

## **Executive Summary**

The American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) publish standards which serve as a basis of acceptable design for the building construction & design industry. Two standards in particular, ASHRAE 62.1-2007 and ASHRAE 90.1-2007, were used in this report to provide a basis of compliance for the City of Hope: Amini Medical Center.

The Amini Medical Center is a new building located in the county of L.A., California. This three story, 59,800 square foot, building is the newest addition to the City of Hope campus community. The Amini Center is designated as a clinical building comprised of labs, patient areas, offices, and storage areas.

For the compliance evaluation against ASHRAE 62.1-2007, Section 5: "Systems and Equipment" and Section 6: "Procedures" of the standard were assessed.

Compliance with section 5 required a systems and equipment review which identified construction measures, equipment fabrication, and materials to help prevent contaminants from entering and growing in a building. When evaluating the Amini Center for each compliance, I discovered that almost all the criteria had been met. Please see Appendix A for the breakdown this evaluation.

Compliance with section 6 dealt with performing the Ventilation Rate Procedure. As a result of this procedure, it was evident that the building air handling units (AHUs) surpassed the minimum ventilation required by Standard 62.1. The buildings fan coil units, however, were not provided with outside air, causing a compliance failure for 8 small units/rooms. Exhaust rates were also checked for compliance in rooms that that are known to produce contaminants or fumes and it was found that all applicable room were compliant with the exception of two "Break/Locker" rooms.

For the compliance evaluation against ASHRAE 90.1-2007, Sections 5 thru 9; Building Envelope, Heating, Ventilation and Air-Conditioning (HVAC), Service Heating Water, Power, and Lighting, were assessed.

The designed building envelope analysis revealed that the Amini Center fails the compliance of certain categories. These failures include lack of necessary building vestibule (or revolving doors) at the building main entrance, floor construction, and the glazing type selected. Beside these failures, all other requirements were met or were assumed to be compliant.

All mandatory provisions of the HVAC evaluation complied with standard 90.1. Due to a lack of the campus central cooling and heating plant information, minimum efficiency comparisons could not be performed.

Service water heating for the Medical Center is provided by a steam water heater. This type of equipment does not appear in the evaluation Table in section 7 and therefore does not have a minimum efficiency requirement. All other provision of the section were met which shows entire compliance for this section.

Section 8: "Power" requires wire sized at a maximum of 2% and 3% voltage drop for feeders and branch circuits respectively. It shall be assumed for this report that the design engineer took this into account when designing the system.

Lighting compliance was evaluated using the Building Area Method. This method provides a maximum lighting power density (LPD) in Watts/ft<sup>2</sup> that the designed lighting must not exceed. For the design of the Amini Center, the LPD was calculated at 0.85 W/ft<sup>2</sup>; which was less then the ASHRAE requirement of 1.0 W/ft<sup>2</sup> for a Health-care clinic.

Overall, the Amini Medical Center meets the majority of requirements set for by ASHRAE 62.1 & 90.1-2007. For the requirements that were not met, simple modifications could have been implemented at the design stage to meet ASHRAE, but, since ASHRAE was not the governing body for compliance when this building was designed, these issues did not come to fruition.