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Nova Classical Academy

The mechanical design prepared by Nasseff Mechanical Contractors in conjunction with Wentz Associates, Inc. Mechanical Engineering division meets State standards and will provide indoor air quality to meet the requirements of ASHRAE 62-2001 and ASHRAE 52.1. Specifically outside air ventilation volume is 10 CFM/person in the classrooms and 5 CFM /person in the offices. The Building Automation System (BAS) will provide for the monitoring of outdoor air flow and total air flow of the rooftop units serving the classrooms, common spaces and gym.

The temperature control and BAS provided for Nova Classical Academy exceeds the design of most average office buildings. The VAV system and individual zone control of classrooms is comparable to systems available in Class A office buildings.

The mechanical design includes the following items.

Mechanical Design Summary:

(Please note there were several voluntary alternate deductions that were rejected to maintain a higher level of heating and cooling performance.)

Classroom building

1. Heating, ventilation, and air conditioning (HVAC) is provided using four (4) rooftop units with variable frequency drives (VFD) to provide energy savings during occupied hours.
2. Each rooftop unit is provided with a factory 24 inch roof curb with vibration isolation rails to minimize transferred noise from the fans and motors.
3. All ductwork main risers are sized for medium pressure. Branch mains, distribution ductwork, and diffusers, registers and grilles are sized for low pressure. The low pressure drop at the diffusers, register and grilles reduces air noise transferred to the space.
4. The HVAC control system is an ALC WebCTRL graphical user interface package provided on a server/PC computer system. The BAS is web based and BACnet compatible.
5. The classrooms have individual temperature control. The 75 temperature controlled zones are provided and each have a VAV box, hot water reheat coil and space sensor. The average air change rate in the classrooms, based on maximum VAV supply air volume, is 8.8 air changes per hour.

6. One (1) exhaust system serves all toilet rooms, janitor closets and fume hoods.
7. Hydronic heating system including one (1) high efficiency boiler, boiler pump and system circulating pump with a VFD to reduce energy use in part load conditions.

Common Area (Cafeteria, Kitchen, Music Rooms and Administration Offices)

1. Heating, ventilation and cooling is provided using one (1) rooftop unit with variable frequency drives (VFD) to provide energy savings during occupied hours.
2. The rooftop unit is provided with a factory 24 inch roof curb with vibration isolation rails to minimize transferred noise from the fans and motors.
3. Mains, branch mains, distribution ductwork, and diffusers, registers and grilles are sized for low pressure. The low pressure drop at the diffusers, register and grilles reduces air noise transferred to the space.
4. The exterior offices, interior administration offices and music rooms have individual temperature control. Five (5) temperature controlled zones are provided; each with a VAV box, hot water reheat coil and space sensor.
5. Two (2) exhaust systems serve the toilet rooms and Nurses room.

Gymnasium (Stage and Lockers)

1. Heating, ventilation and cooling is provided using two (2) constant volume rooftop units.
2. Two (2) temperature controlled zones each provided with a by-pass VAV box and space sensor.
4. Two (2) exhaust systems serve the locker rooms.