indoor air quality

Credit 8

Individual Building  Portfolio

Project Name: [name]

Project Number: GS- [####]

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| --- | --- | --- | --- |
| Total Points available: | 4 | Points claimed: | [#] |

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| **No.** | **Type** | **Criteria** | **Description** | **Claimed** |
| **8.1** | **Building** | **HVAC maintenance, cleaning and hygiene** | **1 point** is available where the entry of outdoor pollutants into occupied spaces is mitigated through leading HVAC maintenance, cleaning and hygiene practices during the performance period. | [#] |
| **8.2** | **Action** | **Outdoor pollutant control: Carbon monoxide concentration** | **1 point** is available where levels of carbon monoxide entering the occupied space are managed and minimised during the performance period. | [#] |
| **8.3** | **Data** | **Indoor pollutant control: Carbon dioxide concentration** | **2 points** are available where carbon dioxide concentrations in occupied spaces are maintained at best practice levels during the performance period. | [#] |

# Project-specific technical questions

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| 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. |  |

8.0 General Requirements

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| 8.0 The Regularly Occupied Primary Spaces general requirement has been completed for this building. This is a minimum requirement in order to proceed. |  |

8.1 HVAC MAINTENANCE, CLEANING AND HYGIENE

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| This criterion was awarded in the previous Certification and **no changes** have been made to the building, regularly occupied primary spaces, or HVAC maintenance, cleaning and hygiene practices during the performance period, the scope and content compliance requirements can be considered to be met. The compliance requirements can be considered to be met.  ***Please complete section 8.1.3 only.*** |  |
| This criterion was not awarded / targeted in the previous Certification or changes have been made to the building, regularly occupied primary spaces, or HVAC maintenance, cleaning and hygiene practices during the performance period.  ***Please complete section 8.1 in full.*** |  |

Describe how best practice HVAC maintenance, cleaning and hygiene practices are applied to meet the compliance requirements for each of the items below, by referencing supporting evidence attached to the Submission Template.

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| --- | --- |
| **Requirements** | **Supporting Evidence** |
| **8.1.1** Show that HVAC maintenance, cleaning and hygiene practices are applied to all HVAC equipment under the operational control of the building owner or facility manager. Explain any exceptions. |  |
| **8.1.2** Show that HVAC maintenance, cleaning and hygiene practices are carried out in accordance with one of the following:  AIRAH HVAC Hygiene Best Practice Guideline;  AIRAH DA 19 HVAC&R Maintenance Guideline; or  An equivalent best practice standard.  Describe the standard practices that are used on site. |  |
| **8.1.3** Show that at least one inspection has been carried out during the performance period.  Describe any maintenance and cleaning follow-up actions recommended as a result of the inspection. Show that these recommendations were actioned and implemented during the performance period.  Note: follow-up actions required in this credit do not relate to recommendations for major system upgrades that may come out of an inspection. Major system upgrades are beyond the scope of this credit criterion. |  |
| **8.1.4** For naturally ventilated spaces show that all operable windows and other occupant controlled air intakes have been inspected during the performance period, and confirmed to be clean, unobstructed and free of pollutants.  Describe any maintenance and cleaning follow-up actions recommended as a result of the inspection. Show that these recommendations were actioned and implemented during the performance period. |  |

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

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| **Supporting Documentation**  (Name / title / description of document) | **Reference**  (Page no. or section) |
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### DISCUSSION

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

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8.2 outdoor pollutant CONTROL – carbon monoxide

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| Indicate which compliance pathway has been selected for this criterion. | **8.2A** External CO sources have been mitigated through air filtration; or |  |
| **8.2B** Appropriate CO levels within the space have been verified; or |  |
| **8.2C** A NABERS Indoor Environment rating has been achieved. |  |

Based on the selection above, please complete the relevant section below.

8.2A Air Filtration

Describe how external CO sources have been identified and mitigated to meet the compliance requirements for each of the items below, by referencing supporting evidence attached to the Submission Template.

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| **Requirements** | **Supporting Evidence** |
| **8.2A.1** Show that a review has been conducted to identify possible sources of carbon monoxide (CO) emissions in the proximity of all AHU outdoor air intakes, openable windows, and other outdoor openings (intakes) servicing regularly primary occupied spaces.  Describe the findings of this review, including;   * a description of where CO sources were identified; and * confirmation that intakes are compliant with distances specified in Table 5.5.1 of ASHRAE Standard 62.1:2016 |  |
| **8.2A.2** Where there were no sources of CO pollution present near the intakes, no further action is required. |  |
| **8.2A.3** Where there were sources of CO emissions identified near air intakes, show that measurements were carried out at these air intakes to determine CO levels.  Show that all measurements show CO concentrations to be less than 9 ppm during regular hours of operation and no further action is required. |  |
| **8.2A.4** Where a measurement at an intake shows CO concentrations to be equal to or greater than 9 ppm during regular hours of operation show that one of the following actions has been be taken:   * Air filtration media with at least an AS 1324 filter performance rating of F7 or Minimum Efficiency Reporting Value (MERV) of 13 has been put in place to cover affected air intakes, during the performance period; * Affected intake(s) have been relocated away from the identified pollution sources; * CO monitoring and recording has been established with an alarm informing occupants when the affected space is unhealthy, or informing the facilities manager when elevated CO levels are present; or * The affected air intake opening is a louvre or window which has been prevented from being used, without compromising ventilation. |  |

### DISCUSSION

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

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8.2B CO measurement within the occupied space

Describe how CO levels have been measured within the ROPS to meet the compliance requirements for each of the items below, by referencing supporting evidence attached to the Submission Template.

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| --- | --- |
| **Requirements** | **Supporting Evidence** |
| **8.2B.1** Show that CO concentration levels within the regularly occupied primary spaces have been measured during regular occupancy hours, either within the breathing zone, or at return air grilles.  Show that the measurements were carried out during the performance period and under normal operating conditions. |  |
| **8.2B.2** Show that the measured CO concentration levels within all regularly occupied primary spaces tested remained below 9 ppm for all measurements within a given space. |  |
| **8.2B.3** Describe how the measurements were taken, e.g. using an automated Building Management System (BMS), handheld equipment, or other specialised measurement equipment. |  |

### DISCUSSION

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

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8.2C NABERS Indoor Environment CO performance

Describe how indoor carbon monoxide (CO) 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, by referencing supporting evidence attached to the Submission Template including a valid NABERS IE report.

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| **Requirements** | **Supporting Evidence** | |
| Confirm that the NABERS IE rating was completed after January 2015. | |  |
| Show the period for which this NABERS IE 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 the average measured CO concentration for the building as stated in Carbon Monoxide section of the NABERS Indoor Environment Report.  Confirm that an average measured CO level of 1.5 ppm or lower has been achieved. |  | |

### DISCUSSION

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

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

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| **Supporting Documentation**  (Name / title / description of document) | **Reference**  (Page no. or section) |
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8.3 indoor pollutant control – carbon dioxide

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| Indicate which compliance pathway has been selected for this criterion. | **8.3A** CO2 levels in the space have been measured, and validated as appropriate; or |  |
| **8.3B** Outdoor air flowrates have been measured, and validated as exceeding the minimum requirements; or |  |
| **8.3C** A NABERS Indoor Environment rating has been achieved. |  |

Based on the selection above, please complete the relevant section below.

8.3A Measured CO2 levels

Describe how CO2 levels have been measured within the ROPS to meet the compliance requirements for each of the items below, by referencing supporting evidence attached to the Submission Template.

| **Requirements** | **Supporting Evidence** | |
| --- | --- | --- |
| **8.3A.1** Show that Carbon dioxide (CO2) concentration levels within the regularly occupied primary spaces have been measured during regular occupancy hours, either within the breathing zone, or at return air grilles.  Note: Measuring a mixed sample at the return air point in the air handling unit is not acceptable. |  | |
| **8.3A.2** Confirm the overall percentage of ROPS with measured CO2 concentrations lower than 800 ppm under normal operating conditions. |  | |
| **8.3A.3** Describe all spaces where initial CO2 concentration measurements are found to be higher than 800ppm.  Show that follow-up actions have been taken to address CO2 levels within these spaces. Describe all follow up actions. |  | |
| **8.3A.4** Describe how the measurements were taken, e.g. using an automated Building Management System (BMS), handheld equipment, or other specialised measurement equipment. |  | |
| **8.3A.5** Show that all indoor air CO2 measurements taken within regularly occupied primary spaces have been collated and reported in the Indoor Air Quality Calculator or a tabulated report.  Confirm which of the two options has been selected for entry of data into the Indoor Air Quality Calculator. | | |
| Measured data was logged for all regularly occupied primary spaces throughout the building; OR | |  |
| A representative sample of (at least 10) regularly occupied primary spaces was selected to log measured data. | |  |
| **8.3A.6** For any areas where CO2 concentration measurements do not comply with the requirements specified in 8.3A.2, describe the corrective actions implemented to improve the performance and meet the criterion’s requirements. |  | |

### DISCUSSION

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

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8.3B Outdoor airflow rates

Describe how minimum outdoor airflow rates provided by mechanical ventilation systems have been measured and validated to be at appropriate levels, to meet the compliance requirements for each of the items below, by referencing supporting evidence attached to the Submission Template.

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| **Requirements** | **Supporting Evidence** |
| **8.3B.1** Show that outdoor airflow rates have been measured, within the performance period and under normal operating conditions, for all air handling units supplying outdoor air to the regularly occupied primary spaces. |  |
| **8.3B.2** Confirm the overall percentage of ROPS that are supplied with outdoor air rates that have been shown to be at least 50% greater than those required in AS 1668.2-2012. |  |
| **8.3B.3** Describe how the measurements were taken, e.g. using an automated Building Management System (BMS), or other specialised measurement equipment. |  |
| **8.3B.4** Show that all outdoor airflow measurements taken within regularly occupied primary spaces have been collated and reported in the Indoor Air Quality Calculator or an alternative equivalent reporting mechanism.  Provide any additional comment on the measurement results input into the Indoor Air Quality Calculator. |  |
| **8.3B.5** For any areas where CO2 concentration measurements do not comply with the requirements specified in 8.3B.2, describe the corrective actions implemented to improve the performance and meet the criterion’s requirements. |  |

### DISCUSSION

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

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8.3C NABERS Indoor Environment CO2 performance

Describe how indoor carbon dioxide (CO2) 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, by referencing supporting evidence attached to the Submission Template including a valid NABERS IE report.

|  |  |  |
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| **Requirements** | **Supporting Evidence** | |
| Confirm that 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 the percentage of locations sampled that meet the ventilation requirements, as noted in the Ventilation Effectiveness section of the NABERS Indoor Environment Report.  Confirm that 80% of the locations sampled meet these requirements. |  | |

### DISCUSSION

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

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| --- | --- |
| **Supporting Documentation**  (Name / title / description of document) | **Reference**  (Page no. or section) |
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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.