BOARD NOTICE 66 OF 2011

CONSTRUCTION INDUSTRY DEVELOPMENT BOARD

THE CONSTRUCTION INDUSTRY DEVELOPMENT BOARD ACT, 2000 (Act No. 38 of 2000)

BEST PRACTICE: GREEN BUILDING CERTIFICATION

The Board, in terms of section 5(2)(b), read with section 5(2)(f) of the Construction Industry Development Board Act, 2000 (Act No. 38 of 2000), identified "The Green Star South Africa-Office Version 1" as a best practice to be followed in the design of office buildings. The Green Star South Africa- Office Version 1 is available on the Green Building Council of South Africa (GBCSA) official website at the Internet address <u>http://www.gbcsa.org.za</u>.

Ronnie Khoza /

Chief Executive Officer (In his capacity as the accounting authority in terms of section 49(2)(b) of the Public

Finance Management Act, 1999 (Act No. 1 of 1999)

Green Star SA - Office Design v1 Indoor Environment Quality

Category Summary:	
-------------------	--

Category Weighting:

28

0

0

15% Category Weighted Score

0.0

Credit Summary for:

÷

Ref No.	Title	Aim of Credit	Credit Criteria Summary	No. of Points Available	No. of Points Achieved	Points to be Confirmed	Comments
IEQ-1	Ventilation Rates	To encourage and recognise designs that provide ample amounts of outside air to counteract build-up of indoor pollutants.	Three points are available as follows: Naturally ventilated spaces Three points are awarded where it is demonstrated that 95% of the UA is naturally ventilated in accordance with SANS 10400-O (minimum 5% openable area). Mechanically ventilated spaces Up to three points are awarded where for 95% of the UA, outside air is provided at rates greater than the requirements of SANS 10400-O (5 litres/second/person for offices), as follows: - One point for 50% improvement; - Two points for 100% improvement; or - Three points for 150% improvement. Mixed-mode ventilated spaces Both modes of operation must individually satisfy the relevant mechanical and natural ventilation criteria. The points awarded will be limited to the maximum points awarded under the mechanical ventilation criteria.	3			
IEQ-2	Air Change Effectiveness	To encourage and recognise systems that effectively deliver optimum air quality to any occupant throughout the occupied area.	Two points are awarded where the Air Change Effectiveness (ACE) for at least 95% of the UA meets the following criteria: Naturally ventilated spaces A distribution and laminar flow pattern for at least 95% of each space in the direction of air flow for not less than 95% of standard hours of occupancy is demonstrated. Mechanically ventilated spaces The ventilation systems are designed to achieve an Air Change Effectiveness (ACE) of >0.95 for at least 95% of the UA when measured in accordance with ASHRAE 129-1997: <i>Measuring Air Change Effectiveness</i> ; and ACE is measured in the breathing zone (nominally 1m from finished floor level). Mixed-mode ventilated spaces Both the above requirements for Naturally Ventilated and Mechanically Air-conditioned Spaces are achieved DEEMED TO SATISFY CRITERIA for displacement ventilation The points can be achieved if the proposed system is a displacement ventilation system, where supply air is distributed at low level, provided the following are clearly demonstrated: • The system covers at least 95% of the UA; • Low level supply outlets are evenly distributed (outlets can be in the floor or at low level < 1,000mm above floor level); • At any given point on the floor there must be an outlet diffuser within 10m; AND • Extract air must be at high level with an exhaust grille every 50m ² (maximum).	2			
							Category: IEO

Ref No.	Title	Aim of Credit	Credit Criteria Summary	No. of Points Available	No. of Points Achieved	Points to be Confirmed	Comments
IEQ-3	Carbon Dioxide Monitoring and Control	To encourage and recognise the provision of response monitoring of Carbon Dioxide levels to ensure delivery of optimum quantities of outside air.	One point is awarded where: Naturality ventilated spaces 95% of the UA is naturally ventilated in accordance with SANS 10400-0; AND Ventilation rates are directly controlled by occupants; AND Carbon dioxide monitoring is provided for every 100m ² of area of occupied floor plan to give an audibleAvisual alarm if CO2 levels rise above 1,000ppm. Mechanically ventilated spaces A carbon dioxide (CO2) monitoring and control system with a minimum of one CO2 sensor at all return points on each floor, is provided to factilitate continuous monitoring and adjustment of outside air ventilation rates to each level, to ensure independent control of ventilation rates to achieve outside air requirements; OR HVAC systems provide 100% outside air with no recirculated component. Mixed-mode ventilated spaces Both modes of operation must satisfy the relevant mechanical and natural ventilation criteria.	1			
IEQ-4	Deylight	To encourage and recognise designs that provide good levels of daylight for building users.	Up to three points are awarded in this credit; there are two alternative credit criteria: The percentage of the UA that has a measured Daylight Factor (DF) of not less than 2.0%, at desk-height level (720mm AFFL) under a uniform design sky; OR The percentage of the UA that has a Daylight Illuminance (DI) of at least 250 Lux. In both cases are the points awarded based on percentage of UA as follows: - One point is awarded for 30% of UA; - Two points are awarded for 60% of UA; or - Three points are awarded for 90% of UA.	3			
IEQ-5	Devilight Glare Control	To encourage and recognise buildings that are designed to reduce the discomfort of glare from natural light.	One point is awarded where it is demonstrated that glare from daylight is reduced through any combination of the following: Where, for each typical glazing configuration or atrium, fixed shading devices shade the working plane, 1.5m in from the centre of the glazing, from direct sun at desk height (720mm AFFL) for 60% of standard working hours; OR Where bilinds or screens are fitted on all glazing and atria as a base building provision and meet the following criteria: - Eliminate all direct sun penetration; AND - Are controlled with an automatic monitoring system; AND - Are equipped with a manual override function accessible by occupents; AND - Have a visual light transmittance (VLT) of <10%.	1			
IEQ-6	High Frequency Baliasts	To encourage and recognise the increase in workplace amenity by avoiding low frequency flicker that may be associated with fluorescent lighting.	One point is awarded where: High frequency ballasts are installed in fluorescent luminaires over a minimum of 95% of the office UA.	1			
IEQ-7	Electric Lighting Levels	To encourage and recognise base building provided office lighting that is not over designed.	One point is awarded where: The office lighting design achieves an average maintained illuminance level of no more than 400 Lux for 95% of the office UA as calculated at the working plane (720mm AFFL).	1			

72 No. 34158

Ref No.	Title	Aim of Credit	Credit Criteria Summary	No. of Points Available	No. of Points Achieved	Points to be Confirmed	Comments
IEQ-8	External Views	To encourage and recognise designs that provide occupants with a visual connection to the external environment.	Up to two points are awarded where: A significant portion of the office UA has a direct line of sight to the outdoors or into an adequately sized and day-lit atrium: - One point for 00% of the UA; or - Two points for 80% of the UA.	2			
IEQ-9	Thermal Comfort	To encourage and recognise buildings that achieve a high level of thermal comfort.	Up to two points are awarded where a high level of thermal comfort is achieved for all of the office UA through any combination of the following: Naturally ventilated spaces Where naturally ventilated buildings achieve credit criteria for IEQ-10 'Individual Comfort Control', up to two points are awarded if the internal temperatures are within the ASHRAE Standard 55-2004 Acceptability Limits for at least 89% of occupied hours during the year: - One point for internal temperatures within the 80% Acceptability Limits; OR - Two points for internal temperatures within the 80% Acceptability Limits. Mechanically ventilated spaces Up to two points are awarded if the Predicted Mean Vote (PMV) levels, calculated in accordance with ISO7730 using standard clothing and metabolic rate values, are within the following limits for at least 98% of occupied hours during the year: - One point for PMV levels between -1 and +1, Inclusive; OR - Two points for PMV levels between -0.5 and +0.5, inclusive. Mixed-mode ventilated spaces For mixed-mode buildings, the systems should be modelled as they are expected to operate and the same criteria used as for a mechanically ventilated space. DEEMED TO SATISFY CRITERIA for air conditioned spaces - refer Technical Manual.	2			
IEQ-10	Individual Comfort Control	To encourage and recognise designs that facilitate individual control of thermal comfort.	Up to two points are awarded where it is demonstrated that user controls are provided for the base building heating, cooling and ventilation systems (where present) as follows: Naturally ventilated spaces User controls are defined as an individually controliable ventilation opening of not less than 0.75m ² , together with individual temperature control or thermostatic control to the local heat source (if a heating system is provided). - One point where user controls are provided every 30m ² of the UA; OR - Two points where user controls are provided every 15m ² of the UA. Mechanically ventilated spaces The base building HVAC system allows for tenant installation of user control of air supply rate, air temperature or mean radiant temperature: - One point where user controls are provided every 30m ² of the UA; or - Two points where user controls are provided every 30m ² of the UA; or - Two points where user controls are provided every 15m ² of the UA. Mixed-mode ventilated spaces For mixed-mode buildings, the above mechanical and natural ventilation user control criteria must be achieved.	2			

Ref No.	Title	Aim of Credit	Credit Criteria Summary	No. of Points Available	No. of Points Achieved	Points to be Confirmed	Comments
JEQ - 11	Hazardous Materiels	To encourage and recognise actions taken to roduce health risks to occupants from the presence of hazardous materials.	One point is awarded where: A comprehensive hazardous material survey has been carried out on the project site, as defined by the South African Occupational Health and Safety Act (OH&S) and/or other relevant legislation; AND Whenever asbestos, lead or polychlorinated biphenyts (PCBs) were found, they have been removed in accordance with the standards listed under Table IEQ-11.1. For new developments or developments in which none of the above hazardous materials were found in the survey, this credit is 'Not Applicable' and is excluded from the points available, used to celculate the Indoor Environment Quality category score. Type 'na' in the No. of Points Achieved column.	1			
IEQ-12	Internal Noise Levels	To encouraga and recognise buildings that are designed to maintain internal noise levels at an appropriate level.	Up to two points are ewarded where 95% of the project's UA does not exceed the maximum internal noise levels recommended in SANS 10103:2004 as follows: Building Services Design - One point is awarded where, within the entire base building general office space, noise from the building services does not exceed; 40dBAeq for general office space (>50m ³) Overall Building - One point is awarded where within the base building office space, the ambient sound level does not exceed; 40dBAeq for general office space (>50m ³)	2			
IEQ-13	Volatile Organic Compounds	To encourage and recognise specification of Interior finishes that minimise the contribution and levels of Volatile Organic Compounds in buildings.	Up to three points are awarded where the various finishes used in the project meet the benchmarks as follows: Paints One point where at least 95% of all painted surfaces meet the TVOC Content Limits outlined in Table IEQ-13.1 or where no paint is used in the project. Adhesives and Sealants	1			
			One point where 95% of all achesives and sealants meet the TVOC Content Limits outlined in Table IEQ-13.2 or where no adhesives or sealants are used.	1			
			Carpets and Flooring One point where all carpets meet the TVOC emissions limits outlined in Table IEQ-13.3; OR Where no carpet has been installed in the project and projects wish to use low-VOC flooring, one point is awarded where all the flooring installed in the project meet the emissions limits outlined in Table IEQ-13.3. Where no carpet has been installed in the project, the carpet point is 'Not Applicable' and is excluded from the points available, used to calculate the indoor Environment Quality category score. Type 'na' in the No. of Points Achieved column.	1			

Ref No.	Title	Aim of Credit	Credit Criteria Summary	No. of Points Available	No. of Points Achieved	Points to be Confirmed	Comments
IEQ-14	Formaldehyde Minimisation	To encourage and recognise the specification of products with low formaldehyde emission levels.	One point is awarded where all composite wood products (including exposed and concealed applications) either: Have low formaldehyde emissions; OR Contain no formaldehyde. If no composite wood products are used within the project, this credit is 'Not Applicable' and is excluded from the points available, used to calculate the Indoor Environment Quality category score. Type 'na' in the No. of Points Achieved column.	1			
IEQ-15	Mould Prevention	To encourage and recognise the design of services that eliminate the risk of mould growth and its associated detrimental impact on occupant health.	One point is awarded where it is demonstrated that: The mechanically air-conditioned ventilation system maintains humidity levels at no more than 60% relative humidity in the space and no more than 80% relative humidity in the supply ductwork; OR The building is fully naturally ventilated.	1			
IEQ-16	Tenant Exhaust Riser	To encourage and recognise the design of buildings with a general exhaust riser that can be used by tenants to remove indoor pollutants from printing and photocopy areas.	One point is awarded where the building either: Includes a dedicated tenant's exhaust riser with the following characteristics: - Provides no less than 0.2 L/s/m ² for 100% of the UA; AND - Has a capacity of 0.35 L/s/m ² for 100% of UA on any individual floor; AND - The exhaust system is not recycled to other enclosures of different use. OR Provides an exhaust louver for tenant extract in each tenanted area of a size equivalent to 0.175m2/m2 of UA and with an exhaust point at least 7m away from any openable window or air intake.	1			
IEQ-17	Environmental Tobacco Smoke (ETS) Avoidance	To encourage and recognize the air quality benefits to occupants by prohibiting smoking inside the building.	One point is awarded where: - Smoking is not allowed inside the building; AND - No provision is made for smoking areas inside the building (e.g. separately exhausted smoking rooms); AND - There is clear signage indicating that smoking indoors is prohibited and identifying the location of outside smoking areas if provided.	1			
		-	Total Points:	28	0	0	

Project Teams are to refer to the Green Star SA Office v1 Technical Manual for explicit credit criteria and documentation requirements. The Green Star Technical Clarifications (TC) and Credit Interpretation Request (CIR) rulings provide an essential source of information to all projects undertaking Green Star assessment. They are available on the GBCSA website http://www.gbcsa.org.za . Technical Clarifications often represent the GBCSA answers to technical queries and complement Green Star SA Technical Manuals. They do not amend but clarify Credit Criteria or Compliance Requirements. They are an extension of the Technical Manual; it is the responsibility of the project teams to stay up-to-date with this section of the GBCSA website. The CIR rulings offer alternative compliance options whenever those have been deemed equivalent in meeting the Aim of Credit.