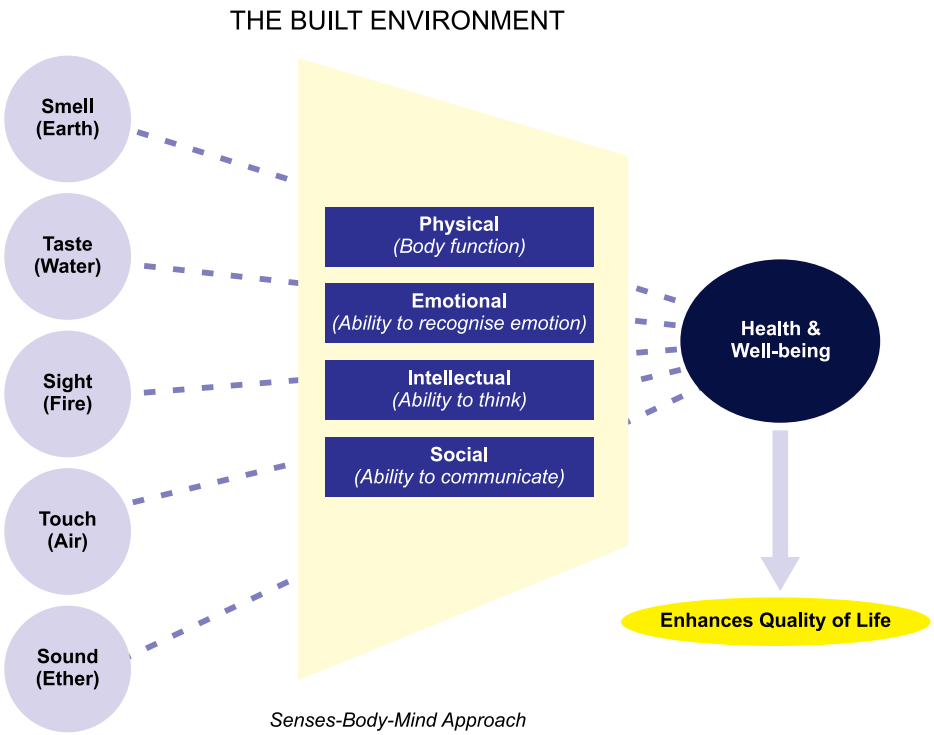
1. Built Environment, Health and Well-being

World Health Organisation (WHO) highlights the importance of Wellness and defines 'Health as a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity'. Wellness is an extremely powerful element that can play a significant role in occupant engagement, productivity, talent retention, creativity and innovation.

How people 'function' and 'feel' within personal and social circles strongly reflects the kind of environment they live in. The way people 'function' reflect their connection with their surroundings. Therefore the built environment plays a vital role in health & well-being of the occupants and should be closely knitted with people centric design.

The occupants perceive the built environment through their five senses - Smell, Taste, Sight, Touch and Sound. The five elements of nature - Earth, Water, Fire, Air and Ether, which make up the built environment, affect physical, emotional & intellectual and social well-being of the occupants through these five senses. Health and physical well-being of the occupants can be enhanced by improving the features of the built environment.

A holistic 'Whole Body Mind' approach- treating a person as a whole including his/her body and mind, is required for enhancing well-being of occupants. The whole body and mind approach addresses physical function, ability to recognise emotion, think and communicate. This requires a conducive atmosphere and a blend of Behavioural, Humanistic and Spiritual Psychological approach within working environment. The holistic approach enhances physical, emotional, intellectual and social well-being and ultimately the quality of life of the occupants.



Senses-Body-Mind Approach

2. Various aspects of Health & Well-being

Health and Well-being of an individual is addressed holistically only when the following aspects have been taken care:

1. Physical - Body function
2. Emotional - Ability to recognise
3. Intellectual - Ability to think and
4. Social - Ability to communicate

The above aspects play a vital role in enhancing the health and well-being of an individual occupant in a building and hence the overall quality of life.

2.1 Physical Well-being:

Physical well-being is a fundamental requirement of an individual occupant, which helps in completing his/her day to day activities without undue fatigue or physical stress. The various factors in a built environment that affects the physical well-being are the air we breathe, the water we drink, the nutritional choices and transit choices we adopts. The perception of spaces we interact with and their use, directly impact our physical health & well-being.

The illustration below highlights the influencing factors of a built environment on physical Well-being.

Aspects of Physical Well-being

2.2 Emotional & Intellectual Well-being:

Emotional well-being is the ability to comprehend the challenges one encounters. The ability to acknowledge and share feelings of hope, happiness, anger, fear, sadness in a productive manner contributes to our Emotional Well-being.

Intellectual well-being encourages exploring new concepts, the desire to learn, seeking new challenges and improving skills. It opens occupants' mind towards new ideas and experiences that can be applied to personal decisions and group interaction.

A built environment creates an atmosphere that caters to the Emotional and Intellectual well-being, strengthening the spirit of the occupants'. To sustain the atmosphere, a built environment needs to be combined with appropriate policies and measures at organisation level. A true measure of this is reflected through the satisfaction level of the occupants, a considerable degree of autonomy and sense of purpose in life.

Some of the factors which contribute to emotional and intellectual Well-being of the occupants in a built environment are depicted below.

Aspects of Emotional & Intellectual

2.3 Social Well-being:

Social Well-being is a positive sense of belonging and social inclusiveness which enable occupants to connect and function in society. It connects them to the society helping them establish and maintain positive relationships with family, friends and colleagues. Some of the factors which contribute significantly for enhancing the social Well-being include the initiatives / activities towards improving community engagement, safety and the awareness on Well-being.

The illustration below highlights the influencing factors of a built environment on Social Well-being.

Aspects of Social Well-being

3. Impacts of Health & Well-being - Present Context

Over the past years an increasing body of evidence has shown that subjective well-being can be realised through various means, such as surveys, and its impacts measured through all related non-communicable diseases. Non-communicable diseases, more commonly known as chronic diseases are one of the most common indicator of Physical, Emotional & Intellectual and Social well-being. NCDs are the result of a combination of physiological, psychological, environmental and behaviours factors. Recent studies by WHO has indicated that more that 50% of the world lives with chronic diseases.

The NCDs prevailing very commonly includes Cardiovascular diseases (CVD), Cancer (CNR), Chronic Respiratory Diseases (CRD), Diabetics (DBS), Visual & Hearing Impairment (VHI) and Bone & Joint Disorders (BJD). The Well-being parameters discussed so far have direct / indirect relation to Non-communicable diseases. Absence or deterioration of Well-being parameters and the possible non-communicable disease that would affect the human beings are given below.

Wellbeing Parameters (Macro Level)		5 Senses				
		Smell	Taste	Sight	Touch	Sound
PHYSICAL WELL-BEING	Indoor Air Quality	CRD/ CNR		VHI		
	Water Quality		CNR			
	Thermal Comfort				CVD	
	Visual Comfort			VHI		VHI
	Acoustic Comfort					
	Olfactory Comfort	CRD				
	Ergonomics				BJD	
	Nutrition Enhancement		CVD/ CNR/ DBS			
	Health & Sanitation	CRD				

Wellbeing Parameters (Macro Level)		5 Senses				
		Smell	Taste	Sight	Touch	Sound
EMOTIONAL & INTELLEC-TUAL WELL-BEING	Recreational & Cultural	CRD			CVD/DBS	
	Greenery- Interior & exterior					
	Connectivity with Nature			VHI		
	Employee Friendly Environment	CVD / DBS				
	Bonding with employees	CVD / DBS				
	Spiritual wellbeing	CVD / DBS				

Wellbeing Parameters (Macro Level)		5 Senses				
		Smell	Taste	Sight	Touch	Sound
SOCIAL WELL-BEING	Community engagement	CVD / DBS				
	Safety & Security	CVD / DBS				

CHRONIC DISEASES

Cardiovascular diseases	CVD	Diabetes	DBS
Cancer	CNR	Visual & Hearing Impairment	VHI
Chronic respiratory diseases	CRD	Bone & Joint Disorders	BJD

4. Indian Perspective on Well-being

Indian culture has a rich spiritual heritage and discourse and well-being has been an integral aspect of ancient traditions of India. Intellectual wellness is viewed as a positive attribute, emotional well-being, the capacity to live a full and creative life, and the flexibility to deal with life's inevitable challenges. Ancient Indian thought has an endless array of techniques to raise human consciousness and is a storehouse of rich psychological insights and nuances of processes and constructs such as emotional & intellectual, physical and social well-being.

Although there are differences in certain details, there is a wide agreement that the health of an individual is not just the state of his physical body but an aggregate of the body, senses, mind and soul. An unhealthy state of mind is often the cause of illness and to remain disease-free it is important to have a healthy mind and body. The table below demonstrates how the five elements are connected with our body.

Element	Consciousness	Organ	Perception
Earth	Olfactive	Nostrils	Smell
Water	Gustative	Tongue	Taste
Fire	Visual	Eyes	Form
Air	Tactual	Skin	Touch
Ether	Auditive	Ears	Sound

Relation between the five elements and consciousness in a built environment, and their perception through organs

5. Scope and Applicability

The IGBC Health & Well-being Rating is designed to certify new buildings and existing buildings of all commercial developments. To facilitate wider implementation, the rating system is made simple, practical and easily implementable. All related communicable and non-communicable diseases for various measures have also been considered. The IGBC Health & Well-being Rating is applicable for buildings which are occupied and in operation for at least 1 year.

6. IGBC Health & Well-being Rating

IGBC would strive to reach out the concepts of healthy building amongst all typologies of buildings. This is a wonderful opportunity for the country to be a trend-setter amongst other countries in addressing occupant well-being.

IGBC Health & Well-being Rating addresses various features under the following categories:

- ❖ Physical Well-being
- ❖ Emotional and Intellectual Well-being
- ❖ Social Well-being
- ❖ Innovation & Design

The guidelines detailed under each mandatory requirement & credit enables the design and construction of healthy buildings. However, every building should meet certain mandatory requirements, which are non-negotiable.

The various levels of rating awarded are:

Certification Level	Credits	Recognition
Certified	50-59	Best Practices
Silver	60-69	Outstanding Performance
Gold	70-79	National Excellence
Platinum	80-100	Global Leadership

6.1 Anticipated Benefits

Healthy living practices and measurement techniques in the built environment can help in addressing the following:

- Awareness Creation amongst occupants
  - Awareness on indoor air quality, water quality and consumption requirement, along with their impacts
  - Awareness on importance of fitness, nutritional choices and eco-friendly practices
- Improvements in Built environment
  - Improved Visual comfort, Thermal comfort, Olfactory comfort and Acoustic comfort for the building occupants
  - Improved Hygiene and better sanitation
  - Caring environment and safer surroundings
- Positive impact on Health of Occupants
  - Lower sickness rates, spread of diseases, physical strain and associated health impacts in occupants
  - Enhanced fitness levels of the occupants
  - Reduces health hazards and related Communicable and Non Communicable Diseases such as Chronic Respiratory Diseases (CRD), Cancer, Visual and Hearing Impairments, Cardiovascular Diseases, Chronic Respiratory Diseases and Bone & Joint Disorders etc.
  - Improved quality of life, health and well-being of the occupants
- Financial Benefits
  - Reduction in medical expenditures
  - Reduction in absenteeism
  - Increased Productivity

6.2 Registration

Project teams interested in IGBC Health & Well-being Rating Certification for their project must first register with IGBC. Projects can be registered on IGBC website (www.igbc.in) under 'IGBC Health & Well-being Rating'. The website includes information on registration process. Registration is the initial step which helps establish contact with IGBC and provides access to the required documents, templates, important communications and other necessary information.

IGBC web site will have all important details on IGBC Health & Well-being Rating registration & certification - process, schedule and fee.

6.3 Certification

6.3.1 Documentation

To earn the IGBC Health & Well-being Rating, the project must satisfy all the mandatory requirements and the minimum number of credit points.

The project team is expected to provide supporting documents at preliminary/ design, final/ construction and performance stage of submission for all the mandatory requirements and the credits attempted.

The project needs to submit the following:

- General information of project including:
- Filled-in Master Template (in excel format)
- Narratives and supporting documentation such as drawings, calculations (in excel sheets), Test reports, declarations/ contract documents, purchase invoices, manufacturer cut sheets/ letters/ material test reports, etc., for each mandatory requirement/ credit
- In addition, project teams can refer the 'Documentation Required for Certification' section provided under each mandatory requirement/ credit.

The necessary details are mentioned in this guide, under each mandatory requirement and credit.

Documentation is submitted in two phases - preliminary submittal and final submittal:

- The preliminary submission involves those credits which can be evaluated at the design stage. The 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 are provided within 35 days.
- The next phase involves submission of clarifications to preliminary review queries and final submittal. The construction document is submitted on completion of the project. This review would be provided within 35 days, after which the rating is awarded.
- It is important to note that the mandatory requirements/ credits earned at the preliminary review are only considered as anticipated. These mandatory requirements/ credits are not awarded until the final documents are submitted, along with additional documents showing implementation of design features. If there are changes in any 'credit anticipated' after preliminary review, these changes need to be documented and resubmitted during the final review.

- ❖ IGBC will recognise a Healthy building that achieves one of the rating levels with a formal letter of certification and a mountable plaque.

6.3.2 Physical Verification & Monitoring

Before the award of rating, the project would be physically audited to verify implementation of the design measures.

6.4 Fee

Registration, Certification, Appeal and CIR fee details are available on IGBC website (www.igbc)

IGBC Health & Well-being Rating - Checklist		
Modules		Points
Physical Well-being		
Indoor Air Quality		
IAQ Mandatory Requirement 1	Tobacco Smoke Control	Required
IAQ Mandatory Requirement 2	Fresh Air Ventilation	Required
IAQ Credit 1	Monitor Indoor Air Quality	7
IAQ Credit 2	Reduce Indoor emissions	3
		10
Water Quality		
WQ Mandatory Requirement 1	Access to Drinking Water	Required
WQ Credit 1	Quality of Drinking Water	3
WQ Credit 2	Quality of Recycled Water	3
		6
Comfort		
CT Mandatory Requirement 1	Occupant Satisfaction Survey	Required
CT Credit 1	Visual Comfort	11
CT Credit 2	Thermal Comfort	6
CT Credit 3	Acoustic Comfort	6
CT Credit 4	Olfactory Comfort	4
CT Credit 5	Ergonomics	4
CT Credit 6	Comfort for Differently Abled Occupants	4
		35
Health & Sanitation		
HS Credit 1	Housekeeping	2
HS Credit 2	Eco-friendly Chemicals	1
HS Credit 3	Control of Outdoor Dust Pollutants	1
		4
Fitness & Nutritional Choices		
FNC Credit 1	Fitness Facilities	4
FNC Credit 2	Awareness on Physical Fitness	3
FNC Credit 3	Nutritional Choices	3
		10
Emotional and Intellectual Well-being		
E&IW Credit 1	Exterior Connectivity to Occupants	12
E&IW Credit 2	HR Policies	6
E&IW Credit 3	Spiritual Well-being	2
		20

Social Well-being		
SW Credit 1	Recreation and Culture	4
SW Credit 2	Employee safety	5
SW Credit 3	Service to Society	1
		10
Innovation & Design		
ID Credit 1	Innovation & Design	1
ID Credit 2	Innovation & Design	1
ID Credit 3	Innovation & Design	1
ID Credit 4	Innovation & Design	1
ID Credit 5	Innovation & Design	1
		5
TOTAL		**100**
Annexures:		
Annexure-I	Minimum Ventilation Rates in Breathing Zone	
Annexure-II	Measurement Methodology of Indoor Air Quality Parameters	
Annexure-III	Specifications of the Instrument to be used for Measuring IEQ Parameters	
Annexure-IV	Pesticide Residues Limits and Test Method	
Annexure-V	Required Air Speed to Offset Increased Temperature	
Annexure-VI	Measurement Methodology for Thermal Comfort	
Annexure-VII	Reverberation Time	
Annexure-VIII	Measurement Methodology for Acoustic Comfort	

PHYSICAL WELL-BEING

Indoor Air Quality

Tobacco Smoke Control

IAQ Mandatory Requirement 1

Required

Intent:

Avoid exposure of non-smokers to the adverse health impacts arising due to passive smoking

Requirements:

- **'No smoking' signage at the main entrance and prominent locations**
- **No Smoking Policy**
  - Demonstrate that smoking is prohibited in the building, and is in accordance with the regulations of Ministry of Health & Family Welfare, Government of India

(OR)

- **Isolated Smoking Zone**
  - Provide smoking zone 10 meters away from entry ways and fresh air intake, incase prohibition of smoking is not possible within the building
  - The smoking zone should have the following features:
    - Physically separated with deck to deck partitions on all four sides
    - Entrance with an automatic door kept in close position
    - Air flow systems that:
      - Exhaust the air directly outside and do not allow exhaust air to mix with the supply air
      - Do not re-circulate the air or transfer from a smoking area to non-smoking areas
      - Maintain lower pressure compared to the adjacent spaces
  - In case of an assigned outdoor smoking area, locate such area at a minimum of 10 meters from all outdoor air intakes (entrance doors, window openings etc.)

    Source: Guidelines for Law Enforcers for effective implementation of Tobacco Control Laws 2013, Ministry of Health & Family Welfare, Government of India

Documentation Required:

- Photographs of 'no smoking' signage installed at the main entrance and other prominent locations

No Smoking Policy

- No smoking policy document adopted by the project

Isolated Smoking Zone

- Design details of the designated smoking zone within the building
- Plan indicating the location of the outside smoking zone and photographs with signage

Fresh Air Ventilation

IAQ Mandatory Requirement 2

Required

Intent:

Provide quality fresh air within the building, thereby enhancing health, wellness, productivity and cognitive ability of the occupants

Requirements:

Demonstrate that fresh air in the building is maintained for mechanically and naturally ventilated spaces

❖ **Mechanically Ventilated Spaces**

- The fresh air ventilation in all regularly occupied areas should meet the minimum ventilation rates, as prescribed in NBC-2016, Part 8, Section- 3, Table 3 (minimum ventilation rate in breathing zone) or ASHRAE 62.1-2016
- Ventilation requirement in some of the regularly occupied areas are as below:

Minimum Ventilation Rates in Breathing Zone				
Occupancy Category	People Outdoor Air rate (Rp)		Area Outdoor Air Rate, (Ra)	
	Cfm / Person	1 / s Person	Cfm / fl2	1 / s.m2
Office Building				
Office Space	5	2.5	0.06	0.3
Reception areas	5	2.5	0.06	0.3
Main entry lobbies	5	2.5	0.06	0.3

Refer Annexure-I ‘Minimum Ventilation Rates in Breathing Zone’ for elaborative list of spaces’

Notes:

- *Exhaust outlets shall be located at a minimum height of 3 m away from ground level and away from doors, occupied area and operable windows.*
- *Fresh air intake shall be located atleast 8 m away from exhaust stacks, cooling tower and/or any other polluting sources.*

❖ **Naturally Ventilated Spaces**

- Provide operable windows and / or doors to the exteriors, in all regularly occupied areas

Category	Percentage of Openable Area to Total Carpet Area
Regularly Occupied Areas (< 100 sq.m)	8%
Regularly Occupied Areas (> 100 sq.m)	12%

General note:

- *In case the ambient air quality is inferior compared to the Class-C threshold limits (P.M 2.5, CO2, Ozone) specified as part of IAQ credit-1 'Monitor Indoor Air Quality' then it is recommended to close all the openable windows and adopt any of the air purifying measures such as air purifiers, air purifying plants etc; to meet the required indoor air quality.*

Documentation Required:

Mechanically ventilated spaces

- ❖ Report indicating the ambient air quality within the site
- ❖ Floor plans highlighting list of regularly occupied spaces, fresh air inlets and exhausts.
- ❖ Calculations indicating fresh air intake volumes in all regularly occupied spaces, for each zone, as per Ventilation Rate Procedure prescribed in NBC 2016.

Naturally ventilated spaces

- ❖ Report indicating the ambient air quality within the site
- ❖ Floor plans with window and door schedule.
- ❖ Calculations indicating the openable area of windows and doors to the carpet area, for each of the regularly occupied spaces in percentage.
- ❖ In case the ambient air quality is inferior, highlight the measures taken to meet the required air quality along with the supporting photographs

Monitor Indoor Air Quality

IAQ Credit 1

Points: 7

Intent:

Monitor indoor air quality thereby enhancing the awareness amongst occupants on the impacts of air pollutants

Requirements:

❖ **Monitor** *Points:1, 3, 6*

➢ Monitor IAQ parameters in all regularly occupied spaces and ensure that 80% of the measurements are well within the threshold values.

Parameters	Threshold values			Frequency of Monitoring
	Class A	Class B	Class C	
CO_2	Max 350 ppm above ambient	Max 440 ppm above ambient	Max 530 ppm above ambient	Daily Monitoring
PM 2.5	< 15 µg/m³	< 20 µg/m³	< 25 µg/m³	
PM 10	< 50 µg/m³	< 75 µg/m³	< 100 µg/m³	
CO	< 2 ppm	< 6 ppm	< 9 ppm	
O_3	< 50 µg/m³	<75 µg/m³	<100 µg/m³	Quarterly Monitoring
TVOC * (equivalent to isobutylene)	< 500 µg/m³	< 650 µg/m³	< 800 µg/m³	
SO_2	< 40 µg/m³	< 80 µg/m³	-	
NO_2	< 40 µg/m³	< 80 µg/m³	-	

Inputs from 'IGBC Rating Guidelines' and 'Indoor Environment Quality Standard, ISHRAE Standard - 10001:2016'

Notes:

➢ *Threshold values of IAQ Parameters:*

- *Class C (Minimum applicable) - It defines the minimum acceptable value for critical parameters of IAQ elements. The project meeting class C threshold values will gain '1' credit point.*
- *Class B (Acceptable) - It defines acceptable value of parameters of IAQ elements in the space. The project meeting class B threshold values will gain '3' credit points.*
- *Class A (Aspiration) - It defines aspirational values for parameters of IAQ elements in the space. The project meeting class A threshold values will gain '6' credit points.*

➢ *The measurement methodology for IAQ parameters shall be as per Annexure-II. The project can also adopt Chemical methods as per IS 5182 Part 2 for SOx, IS 5182 Part 6 for NOx and IS 5182 Part 9 for O_3.*

- *The minimum resolution and accuracy of the instruments shall be as per Table 10-'Specifications of the instruments to be used for measuring IEQ parameters' of Indoor Environment Quality Standard, ISHRAE Standard - 10001:2016. Refer Annexure-III for details.*

❖ **Display:** *Point: 1*

- Display the parameters that are monitored on a daily basis in a prominent location such as entrance, waiting lounges, work areas etc, to create awareness amongst the occupants and visitors.
  - CO_2
  - CO
  - PM 2.5
  - PM 10
  - TVOC
  - O_3

Documentation Required:

❖ Air quality report with the details of daily and quarterly monitored parameters

❖ Photograph of display of monitored parameters

❖ Details of measures adopted to improve indoor air quality

Reduce Indoor emissions

IAQ Credit 2

Points: 3

Intent:

Monitor and implement measures to reduce indoor emissions & microbes, thereby reducing the associated adverse health impacts on the occupants

Requirements:

❖ **Monitor** *Points: 1, 3*

➢ Monitor indoor emissions in all regularly occupied spaces and ensure that 80% of the measurements are well within the threshold values.

Parameters	Threshold values Class A	Threshold values Class B	Frequency of Monitoring
Indoor Emissions & Microbial Count			
CH_2O	< 30 µg/m³	< 100 µg/m³	Quarterly Monitoring
Total Microbial Count	50 CFU/ m³	150 CFU/ m³	

Inputs from Indoor Environment Quality Standard, ISHRAE Standard - 10001:2016 and WHO Standards

Notes:

➢ *Threshold values of IEQ Parameters:*

- *Class B (Acceptable) - It defines acceptable value of parameters of IEQ elements in the space. The project meeting class B threshold values will gain '1' credit point.*
- *Class A (Aspiration) - It defines aspirational values for parameters of IEQ elements in the space. The project meeting class A threshold values will gain '3'' credit point.*

➢ *The measurement methodology for IAQ parameters shall be as per ISHRAE Standard - 10001:2016, Table 8 - measurement methodology for IAQ parameters (ISO: 16000-1 and ISO: 16000-32). Refer Annexure-II for details.*

➢ *The minimum resolution and accuracy of the instruments shall be as per Table 10-'Specifications of the instruments to be used for measuring IEQ parameters' of Indoor Environment Quality Standard, ISHRAE Standard - 10001:2016. Refer Annexure-III for details.*

Documentation Required:

❖ Detailed report on the indoor emissions.

❖ Details of measures adopted to reduce indoor emissions and microbes.

Water Quality

Access to Drinking Water

WQ Mandatory Requirement 1

Required

Intent:

Provide access to drinking water for adequate consumption by the occupants for their health and well-being.

Requirements:

- Water Quantity
  - Provide minimum 2 liters of drinking water per person per day
- Accessibility (location, distance)
  - Provide minimum one water fountain/ dispenser per floor

Documentation Required

- Total number of occupants and the quantity of drinking water made available per day for their consumption.
- Highlight the number of water fountain/ dispenser/ bubblers provided per floor along with sample photographs.

Quality of Drinking Water

WQ Credit 1

Points: 3

Intent:

Ensure quality drinking water to minimise the risk of water-borne diseases

Requirements:

❖ **Municipal / Borewell Water** *Points: 1, 3*

➢ Demonstrate that the water is treated to meet the following drinking water specifications as per IS 10500- 2012 'Drinking Water- Specification Standard':

Characteristic	Requirement (Acceptable Limit)
Physical Parameters	
Colour, Hazen units	5
Odour	Nil
pH value	6.5 - 8.5
Turbidity, NTU	1
Total dissolved solids, mg/l	500
General Parameters	
Total Hardness CaCO3, mg/l	200
Total alkalinity as calcium carbonate, mg/l, Max	200
Calcium (as Ca), mg/l	75
Magnesium as Mg, mg/l	30
Chloride as Cl, mg/l	250
Sulphate as SO4, mg/l	200
Iron as Fe, mg/l	0.3
Toxic Parameters	
Lead	0.01
Mercury	0.001
Cadmium	0.003
Total Chromium	0.05
Total Arsenic	0.01
Pesticide	Annexure-IV
Bacteriological Parameter	
E. coli	Shall not be detectable in any 100 ml sample

(AND / OR)

❖ **Third Party Supply**

➢ Ensure that supplied water meets the above drinking water specifications as per IS-10500 standard

Note:

- *Testing of physical parameters will gain 1 credit and testing of all parameters will gain 3 credits*

Documentation Required

❖ Quarterly test reports of potable water

Quality of Recycled Water

WQ Credit 2

Points: 3

Intent:

Monitor the quality of recycled water to minimise the risk of water borne diseases

Requirements:

- Measure the quality of treated recycled water, so as to ensure compliance to MOEF Norms / CPCB norms / State Pollution Control Norms. *Point: 1*
- If the treated water is reused for flushing, cleaning and other similar applications, ensure physical parameters are as per IS 10500. *Points: 2*

Recycled Water as per CPCB-2015	
Parameters	Threshold limits
pH	6.5-9
BOD (mg/l)	Not more than 10
COD (mg/l)	Not more than 50
TSS (mg/l)	Not more than 20
NH4N (mg/l)	Not more than 5
N-total (mg/l)	Not more than 10
Fecal Coli form (MPN/100 ml)	Not more than 100

Characteristic	Requirement (Acceptable Limit)
Physical Parameters as per IS 10500: 2012	
Colour, Hazen units	5
Odour	Nil
Turbidity, NTU	1
Total dissolved solids, mg/l	500

Documentation Required

- Quarterly Test reports for the recycled water

Comfort

Occupant Satisfaction Survey

CT Mandatory Requirement 1

Required

Intent:

Ensure that the occupants are satisfied with the comfort conditions, thereby enhancing the Well-being and productivity of occupants

Requirements:

Conduct an occupant satisfaction survey for comfort parameters (visual comfort, thermal comfort, acoustics comfort, olfactory comfort, and ergonomics) and demonstrate that at least 70% of occupants are satisfied with the comfort parameters provided.

Documentation Required

- Report indicating the details of survey conducted and its results

  Note:

  - *The occupant survey shall be conducted by a third-party agency once in a year*

Visual Comfort

CT Credit 1

Points: 11

Intent:

Ensure adequate lighting to provide visual comfort for the occupants, thereby reducing strain on the eyes and associated health impacts

Requirements:

❖ **Day lighting** *Points: 1, 2, 3*

➢ Demonstrate through measurement approach that atleast 50% of regularly occupied spaces in the building achieves daylight illumination levels of minimum 110 Lux (and a maximum of 2,200 Lux), at horizontal working plane.

Percentage of regularly occupied areas	Points
50%	1
60%	2
70%	3

❖ **Illumination level** *Points: 1, 2, 3*

➢ Demonstrate the following:

♦ General illumination level of 215 lux is maintained in atleast 75% of the regularly occupied spaces

♦ Corrective measures are taken based on the survey for meeting the illumination level as per the comfort requirements of the occupants in the regularly occupies spaces

Percentage of regularly occupied areas	Points
75%	1
85%	2
95%	3

❖ **Brightness Relationship** *Point: 1*

➢ Demonstrate that atleast 75% of the regularly occupied spaces meets the requirement of brightness relationship specified in National Building Code- 2016.

Brightness relationship shall be as follows:

Brightness relationship	
Between the visual task and the adjacent areas like table top	3:1
Between the visual task and remote areas of room	10:1

Source: National Building Code-2016, Part 8 Section 1 - Lighting and Natural Ventilation, 4.1 Principles of lighting

❖ **Glare Index** *Point: 1*

➢ Demonstrate through lighting simulation that at least 75% of the regularly occupied spaces meet the requirement of limiting the Glare Index as specified in SP 41.1987- Functional requirement of buildings.

Type of spaces	Limiting Glare Index
General offices	19
Deep plan general offices	-
Computer workstation	-
Conference room	19
Executive offices	19
Business machine operation	19
Lobbies, Waiting rooms	-
Rest rooms	-
Interior parking areas	-

Source: SP 41 (1987): Handbook on Functional Requirements of Buildings (Other than Industrial Buildings), Table I- 'Recommended Values of Illumination and Limiting Values of Glare Index'

❖ **Occupant Satisfaction** *Points: 1,2, 3*

➢ Conduct an occupant satisfaction survey for visual comfort and demonstrate the following:

Occupied Spaces	The percentage of satisfied occupants		
	Class A	Class B	Class C
General Office space, Conference room, Workstations, Cafeteria/Restaurant, Common areas, Reception	90%	85%	80%

Notes:

- *Measurements shall be taken after installation of furniture, equipment & systems at work plane height at 9 am, 12 pm, and 3 pm, on a 10 foot square grid. To show compliance, consider the average of the measurements taken at 9 am, 12 pm, and 3 pm*
- *Areas with 2,200 Lux or more daylight illumination level should not be considered*
- *The measurement methodology for visual comfort parameter shall be as per ISHRAE Standard - 10001:2016, Section 6.4- Lighting Comfort*
- *The accuracy level of the instruments shall be as per Annexure-III- 'Specifications of the Instruments to be used for measuring IEQ parameters'*
- *The occupant survey shall be conducted by a third-party agency once in a year*

Documentation Required

Day lighting

- Daylight analysis report indicating daylight illumination levels measured at work plane height, for all the regularly occupied spaces in the building
- Floor/ roof plans with window and skylight schedule
- Photographs showing the building elevations (all sides) and interiors spaces at different floors

Optimal Illumination level and Brightness Relationship

- Lighting analysis report indicating optimum illumination levels measured at work plane height, and brightness relationship, for the regularly occupied spaces in the building
- Lighting analysis report highlighting the following:
  - Floor plans indicating the illumination level achieved at visual task, adjacent areas and remote area.
  - A table with the following details:
    - Regularly occupied spaces
    - Illumination levels at the working area, adjacent spaces and remote spaces
    - The brightness ratio achieved for each occupied space

Glare Index

- Lighting simulation report with the details of glare index for regularly occupied spaces

Occupant Satisfaction

- Occupant satisfaction survey report

Thermal Comfort

CT credit 2

Points: 6

Intent:

Provide comfortable indoor thermal environment, for enhanced productivity, health & well-being of occupants

Requirements:

❖ **Operative Temperature, Humidity and Air Velocity** *Points: 1, 2, 3*

➢ Demonstrate that the operating temperature, humidity and air velocity are maintained in regularly occupied spaces as below, for at least 75% of operating hours:

Type of Building/Space	Temperature (°C)		Humidity	Air Velocity
	Summer	Winter		
General Office space, Conference room, Workstations, Cafeteria/ Restaurant, Common areas, Reception	24.5 + 2.5	22.0 + 3.0	30 % – 70 %	< 0.2 m/s

Source: ISHRAE IEQ Standard 10001 - 2016

➢ For air velocity, higher than 0.2 m/s please refer Annexure-VI

Percentage of operating hours	Points
75 %	1
85 %	2
95%	3

❖ **Occupant Satisfaction** *Points: 1,2*

➢ Conduct an occupant satisfaction survey for thermal comfort and demonstrate the following:

Occupied Spaces	The percentage of satisfied occupants		
	Class A	Class B	Class C
General Office space, Conference room, Workstations, Cafeteria/Restaurant, Common areas, Reception	90%	85%	80%

Documentation Required:

❖ Report highlighting Air temperature, Humidity and Air velocity measurements taken at regular intervals and the percentage of operating hours the parameters are maintained

❖ Occupant satisfaction survey report

Notes:

- *The measurement methodology for thermal comfort parameter shall be as per Annexure-VI - Measurement Methodology for Thermal Comfort.*
- *The accuracy level of the instruments shall be as per Annexure-III 'Specifications of the instruments to be used for measuring IEQ parameters'*
- *The occupant survey shall be conducted by a third-party agency*

Acoustic Comfort

CT Credit 3

Points: 6

Intent:

Minimise noise levels and provide acoustically comfortable environment for the building occupants, to enhance productivity and reduce the associated negative health impacts

Requirements:

❖ **Noise Criterion and Reverberation Time** *Points: 1, 2, 3*

- Demonstrate atleast 50% of the regularly occupied space shall meet the recommended levels of Noise Criterion (NC) and Reverberation Time (RT)
- Noise Criterion for spaces shall not exceed the criteria as indicated in the table below

Space	Class B
Executive & private offices	35
Conference Rooms	35
Teleconference rooms	25 max
Open- plan office spaces	40
Corridors & lobbies	45

- Reverberation Time shall not exceed the criteria as indicated in the table below

Space	Reverberation Time (Sec)
Open Office Plan	<1.0
Meeting Rooms	< 0.8
Video Conference Rooms	<0.6
Collaborative spaces	<1.25
Private cabins	<1.0

Source: ISO 171-1

Refer Annexure-VII ‘Reverberation Time’ for elaborate list of spaces

Percentage of the regularly occupied space meeting the requirements	Points
50 %	1
60 %	2
70 %	3

❖ **Occupant Satisfaction** *Points: 1, 2, 3*

- Conduct an occupant satisfaction survey for acoustical comfort and demonstrate the following:

Occupied Spaces	The percentage of satisfied occupants		
	Class A	Class B	Class C
General Office space, Conference room, Workstations, Cafeteria/Restaurant, Common areas, Reception	90%	85%	80%

Documentation Required

- Detailed acoustical survey report highlighting the levels of Noise Isolation Class, Noise Criterion and Reverberation Time in the regularly occupied spaces.
- Occupant satisfaction survey report

  Notes:

  - *The measurement methodology for the acoustic comfort parameters shall adhere to ISHRAE Standard - 10001:2016, Annexure-VIII 'Measurement Methodology for Acoustic Comfort'*
  - *The minimum resolution and accuracy of the instruments shall be referred from Annexure-III- 'Specifications of the instruments to be used for measuring IEQ parameters'*
  - *The occupant survey shall be conducted by a third-party agency*

Olfactory Comfort

CT Credit 4

Points: 4

Intent:

Minimise odour in service areas to reduce discomfort and associated negative health impacts to the occupants

Requirements:

❖ **Exhaust Systems** *Point:1*

- Demonstrate that the project has implemented the following features in spaces such as toilets, kitchen/ pantry and other enclosed service areas:
  - Isolate the zones from other regularly occupied areas
  - Provide exhaust systems with an exhaust rate of atleast 0.5 cfm per sq.ft

❖ **Occupant Satisfaction** *Points: 1, 2, 3*

- Conduct an occupant satisfaction survey for olfactory comfort and demonstrate the following:

Occupied Spaces	The percentage of satisfied occupants		
	Class A	Class B	Class C
General Office space, Conference room, Cafeteria/Restaurant, Toilets, Kitchen/ pantry and other enclosed service areas	90%	85%	80%

Note:

- *The occupant survey shall be conducted by a third-party agency*

Documentation Required

❖ Details of exhaust systems and their capacity in spaces such as toilets, kitchen/ pantry and other enclosed service areas

❖ Occupant satisfaction survey report

Ergonomics

CT Credit 5

Points: 4

Intent:

Provide ergonomically designed spaces to enhance occupants' comfort, thereby addressing health aspects related to bone & joint disorders

Requirements: *Point: 1*

- Demonstrate that the spaces and furniture are ergonomically designed as per Time Saver Standards for interior designing Space Planning/ Metric Handbook - Planning & Design Data/ ISO 6385:2004 - Ergonomic Principles in the Design of Work Systems or any other equivalent standard for the following applications:
  - Space Planning
    - General offices and multiple workstations
      - Area required per person
      - Details of basic workstations/ multiple workstations
      - Trading Desk/ Table Details
  - Private offices
    - Executive Workstations
    - Typical Room Arrangements
    - Wall unit Details
  - Conference rooms
    - Table Sizes and Seating Capacities
    - Room Layouts
    - Table Base and Edge Treatments
  - Reception areas
    - Seating Arrangements
    - Reception Desk Details
  - Furniture, furnishings, and equipment
    - Desks and Seating sizes
    - Chairs
    - Reception and Lounge Seating
    - Conference Tables
    - Vertical File Cabinets
    - Storage Cabinets
    - Electronic Media Storage

Points: 1,2,3

❖ Demonstrate that 80% of the occupants are satisfied with the comfort levels of space and furniture provided

Occupied Spaces	The percentage of satisfied occupants		
	Class A	Class B	Class C
General Office space, Conference room, Workstations, Cafeteria/Restaurant, Common areas, Reception	90%	85%	80%

Note:

- *The occupant survey shall be conducted by a third-party agency*

Documentation Required

❖ Sample photographs of furniture provided in the facility

❖ Floor plans with furniture layout

❖ Occupant satisfaction survey report

Comfort for Differently Abled Occupants

CT Credit 6

Points: 4

Intent:

Ensure that the facility caters to differently abled occupants, thereby addressing their physical comfort

Requirements: *Points: 1, 2, 3, 4*

- Demonstrate that the facility has provided comfort for differently abled as prescribed in NBC-2016, Part-3 Development Control Rules & General Building Requirement, Section-13 'Requirements for Accessibility in Built Environment for Elders and Persons with Disabilities'
  - The project should have any four of the following features:
  - Non-slippery ramps for easy access to the main entrance of the building. Such ramps should have with hand rails on atleast one side
  - Accessible information at the entrance to the site/ building
  - Uniformity in floor level for hindrance-free movement in common areas such as wash rooms, canteen and common assembly area
  - Preferred car park space(s) having an easy access to the main entrance or closer to the lift lobby and suitable drop-off point near main entrance
  - Braille and audio assistance in lifts for visually impaired people
  - Rest rooms (toilets) for differently abled people
  - Important information communicated via two senses or more (tactile, audible and visual)
  - Necessary measures to facilitate safe assisted evacuation/ rescue in emergencies
  - Conduct an occupant satisfaction survey for differently abled and implement at least one corrective measure to suit their requirement.

  Notes:

  - *Each measure will gain one credit point*
  - *Refer Annex B: Anthropometrics And Requirements for Accessibility in Built-Environment for Elders and Persons with Disabilities of NBC-2016 for further details*

Documentation Required

- Supporting photographs of the provisions made for differently abled people in the facility
- Site plan/ Floor plan highlighting facilities for differently abled people
- Occupant satisfaction survey report

Health & Sanitation

Housekeeping

HS Credit 1

Points: 2

Intent:

Have well defined procedures in place to maintain cleanliness and hygiene thereby reduce the risk of spreading respiratory and other communicable diseases.

Requirements: *Points: 1, 2*

- Demonstrate that the facility has followed housekeeping protocol for all spaces such as work space, washrooms, kitchen/ pantry, service areas, etc, as applicable
  - Identify and have standard operating procedures for cleaning high touch surfaces at regular intervals
- Integrated Pest Management Plan as per National Building Code - 2016

  Note:

  - *Refer Part 12, Asset and Facility Management, National Building Code - 2016, for elaborative good practices of the above indicated parameters.*

Documentation Required

- Housekeeping protocol or standard operating procedures and the systems in place for monitoring the house keeping measures
- Pest management plan

Eco-friendly Chemicals

HS Credit 2

Point: 1

Intent

Encourage use of eco-friendly housekeeping chemicals so as to reduce adverse impacts on respiratory systems.

Requirement

- Demonstrate that the facility utilizes eco-friendly housekeeping chemicals that are certified by GreenPro or other equivalent standards, for all building applications.

Documentation Required

- Details of housekeeping chemicals used and their applications
- Purchase invoices of eco-friendly housekeeping chemicals procured in the past 1 year

Control of Outdoor Dust Pollutants

HS Credit 3

Point: 1

Intent:

Minimise entry of outdoor dust into the facility, thereby reducing impacts on respiratory systems and dust allergies

Requirements:

- Demonstrate that the facility has installed door mats (and/ or) air curtains covering entry path at the following areas:
  - Main building entrance
  - Entrance from basement
  - Service entrance to the building
  - Entrance from kitchen/ pantry
  - Any other building entrances

Documentation Required

- Photographs showing installed door mats (and/ or) air curtains covering the entry paths
- Floor plans highlighting all entry ways and measure taken for credit compliance

Fitness & Nutritional Choices

Fitness Facilities

FNC Credit 1

Points: 4

Intent:

Provide fitness facilities for occupants to enhance their physical Well-being.

Requirements:

- Demonstrate that the building has inhouse fitness facilities or has tie up with external fitness centers within the radius of 1 km to cater to minimum 10% of building occupants through the day. The inhouse/ external facilities shall include:
  - Indoor fitness facilities - Table Tennis, Gym, yoga or any other indoor activities

    Points: 2

    (AND / OR)
  - Outdoor fitness facilities - Badminton, Basket Ball, Football or any other outdoor facilities

    Points: 2

  Note:

  - *Each measure will gain one credit point*

Documentation Required

- Demonstrate that the facilities provided can cater to atleast 10% of the building occupants
- Photographs of the fitness facilities provided

Awareness on Physical Fitness

FNC Credit 2

Points: 3

Intent

Create awareness and encourage the occupants to adopt practices that improve their physical fitness

Requirement

❖ **Awareness** *Point: 1*

- Demonstrate that the facility has adopted atleast two of the following measures for creating awareness amongst the employees
  - Organise Awareness Programme once in three months
  - Share fitness practices amongst the occupants through circulars, emails, etc, once in three months
  - Install educational signage on importance of fitness at prominent locations
  - Or any other appropriate measures for increasing awareness

❖ **Encouragement** *Points: 2*

- Demonstrate that the facility has adopted atleast two of the following measures for encouraging employees
  - Form Fitness committees/ working groups within the facility
  - Organize fitness regimes for the employees
  - Give incentives to the employees for participating in fitness activities such as marathons, gym, etc
  - Conduct Health/Medical camps, once in a year
  - Or any other measures for encouragement, as applicable

Note:

- *Each measure will gain one credit point*

Documentation Required

❖ **Awareness**

- Report on various measures taken for creating awareness with supporting photographs
- Copies of circulars and emails

❖ **Encouragement**

- Report on various initiatives taken for encouraging the occupants to adopt fitness practices. Enclose supporting photographs where applicable.
- Policies on incentives given to the employees for participating in fitness activities such as marathons, gym, etc
- Details of Health/Medical camps conducted

Nutritional Choices

FNC Credit 3

Points: 3

Intent:

Encourage increased consumption of healthy nutritional options for improved health and well-being of the occupants

Requirements:

- Provide healthy nutritional options as part of the menu, if the facility has a canteen.
- Eliminate food items having Trans fats
- Display nutritional facts of the food items provided/ sold
- Incase the facility does not have a canteen, educate the occupants on nutritional facts, trans fats and encourage them to increase the consumption of nutritional options

Documentation Required

- Details of the nutritional options provided as part of the menu
- Declaration on elimination of food items having Trans fats
- Photographs of display of nutritional facts

EMOTIONAL & INTELLECTUAL WELL-BEING

Exterior Connectivity to Occupants

E&IW Credit 1

Points: 12

Intent:

Develop green landscape and provide connectivity, thereby enhance the emotional Well-being of the occupants.

Requirements:

❖ **Green Ratio** *Points: 1, 2, 3, 4, 5*

➢ Ensure atleast 15% of the site area has green cover

Percentage of total area with green cover	Points
> 15%	1
> 20%	2
> 25%	3
> 30%	4
> 35%	5

Notes:

- *Vertical Landscaping and potted plants can also be considered for this credit*
- *Vegetation on ground, in interiors and over built structures such as roofs, basements, podiums, courtyards etc., can be considered*
- *Artificial vegetation shall not be considered*

❖ **View to Outdoor Environment** *Points: 1, 2, 3, 4, 5*

Ensure atleast 25% of regularly occupied spaces achieve direct line of sight to the outdoor environment

Percentage of regularly occupied spaces with connectivity to the outdoors	Points
> 25%	1
> 35%	2
> 45%	3
> 55%	4
> 65%	5

❖ **Access to Exterior Landscape** *Points: 2*

➢ Ensure that the building has any two of the following facilities for the occupants

♦ Resting areas

♦ Shaded structures in gardens (e.g. Pergola, Gazebo etc)

♦ Shaded pathways (with trees) for occupants

♦ Outdoor spaces for social gathering

♦ Other appropriate options

Documents required

- Site drawing and building roof plans highlighting the area with vegetation, as applicable, along with area calculations.
- Calculations (floor-wise) indicating the regularly occupied spaces having access to outdoor views, along with the supporting photographs
- Provide the details of measures taken for access to exterior landscape along with supporting photographs

HR Policies

E&IW Credit 2

Point: 6

Intent:

Adopt policies that would portray a caring environment, thereby creating an emotionally inspiring work place.

Requirements:

❖ **Employ friendly policies** *Points: 1, 3, 5*

- ➢ Demonstrate that the organisation has adopted HR policies that facilitate flexible work hours for employees, for example:
  - ♦ Have Flexible work time for the employees
  - ♦ Permit work from home during exigencies

❖ Demonstrate that the organisation acknowledges employees for healthy work practices through rewards & recognition.

❖ Demonstrate that the organisation has policies for women employees.

No. of policies implemented	Points
One policy	1
Two policies	3
Three policies	5

❖ **Opportunities for self-development** *Point: 1*

- ➢ Create opportunities for the employees for their self development, through Workshops, Seminars/ Lectures, Online courses, etc.

Documents required

❖ Copy of HR Policies adopted by the project.

❖ Narrative describing exclusive policies for women and awareness programs/ periodical sessions focused on women.

❖ Report and supporting documents highlighting the educational opportunities provided to the occupants.

Spiritual Well-being

E&IW Credit 3

Points: 2

Intent:

Provide an environment to embrace spiritual activities, which can enhance the emotional strength of occupants

Requirements:

- Demonstrate that the organisation encourages employees to embrace spiritual activities by providing the environment, space and facilities for enhancing their spiritual well-being. The organisation may encourage this through having any two of the following:
  - Spiritual space/ zone provided within the campus.
  - Periodical awareness sessions/ workshops on spirituality
  - Other appropriate initiatives

  Note:

  - *Ensure Spiritual well-being is not connected to or hints at religion in any way.*

Documents Required

- Report on the initiatives taken by the organisation.
- Floor plans highlighting adequate space for meditation, spiritual zone or any other facilities provided for encouraging the spiritual activities.

SOCIAL WELL-BEING

Recreation & Culture

SW Credit 1

Points: 4

Intent:

Encourage activities that would enhance bonding amongst the occupants

Requirements:

❖ **Celebration of Festivals** *Points: 2*

➢ Demonstrate that the employees are encouraged to celebrate atleast 2 National / Cultural festivals in a year, within the organisation.

Note:

- *Each measure will gain one credit point*

❖ **Recreation & leisure activities** *Points: 2*

➢ Demonstrate that the organisation initiates at least 2 recreational and leisure activities such as:

♦ Trips to enhance bonding amongst the employees (Min one/ year)

♦ Lunch outing for the employees (Min one/year)

♦ Family get together (Min one/year)

♦ Other recreational activities

Note:

- *Each activity will gain one credit point*

Documentation required

❖ Details of National/ Cultural festivals celebrated within the facility and recreational & leisure activities organised, along with supporting photographs.

Employee Safety

SW Credit 2

Points: 5

Intent:

Ensure safety measures are part of good practices so that occupants feel emotionally strong and secured.

Requirements:

❖ **Women's safety** *Points: 1, 2, 3*

➢ Demonstrate that the facility has the following:

♦ Women's safety committee

♦ Transit facilities for women

♦ Other women's safety policies

Note:

• *Each measure will gain one credit point*

❖ **Policies for travel** *Point: 1*

➢ Demonstrate that the organisation has policies focusing on travel for safety of the employees

❖ **Safety measures** *Point: 1*

➢ Demonstrate that the facility has adopted safety protocols and taken adequate measures for safety of their employees within the campus, for example:

♦ Awareness and training for the employees on safety measures

♦ Safety gears for the employees where applicable

♦ Emergency action plans

♦ Other applicable safety measures

Documents Required

❖ Policies adopted by the facility focusing on women's safety and travel.

❖ Details of the safety measures adopted within the campus, with supporting documents and photographs.

Service to Society

SW Credit 3

Point: 1

Intent:

Encourage and initiate occupant engagement, by fostering active participation in community welfare activities for social well-being

Requirements:

- Demonstrate that the facility has adopted any one of the UNDP Sustainable Development Goal, outlined by the World Green Building Council (WGBC):
  - **Good Health and Well-being -** Ensure healthy lives and promote Well-being for all at all ages
  - **Affordable and Clean Energy -** Ensure access to affordable, reliable, sustainable and modern energy for all
  - **Decent Work and Economic Growth -** Promote inclusive and sustainable economic growth, employment and decent work for all
  - **Industry, Innovation & Infrastructure -** Build resilient infrastructure, promote sustainable industrialisation and foster innovation
  - **Sustainable Cities & Communities -** Make cities inclusive, safe, resilient and sustainable
  - **Responsible Consumption & Production -** Ensure sustainable consumption and production patterns
  - **Climate Action -** Take urgent action to combat climate change and its impacts
  - **Life On Land -** Sustainably manage forests, combat desertification, halt and reverse land degradation, halt biodiversity loss
  - **Partnerships for the Goals -** Revitalise the global partnership for sustainable development

Documents Required

- Details of the initiatives taken along with the supporting documents and photographs

INNOVATION AND DESIGN PROCESS

Innovation and Design Process

ID Credit 1

Intent:

Provide design teams and projects an opportunity to be awarded points for innovative design & performance in healthcare buildings not specifically addressed by the IGBC Health & Well-being rating system and / or exemplary performance above the requirements set by the IGBC Health & Well-being rating system.

Compliance Options:

- **Credit 1.1: Innovation & Design Process**
  - **Option 1: Innovation**

    Identify the intent of proposed innovation credit, proposed requirement for compliance, and proposed documentation to demonstrate compliance, and the design approach used to meet the required measures. **(Or)**
  - **Option 2: Exemplary performance**

    The project is eligible for exemplary performance, if the design and / or construction measures greatly exceed the credit requirements of the IGBC Health & Well-being rating system.
- **Credit 1.2: Innovation & Design Process**

  Same as credit 1.1
- **Credit 1.3: Innovation & Design Process**

  Same as credit 1.1
- **Credit 1.4: Innovation & Design Process**

  Same as credit 1.1

  Notes:
  - *As a general rule, points for exemplary performance are awarded for doubling the credit requirements and / or achieving the next incremental percentage threshold.*
  - *The projects can be attempted innovative ideas such as Geopathic Radiation/ Wi-Fi Radiation, Circadian Rhythm, Strategies for microbial & mould growth control, use of products certified by Green pro (or equivalent) standard etc: Please note that the above indicated list is illustrative and the project can attempt for other innovations that are quantifiable in impacts.*

General Notes:

The project shall also meet the following criteria for achieving an Innovation point:

- *Quantitative performance improvements (comparing a baseline and design case).*
- *Strategy must be significantly better than standard sustainable design practices.*
- *Measures must be voluntary. Measures that are mandated by the local byelaws and not addressed in the rating system are not eligible for Innovation.*
- *Measures should be implemented both in interior and common areas, as applicable.*

IGBC Accredited Professional

ID Credit 2

Intent:

Support and encourage involvement of IGBC Accredited Professional in green building projects, so as to integrate appropriate design measures and streamline the certification process.

Compliance Options:

At least one principal participant of the project team shall be an IGBC Accredited Professional.

ANNEXURES

ANNEXURE - I

Minimum Ventilation Rates in Breathing Zone

(See Notes 1 to 5)
[Clause 6.2 (c) (3)]

(Extract from National Building Code-2016')

Sl No.	Occupancy Category	People Out Door Air Rate, R_p		Area Out Door Air Rate, R_a		Notes	Default Values			Air Class
		Cfm/ Person	1/s Person	cfm / ft^2	1/s.m^2		Occupant density (see Note 4)	Combined Outdoor Air Rate (see Note 4)		
							Person per 1000 ft^s or per 100 m^2	Cfm/ person	1/s person	
I	Correctional Facilities:									
a	Cell	5	2.5	0.12	0.6		25	10	4.9	2
b	Dayroom	5	2.5	0.06	0.3		30	7	3.5	1
c	Guard Stations	5	2.5	0.06	0.3		15	9	4.5	1
d	Booking / Waiting	7.5	3.8	0.06	0.3		50	9	4.4	2
II	Educational Facilities:									
a	Day Care (Through age 4)	10	5	0.18	0.9		25	17	8.6	2
b	Day Care Sick Room	10	5	0.18	0.9		25	17	8.6	3
c	Classrooms (ages 5-8)	10	5	0.12	0.6		25	15	7.4	1
d	Classrooms (age 9Plus)	10	5	0.12	0.6		35	13	6.7	1
e	Lecture Classroom	7.5	3.8	0.06	0.3		65	8	4.3	1
f	Lecture hall (fixed Seats)	7.5	3.8	0.06	0.3		150	8	4.0	1
g	Art Class room	10	5	0.18	0.9		20	19	9.5	2
h	Science laboratories	10	5	0.18	0.9		25	17	8.6	2
I	University/ College Laboratories	10	5	0.18	0.9		25	17	8.6	2
j	Wood / Metal Shop	10	5	0.18	0.9		20	19	9.5	2
k	Computer Lab	10	5	0.12	0.6		25	15	7.4	1
l	Media Centre	10	5	0.12	0.6	See note 6	25	15	7.4	1
m	Music / Theatre / Dance	10	5	0.06	0.3		35	12	5.9	1
n	Multiuse Assembly	7.5	3.8	0.06	0.3		10	8	4.1	1

III	Food And Beverage Service									
a	Restaurant Dining Rooms	7.5	3.8	0.18	0.9		70	10	5.1	2
b	Cafeteria / Fast Food Dining	7.5	3.8	0.18	0.9		100	9	4.7	2
c	Bars Cock tail Lounges	7.5	3.8	0.18	0.9		100	9	4.7	2
IV	General									
a	Break Rooms	5	2.5	0.06	0.3		25	10	5.1	1
b	Coffee Stations	5	2.5	0.06	0.3		20	11	5.5	1
c	Conference / Meeting	5	2.5	0.06	0.3		50	6	3.1	1
d	Corridors	-	-	0.06	0.3		-	-	-	1
e	Storage Rooms	-	-	0.12	0.6	See note 7	-	-	-	1
V	Hotels, Motels Resorts and dormitories									
a	Bedroom / Living Room	5	2.5	0.06	0.3		10	11	5.5	1
b	Barracks Sleeping Areas	5	2.5	0.06	0.3		20	8	4.0	1
c	Laundry Rooms, Central	5	2.5	0.12	0.6		10	17	8.5	2
d	Laundry rooms with in dwelling units	5	2.5	0.12	0.6		10	17	8.5	1
e	Lobbies Pre Function	7.5	3.8	0.06	0.3		30	10	4.8	1
f	Multipurpose Assembly	5	2.5	0.06	0.3		120	6	2.8	1
VI	Office Buildings									
a	Office Space	5	2.5	0.06	0.3		5	17	8.5	1
b	Reception Area	5	2.5	0.06	0.3		30	7	3.5	1
c	Telephone / Data Entry	5	2.5	0.06	0.3		60	6	3.0	1
d	Main Entry Lobbies	5	2.5	0.06	0.3		10	11	3.5	1
VII	Miscellaneous Spaces									
a	Bank Vaults / Safe Deposit	5	2.5	0.06	0.3		5	17	8.5	2
b	Computer	5	2.5	0.06	0.3		4	20	10.0	1
c	Electrical Equipment rooms	-	-	0.06	0.3	See note 7	-	-	-	1
d	Elevator Machine rooms	-	-	0.12	0.6		-	-	-	1
e	Pharmacy	5	2.5	0.18	0.9		10	23	11.5	2
f	Photo Studios	5	2.5	0.12	0.6		10	17	8.5	1
g	Shipping / Receiving	-	-	0.12	0.6		-	-	-	1
h	Telephone Closets	-	-	0.00	0.0		-	-	-	1

I	Transportation waiting	7.5	3.8	0.06	0.3		100	8	4.1	1
j	Ware House	-	-	0.06	0.3		-	-	-	2
VIII	Public Assembly Spaces									
a	Auditorium Seating Area	5	2.5	0.06	0.3		150	5	2.7	1
b	Places of Religious Worship	5	2.5	0.06	0.3		120	6	2.8	1
c	Court Rooms	5	2.5	0.06	0.3		70	6	2.9	1
d	Legislative Chambers	5	2.5	0.06	0.3		50	6	3.1	1
e	Libraries	5	2.5	0.12	0.6		10	17	8.5	1
f	Lobbies	5	2.5	0.06	0.3		150	5	2.7	1
g	Museums (children)	7.5	3.8	0.12	0.6		40	11	5.3	1
h	Museums /Galleries	7.5	3.8	0.06	0.3		40	9	4.6	1
IX	Residential									
a	Dwelling Unit	5	2.5	0.06	0.3	Note 8 & 9	Note 8	-	-	1
b	Common Corridors	-	-	0.06	0.3	-	-	-	-	1
X	Retail									
a	Sales (Expect as Below)	7.5	3.8	0.12	0.6		15	16	7.8	2
b	Mall common areas	7.5	3.8	0.06	0.3		40	9	4.6	1
C	Barbershop	7.5	3.8	0.06	0.3		25	10	5.0	2
D	Beauty and Nail salons	7.5	3.8	0.12	0.6		25	25	12.4	2
E	Pet Shops(animal areas)	20	10	0.18	0.9		10	26	12.8	2
F	Super Market	7.5	3.8	0.06	0.3		8	15	7.6	1
G	Coin operated Laundries	7.5	3.8	0.06	0.3		20	11	5.3	2
XI	Sports and Entertainment									
a	Sports Area / Play Area	-	-	0.30	1.5	Note 10	-	-	-	1
b	Gym, Stadium / Play Area	-	-	0.30	1.5		30	-	-	2
c	Spectator areas	7.5	3.8	0.06	0.3		150	8	4.0	1
d	Swimming (Pool and Deck)	-	-	0.48	2.4	Note 11	-	-	-	2
f	Disco / Dance Floors	20	10	0.06	0.3		100	21	10.3	1
h	Health Club / Aerobics Room	20	10	0.06	0.3		40	22	10.8	2
i	Health Club / Weight Rooms	20	10	0.06	0.3		10	26	13.0	2
j	Bowling Alley (seating)	10	5	0.12	0.6		40	13	6.5	1

k	Gambling Casinos	7.5	3.8	0.18	0.9		120	9	4.6	1
l	Game Arcades	7.5	3.8	0.18	0.9		20	17	8.3	1
m	Stages, Studios	10	5	0.06	0.3	Note 12	70	11	5.4	1

NOTES:

1. *The rates in this table are based on all other applicable requirements being met.*
2. *This table applies to no-smoking areas only. Rates for smoking-permitted spaces shall be determined using other methods.*
3. *Volumetric airflow rates are based on an air density of 1.2 kgDA/m3, which corresponds to dry air at a barometric pressure of 1 atm (101.3 kPa), and an air temperature of 21°C. Rates may be adjusted for actual density but such adjustment is not required for compliance with this standard.*
4. *Actual occupant density should be considered, the default occupant density shall be used only when actual occupant density is not known. Default combined outdoor air (per person) rate is based on the default occupant density.*
5. *If the occupancy category for a proposed space or zone is not listed, the requirements for the listed occupancy category that is most similar in terms of occupant density, activities and building construction shall be used.*
6. *For high school and college libraries, use values shown for public assembly spaces- libraries.*
7. *The prescribed value may not be sufficient when stored materials include those having potentially harmful emissions.*
8. *Default occupancy for dwelling units shall be two persons for studio and one-bedroom units, with one additional person for each additional bedroom.*
9. *Air from one residential dwelling shall not be re-circulated or transferred to any other space outside of that dwelling.*
10. *When combustion equipment is intended to be used on the playing surface, additional dilution ventilation and/or source control shall be provided.*
11. *The prescribed value does not allow for humidity control. Additional ventilation or dehumidification may be required to remove moisture.*
12. *The prescribed value does not include special exhaust for stage effects, for example, dry ice vapours, smoke.*

ANNEXURE - II

Measurement Methodology of Indoor Air Quality Parameters

(Inputs from Indoor Environment Quality Standard, ISHRAE Standard - 10001:2016)

Parameters	Measurement Methodologies
CO_2, PM 2.5, PM 10, CH_2O, SOX, NOX, O_3, TVOC	a) Shall be measured 2-3 hours after the start of operation for different occupied areas on a normal working day b) Shall be measured at return air stream at each terminal unit. If building does not have central system, it shall be measured at one location on every floor. For occupied areas with different activities, report at least one measurement in areas with similar activities
CO	a) Shall be measured in the incoming fresh air b) For underground car parking in the building, the measurement can be done at 600-750 mm above the parking floor in the middle of the parking floor plate
Total Microbial Count	a) Shall be measured at least in one location per floor and wing or in one location for each set of rooms with the similar activity.

Notes:

- *CO_2, PM 2.5, PM 10, CO shall be measured daily basis*
- *O_3, TVOC, SO_2, NO_2, shall be measured quarterly basis*

ANNEXURE - III

Specifications of the Instrument to be used for Measuring IEQ Parameters

(Inputs from Indoor Environment Quality Standard, ISHRAE Standard - 10001:2016)

Element	Parameters	Resolution	Accuracy	Remark
Thermal Comfort	Air temperature	0.1ºC	±0.5ºC	
	Mean radiant temperature	0.1ºC	±0.5ºC	
	Plane radiant temperature	0.1ºC	±0.5ºC	
	Surface Temperature	0.5ºC	±1ºC	
	Relative humidity	1%	±3%	
	Air velocity	0.01 m/s	±0.05 m/s	In case of air velocities higher than 0.2 m/s or where fans are used locally to create the occupant, use of Omni directional air movement sensor is required.
Indoor Air Quality				IAQ: Preferred measurement methods
	CO_2	1ppm	±5%	Non-dispersive Infra –red (NDIR)
	PM 10	1µg/m³	±5%	Gravimetric, Light scattering or beta attenuation method
	PM 2.5	1µg/m³	±5%	Gravimetric, Light scattering or beta attenuation method
	TVOC	0.01ppm (22.9 µg/m³equivalent to isobutylene)	±0.005ppm (115 µg/m³)	Dual section, charcoal tube, polymer absorber based samplers followed by Gas Chromatography (GS) or Photo ionization Detector(PID)
	CH_2O	0.01ppm (12.28 µg/m³)	±0.005ppm (6.14 µg/m³)	Solvent extraction followed by High-performance Liquid Chromatography(HPLC)/GC analysis or PID
	SO_2	0.001ppm (2.6 µg/m³)	±0.005ppm (13 µg/m³)	Improved West and Gaek, Ultraviolet Fluorescence method or Fourier Transform Infrared Spectroscopy(FTIR) Sensor
	NO_2	0.001ppm (1.9 µg/m³)	±0.005ppm (10 µg/m³)	Modified Jacob and Hochheiser method Chemiluminescence or FTIR sensor
	O_3	0.001ppm (2.0µg/m³)	±0.005ppm (10 µg/m³)	UV Photometric Chemiluminescence Chemical method or FTIR
	Total Microbial Count	10CFU/m³	±50CFU/m³	Anderson samplers, Gravimetric followed by culture method

Lighting comfort	Illuminance	10 lux	±5%	Measurements should be taken using a potable light meter and it should be calibrated within the last 12 months
Acoustic comfort	Sound	1dB	±1%	a) Measurements should be taken using a level 1 or level 2 sound meters, set to read on “A” scale to record dB(A) b) Measuring equipment shall confirm to the accuracy requirements given in IEC 60804

ANNEXURE - IV

Pesticide Residues Limits and Test Method

(Extract from IS 10500: 2012- Drinking Water Specification)

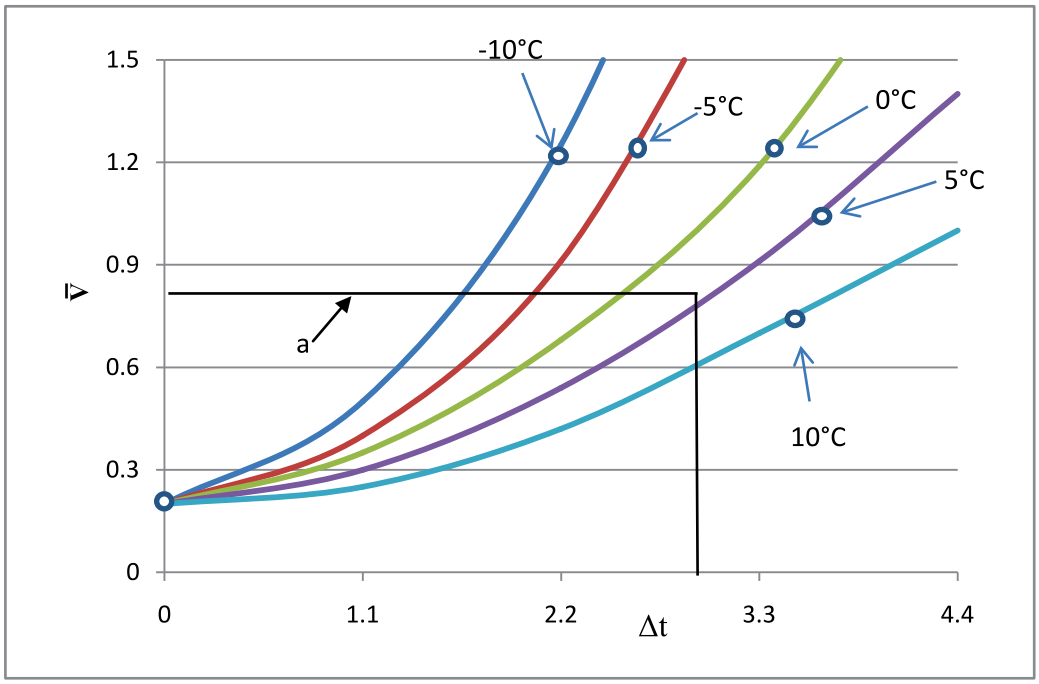
S no	Pesticide	Limit µg/l	Method of Test Ref to	
			USEPA	AOAC / ISO
a	Alachlor	20	525.2 , 507	
b	Atrazine	2	525.2, 8141 A	
c	Aldrin / Dieldrin	0.03	508	
d	Alpha HCH	0.01	508	
e	Beta HCH	0.04	508	
f	Butachlor	125	525.2 , 8141A	
g	Chlorpyriphos	30	525.2 , 8141A	
h	Delta HCH	0.04	508	
i	2,4 Dichlorophenoxyacetic Acid	30	515.1	
j	DDT (o,p and p,p - Isomers of DDT, DDE and DDD	1	508	AOAC 990.06
k	Endosulfan (alpha, Beta and Sulphate)	0.4	508	AOAC 990.06
l	Ethion	3	1657A	
m	Gamma - HCH (Lindane)	2	508	AOAC 990.06
n	Isoproturan	9	532	
o	Malathion	190	8141A	
p	Methyl Parathion	0.3	8141A	ISO10695
q	Monocrotophos	1	8141A	
r	Phorate	2	8141A	

ANNEXURE - V

Required Air Speed to Offset Increased Temperature

(Extract from Indoor Environmental Quality Standard,
ISHRAE Standard -10001:2016, First Version: 2016-2017)

Below mentioned methodology from ISO 7730 can be used to find increase in acceptable operative temperature at elevated air speed.



For light primary sedentary activity, Δt should be < 3ºC and $\bar{v}$ < 0.82m/s

Key

- Δt temperature rises above 26ºC.
- $\bar{v}$ mean air velocity, m/s
- a - limits for light, primary sedentary, activity.
- (t_t-t_a) ºC (ta air temperature, ºC; t_t, mean radiant temperature, ºC).

The example to illustrate the use of air speed to offset increased temperature:

Example 1: If in a given room, an occupant is involved in the moderate level of activity, air speed in room is 1.2 m/s and operative temperature is 26 ºC, then by using above mentioned graph Δt is 3.3 ºC. It makes acceptable room air temperature as 26 ºC + 3.3 ºC.

ANNEXURE - VI

Measurement Methodology for Thermal Comfort

(Extract from Indoor Environment Quality Standard, ISHRAE Standard - 10001:2016)

Parameter	Measurement Methodology
Air temperature and Average air speed	a) Air temperature and Average air speed shall be measured at the 0.1m, 0.6m, and 1.1m levels for seated occupants at plan locations* b) Measurements for standing occupants shall be made at the 0.1m, 1.1m, and 1.7m levels. *
Operative temperature	a) Shall be measured or calculated at the 0.6m level for seated occupants and the 1.1m level for standing occupants.
Floor temperature	a) Shall be measured at the surface by contact thermometer or infrared thermometer
Radiant temperature asymmetry	a) Shall be measured in the affected occupants' locations, with the sensor oriented to capture the greatest surface temperature difference.

* Mean value of this parameter at respective location shall be considered for calculating operative temperature

ANNEXURE - VII

Reverberation Time

Space	Reverberation Time (RT)
Open Office Plan	≤ 1.0
Meeting Rooms	≤ 0.8
Video Conference Rooms	≤ 0.6
Collaborative spaces	≤ 1.25
Private cabins	≤ 1.0
Cafeteria	≤ 1.25
Breakout area	≤ 1.25
Reception	≤ 1.5
Recreation area	≤ 1.5
Multipurpose Hall	≤ 1.0
Gym	≤ 1.5
Washroom	≤ 2.0
Machine Room	≤ 1.50
Crèche	≤ 1.0
Atrium	≤ 1.25
Corridors	≤ 1.0
Courtyard	≤ 1.25

- *Reverberation Time RT60 is the time required for reflections of a direct sound to decay by 60 by dB.*
- *Reverberation time is frequently stated as a single value.*

ANNEXURE - VIII

Measurement Methodology for Acoustic Comfort

(Extract from Indoor Environment Quality Standard, ISHRAE Standard - 10001:2016)

Parameter	Measurement Methodology
Sound level	Measurement method for noise level shall be as defined in ISO 1996-2
Noise Isolation	Measurement method for noise level shall be as defined in ISO 16283-1 and ISO 16283-2.
Reverberation Time	Assessment method for the reverberation time shall be as defined in ISO 3382-2

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