

Executive Summary

The Ventilation Rate Procedure and Indoor Air Quality described in ASHRAE Standard 62.1 is used as the basis for calculating the ventilation requirements and indoor air quality for City Hospital – Phase I. This report examines whether City Hospital – Phase I complies with ASHRAE Standard 62.1.

Phase I is a 300,000 square foot state-of-the-art facility owned and operated by City Hospital in southeast Pennsylvania. It houses support service, research facility, and a central utility plant in four levels with three levels below grade. The 205,000 square foot research facility has four levels with the lower three levels occupied by medical research spaces.

Medical research space accounted for 90% of the occupied zone in the building which cannot receive re-circulated air due to the threat of contamination from research spaces. Therefore the facility will be supplied with 100% outdoor air by four 100,000 air handling units by means of variable air volume (VAV) system. In addition to indoor air quality, exhaust air filtration will be critically controlled due to the nature of research substance.

Air handling units 3 and 4 service Research Level C has been chosen for analysis. This decision was based upon the following considerations. Research Level B, C, and D share similar layout, and two air handling units with 100,000 CFM capacity serve each level.

Ventilation rates set forth by Standard 62.1 are determined for each space based on the usage, occupancy density, and square footage of these areas. After following the zone calculation procedure outlined in section 6.2.2, it was determined that air handling units are compliant with ASHRAE 62.1 – 2004 ventilation requirement. Each research level requires minimum 18,000 CFM of outdoor air and 121,800 CFM is supplied at design condition. The difference can be accounted for by assumptions made prior to analysis, and various sources of exfiltration.

The study also verified that Phase I complies with Standard 62.1 Particulate Matter Removal with minimum 80% particulate filters for supply air, and 99.97% high efficiency particulate air (HEPA) filters at strategic locations. It ensured indoor air quality for occupant within the building as well as exhaust air quality.

All assumptions can be found on page 6 and all information was obtained from mechanical and architectural drawings as well as construction specifications.