Thermal Comfort

## Credit 12

## Individual Building Portfolio

## Project Name: [name]

## Project Number: GS- [####]

|  |  |  |  |
| --- | --- | --- | --- |
| Total Points available: | 3 | Points claimed: | [#] |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **No.** | **Type** | **Criteria** | **Description** | **Claimed** |
| **12A.1** | **Data** | **Indoor temperature** | Up to **2 points** are available where the air temperature in regularly occupied primary spaces, is maintained within acceptable comfort levels during the performance period. | [#] |
| **12A.2** | **Data** | **Indoor relative humidity** | **1 point** is available where relative humidity in regularly occupied primary spaces is maintained within acceptable comfort levels during the performance period. | [#] |
| **12B.1** | **Data** | **NABERS IE annual monitoring** | Up to **2 points** are available where acceptable comfort levels are maintained during the performance period, as verified by NABERS IE annual monitoring. | [#] |
| **12B.2** | **Data** | **NABERS IE spot measurements** | **1 point** is available where acceptable comfort levels are maintained throughout the regularly occupied primary spaces, as verified by NABERS IE spot measurements. | [#] |

# Project-specific technical questions

|  |  |
| --- | --- |
| There are no project-specific technical questions for this credit. |  |
| There are project-specific technical questions for this credit and all responses received from the GBCA are attached. |  |

## 12.0 GENERAL REQUIREMENT

|  |  |  |
| --- | --- | --- |
| 12.0.1 The Regularly Occupied Primary Spaces (ROPS) general requirement has been completed for this building. | |  |
| 12.0.2 Indicate which compliance option has been selected and fill in the corresponding section below.  Select one option. | Compliance with 12A.1 Indoor Temperature and 12A.2 Relative Humidity; or |  |
| Compliance with 12B.1 NABERS IE Annual Monitoring and 12B.2 NABERS IE Spot Measurements. |  |

## 12A.1 INDOOR AIR TEMPERATURE

Describe how the air temperature in regularly occupied primary spacesis monitored and maintained within acceptable comfort levels, to meet the compliance requirements for each of the items below, by referencing supporting evidence attached to the Submission Template.

12A.1.1 Frequency of measurements

|  |  |
| --- | --- |
| **Requirements** | ****Supporting Evidence**** |
| Confirm that the measurement and recording of thermal comfort parameters has taken place at least twelve (12) times during the performance period, i.e. a minimum of one (1) reading per calendar month. | ***e.g. Test results of temperature measurements*** |

12A.1.2 Timing of measurements

|  |  |
| --- | --- |
| **Requirements** | ****Supporting Evidence**** |
| Show that a minimum of two measurements have been taken for each regularly occupied primary space during occupied hours. | ***e.g Location and time of completed testing indicated on As-Built drawings*** |
| Show that the measurements have been taken at different times throughout occupied hours, for example one measurement taken in the morning and one measurement taken in the afternoon. |  |

12A.1.3 Measurement locations

| **Requirements** | ****Supporting Evidence**** |
| --- | --- |
| Show that measurements have been carried out in all regularly occupied primary spaces. | ***e.g. Location of completed testing indicated on As-Built drawings*** |
| Show that a representative floor or space has NOT been used to extrapolate for multiple floors of a building or for similar spaces within the building. |  |

12A.1.4 Recording and reporting of results

|  |  |  |
| --- | --- | --- |
| **Requirements** | **Supporting Evidence** | |
| Show that all measurements taken within regularly occupied primary spaces have been collated and reported in the Thermal Comfort Calculator.  Confirm which of the two options has been selected for entry of data into the Thermal Comfort Calculator. | Measured data was logged for all regularly occupied primary spaces throughout the building and this information was entered into the Thermal Comfort Calculator;  or  A representative sample of (at least 10) regularly occupied primary spaces was selected to log measured data, and this information was entered into the Thermal Comfort Calculator. | |
| The completed Thermal Comfort Calculator is attached. | |  |

12A.1.5 Reference range

|  |  |
| --- | --- |
| Confirm that the reference range used for indoor air temperature is based on an 80% occupant acceptability level, in accordance with Section 5.2/5.3 of ASHRAE 55 – 2013. |  |

12A.1.6 Analysis of results

|  |  |
| --- | --- |
| The measured temperature results have been compared with the specified reference range in the Thermal Comfort Calculator. |  |

### 12A.1.7 Corrective actions

If specific areas within the building do not meet the requirements of this credit, facilities management must investigate and determine whether corrective actions are required within the performance period. If there are no areas which do not meet the requirements of this credit, this section may remain blank.

| **Requirements** | **Supporting Evidence** |
| --- | --- |
| Identify all specific areas within the building that do not meet the thermal comfort requirements. |  |
| Show that corrective actions have been investigated and determined for each area during the performance period. |  |
| Show that the implementation of these corrective actions has been planned based the outcomes of the investigation. |  |

Identify where this information can be found within the supporting documentation provided.

|  |  |
| --- | --- |
| **Supporting Documentation**  (Name / title / description of document) | **Reference**  (Page no. or section) |
| *Green Star – Performance Thermal Comfort Calculator* | [####] |
| #### | [####] |

DISCUSSION

Outline any issues you would like to highlight and clarify with the Certified Assessor(s).

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## 12A.2 Indoor Relative humidity

Describe how the indoor relative humidity in regularly occupied primary spacesis monitored and maintained within acceptable comfort levels, to meet the compliance requirements for each of the items below, by referencing supporting evidence attached to the Submission Template.

12A.2.1 Frequency of measurements

|  |  |
| --- | --- |
| **Requirements** | ****Supporting Evidence**** |
| For Initial Certification Show that at least one measurement instance has been taken and recorded each month, within the final three months of the performance period. | ***e.g. Test results of temperature measurements*** |

12A.2.1 Timing of measurements

|  |  |
| --- | --- |
| **Requirements** | ****Supporting Evidence**** |
| Show that a minimum of two measurements have been taken for each regularly occupied primary space during occupied hours. | ***e.g Location and time of completed testing indicated on As-Built drawings*** |
| Show that the measurements have been taken at different times throughout occupied hours, for example one measurement taken in the morning and one measurement taken in the afternoon. |  |

12A.2.3 Measurement locations

| **Requirements** | ****Supporting Evidence**** |
| --- | --- |
| Show that measurements have been carried out in all regularly occupied primary spaces. | ***e.g. Location of completed testing indicated on As-Built drawings*** |
| Show that a representative floor or space has NOT been used to extrapolate for multiple floors of a building or for similar spaces within the building. |  |

12A.2.4 Recording of reporting results

|  |  |  |
| --- | --- | --- |
| **Requirements** | **Supporting Evidence** | |
| Show that all measurements taken within regularly occupied primary spaces have been collated and reported in the Thermal Comfort Calculator.  Confirm which of the two options has been selected for entry of data into the Thermal Comfort Calculator. | Measured data was logged for all regularly occupied primary spaces throughout the building and this information was entered into the Thermal Comfort Calculator;  or  A representative sample of (at least 10) regularly occupied primary spaces was selected to log measured data, and this information was entered into the Thermal Comfort Calculator. | |
| The completed Thermal Comfort Calculator is attached. | |  |

12A.2.5 Reference range

|  |  |
| --- | --- |
| The reference range used for indoor relative humidity is based on an 80% occupant acceptability level, in accordance with Section 5.2/5.3 of ASHRAE 55 – 2013. |  |

12A.2.6 Analysis of results

|  |  |
| --- | --- |
| **Requirements** | **Supporting Evidence** |
| Show that the measured relative humidity results have been compared with the specified reference range in the Thermal Comfort Calculator. |  |
| Where one half (1/2) point is claimed show that 40% by area, of regularly occupied primary spaces, are within the reference range, for at least 95% of the RH measurements taken throughout the year. |  |
| Where one (1) point is claimed show that 80% by area, of regularly occupied primary spaces, are within the reference range, for at least 95% of the RH measurements taken throughout the year |  |

12A.2.7 Corrective actions

If specific areas within the building do not meet the requirements of this credit, facilities management must investigate and determine whether corrective actions are required within the performance period. If there are no areas which do not meet the requirements of this credit, this section may remain blank.

|  |  |
| --- | --- |
| **Requirements** | **Supporting Evidence** |
| Identify all specific areas within the building that do not meet the thermal comfort RH requirements. |  |
| Show that corrective actions have been investigated and determined for each area during the performance period. |  |
| Show that the implementation of these corrective actions has been planned based the outcomes of the investigation. |  |

Identify where this information can be found within the supporting documentation provided.

|  |  |
| --- | --- |
| **Supporting Documentation**  (Name / title / description of document) | **Reference**  (Page no. or section) |
| *Green Star – Performance Thermal Comfort Calculator* | [####] |
| #### | [####] |

DISCUSSION

Outline any issues you would like to highlight and clarify with the Certified Assessor(s).

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## 12B.1 NABERS Indoor Environment annual monitoring

Describe how thermal comfort levels have been validated to be at appropriate levels, as demonstrated through a certified NABERS Indoor Environment rating, to meet the compliance requirements for each of the items below.

|  |  |  |
| --- | --- | --- |
| **Requirements** | **Supporting Evidence** | |
| The NABERS IE rating was completed after January 2015. | |  |
| Show the period for which this rating is valid.  Confirm that the NABERS IE rating was completed during, or was valid for at least the last three months of, the performance period. |  | |
| Show that the Annual Monitoring section of the NABERS Indoor Environment report demonstrates the average achieved thermal comfort conditions are in accordance with ASHRAE 55. |  | |
| Where one (1) point is claimed show that the thermal comfort conditions are in accordance with ASHRAE 55 for 90% the year. |  | |
| Where two (2) points are claimed show that the thermal comfort conditions are in accordance with ASHRAE 55 for 95% the year. |  | |
| The NABERS Indoor Environment Report is attached to the Submission Template. | |  |

Identify where this information can be found within the supporting documentation provided.

|  |  |
| --- | --- |
| **Supporting Documentation**  (Name / title / description of document) | **Reference**  (Page no. or section) |
| *NABERS Indoor Environment Report* | [####] |
| #### | [####] |

DISCUSSION

Outline any issues you would like to highlight and clarify with the Certified Assessor(s).

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## 12B.2 NABERS Indoor Environment Spot Measurements

Describe how thermal comfort levels have been validated to be at appropriate levels, as demonstrated through a certified NABERS Indoor Environment rating, to meet the compliance requirements for each of the items below.

|  |  |  |
| --- | --- | --- |
| **Requirements** | **Supporting Evidence** | |
| The NABERS IE rating was completed after January 2015. | |  |
| Show the period for which this rating is valid.  Confirm that the NABERS IE rating was completed during, or was valid for at least the last three months of, the performance period. |  | |
| Show that the Spot Measurement section of the NABERS Indoor Environment report demonstrates the average achieved thermal comfort conditions are in accordance with ASHRAE 55. |  | |
| Where one (1) point is claimed show that the thermal comfort conditions are in accordance with ASHRAE 55 for 90% of the locations sampled. |  | |
| Where two (2) points are claimed show that the thermal comfort conditions are in accordance with ASHRAE 55 for 95% of the locations sampled. |  | |
| The NABERS Indoor Environment Report is attached to the Submission Template. | |  |

Identify where this information can be found within the supporting documentation provided.

|  |  |
| --- | --- |
| **Supporting Documentation**  (Name / title / description of document) | **Reference**  (Page no. or section) |
| *NABERS Indoor Environment Report* | [####] |
| #### | [####] |

DISCUSSION

Outline any issues you would like to highlight and clarify with the Certified Assessor(s).

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# DECLARATION

I confirm that the information provided in this document is truthful and accurate at the time of completion.

Provide author details, including name, position and email address:

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Click here to enter a date.