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Mechanical Option

George W. Hays PK-8
Technical Assignment #1



Executive Summary

This report investigates the adequacy of outdoor air for the George W. Hays Public School in Cincinnati. To do this the designed values of outdoor air (OA) were compared against values determined using ASHRAE Standard 62.1-2004 ventilation requirements at design conditions. The Ventilation Rate Calculation Procedure was used and is found in Section 6 of Standard 62.1. This procedure is based on floor area, number of occupants, space category, and the air distribution system.

The structure contains three Air Handling Units (AHU's) that are responsible for supplying OA to every space in the building. AHU-1 serves the three story classroom wing of the building. AHU-2 serves 1st and 2nd floor classrooms. AHU-3 serves the gymnasium and the gymnasium support areas.

It was found that AHU-1 and AHU-2 do not meet the OA requirements of ASHRAE 62.1, while AHU-3 did meet the required minimum OA. AHU-1 is significantly under ventilated while AHU-2 is near ventilation requirements. Both of these discrepancies can be traced to different assumptions about the required OA design conditions and about OA requirements to particular zones. AHU-3 meet the requirements because of one dominating space for which design assumptions and calculated assumptions were similar.

The OA to the building was based on OA requirements of the Ohio Mechanical Code that only have a per person or per sq ft OA requirement. ASHRAE Std. 62.1-2004 has a required OA per person and per sq ft for each space. This requirement is to account for potential pollutants that may be produced from components of the room other than people. Because of the discrepancies between the OBC and ASHRAE 62.1 OA requirements for 62.1 were not meet for the George W. Hays Public School.