



# LEED 2009 for Schools New Construction and Major Renovations

## IEQ CREDIT 7.1: THERMAL COMFORT - DESIGN

All fields and uploads are required unless otherwise noted.

This static sample form has been modified for offline access. All sections of the form are visible. Sample forms are for reference only.

Select all that apply to the project building:

- ☐ The project building is mechanically ventilated, in part or in whole.
- ☐ The project building is naturally ventilated, in part or in whole.
- ☐ The project building is mechanically conditioned, in part or in whole.
- ☐ The project building is naturally conditioned, in part or in whole.

Note: Complete the Mechanical Conditioning section for all mechanically conditioned spaces and the Natural Conditioning section for all naturally conditioned spaces.

A floor plan for the project building indicating the areas served by a combination of natural and mechanical ventilation or conditioning systems is required to demonstrate credit compliance. The representative floor plans for the project building upload below is a linked submittal. If one is not present, you may upload one now.

**Upload L-1.** Representative floor plan(s) for the project building.

Select one of the following:

- ☐ The floor plan above shows the areas served by a combination of natural and mechanical ventilation or conditioning systems.
- ☐ A different document is better suited to satisfy the requirement.

**Upload L-1.1.** Floor plan for the project building indicating the areas served by a combination of natural and mechanical ventilation or conditioning systems.

Select one of the following:

- ☐ All natatorium spaces included in the project building and associated grounds are in compliance with the "Typical Natatorium Design Conditions" defined in Chapter 4 (Places of Assembly) of the ASHRAE HVAC Applications Handbook, 2003 edition.
- ☐ The project does not contain any natatorium spaces.

## MECHANICAL CONDITIONING

Table IEQc7.1-1. Metabolic Rate and Clothing Insulation

Space Type	Clothing Level (CLO)				Metabolic Rate (MET)
	Spring	Summer	Fall	Winter	

Source(s) of weather data used for design calculations:

Weather design conditions used for peak load calculations (0.5%, 1%, median of extremes, etc):

Cooling:

 degF

Heating:

 degF

Hours per typical year that outdoor temperature exceeds design conditions:

Cooling:

 hrs

Heating:

 hrs

**Table IEQc7.1-2. Cooling Mode**

Space Type	Design Operative Temperature (degF)*				Maximum Design Humidity (RH)				Design Air Speed (ft/min)			
	Spring	Summer	Fall	Winter	Spring	Summer	Fall	Winter	Spring	Summer	Fall	Winter

\* Operative temperature includes radiant effects. See ASHRAE Standard 55-2004, Section 5.2.1 for more information.

**Table IEQc7.1-3. Heating Mode**

Space Type	Design Operative Temperature (degF)*				Maximum Design Humidity (RH)				Design Air Speed (ft/min)			
	Spring	Summer	Fall	Winter	Spring	Summer	Fall	Winter	Spring	Summer	Fall	Winter

\* Operative temperature includes radiant effects. See ASHRAE Standard 55-2004, Section 5.2.1 for more information.

- ☐ The combinations of assumed personal factors, operative temperature, air speed, and humidity above are predicted to limit the percentage of dissatisfied people to less than 10% per Standard 55.

**Upload IEQc7.1-1.** Provide supporting documentation. This may include PMV/PPD calculations, ASHRAE comfort tool results and/or a copy of Figure 5.2.1.1 of ASHRAE Standard 55 indicating that all design conditions fall within acceptable ranges.

**LOCAL DISCOMFORT EFFECTS**

- ☐ Local discomfort effects have been considered and are not likely to exceed Standard 55 limits. When local discomfort effects are likely to occur, calculations were performed to demonstrate that the combination of assumed personal factors, operative temperature, air speed, and humidity above are predicted to limit the percentage of dissatisfied occupants to less than 10%.

**TableIEQc7.1\_4.** Local Discomfort Effects

Local Discomfort Effect	Not Likely	Calculations Performed
Radiant temperature asymmetry	<input type="checkbox"/>	<input type="checkbox"/>
Vertical air temperature difference	<input type="checkbox"/>	<input type="checkbox"/>
Floor surface temperature	<input type="checkbox"/>	<input type="checkbox"/>
Draft	<input type="checkbox"/>	<input type="checkbox"/>

**NATURAL CONDITIONING**

Mean monthly outdoor temperature:

Minimum:

degF

Maximum:

degF

This option is not applicable if mean monthly outdoor temperature is less than 50 degrees F.

This option is not applicable if mean monthly outdoor temperature is greater than 92.3 degrees F.

Select all that apply to the project building:

- ☐ The spaces have operable windows open to the outdoors readily adjustable by occupants.
- ☐ No mechanical cooling systems serve the space.
- ☐ No heating system is in operation when this method is used.
- ☐ Metabolic rates are expected to be from 1.0 to 1.3 MET.
- ☐ Occupants may freely adapt their clothing to the indoor and/or outdoor thermal conditions.

List the source(s) of weather data used for mean monthly outdoor temperature calculations

- ☐ Operative temperature is predicted to be within the 80% acceptability limits on Figure 5.3 from ASHRAE 55.

**Upload IEQc7.1-2.** Provide documentation with inputs and results of calculations or simulations. Include worst case design outdoor conditions and worst case predicted indoor conditions for each month. Show predicted worst case indoor conditions for each month on Figure 5.3 of ASHRAE Standard 55-2004.

## ADDITIONAL DETAILS

- ☐ Special circumstances preclude documentation of credit compliance with the submittal requirements outlined in this form.

### SPECIAL CIRCUMSTANCES

Describe the circumstances limiting the project team's ability to provide the submittals required in this form. Be sure to reference what additional documentation has been provided, if any. Non-standard documentation will be considered upon its merits.

**Upload IEQc7.1-SC.** Provide any additional documentation that supports the claim to special circumstances. (Optional)

- ☐ The project team is using an alternative compliance approach in lieu of standard submittal paths.

### ALTERNATIVE COMPLIANCE PATH

Describe the alternative compliance path used by the project team. Include justification that this path meets the credit intent and requirements. Be sure to reference what additional documentation has been provided, if any. Non-standard documentation will be considered upon its merits.

## SUMMARY

IEQ Credit 7.1: Thermal Comfort - Design Points Documented:

REFERENCE ONLY