Livingston School District
Mount Pleasant Middle School

MOUNT PLEASANT MIDDLE SCHOOL

HVAC

M-01 Heating Plant:

Observations:
The existing boilers have recently been upgraded. (3) steam boilers (8660 mbh each) manufactured by Weil-McLain have been installed. Newer hot water converters and distribution pumps have also been installed, making both steam and hot water available for heating the school. The boilers are controlled by a Johnson-Metasys DDC system. Condensate pump for the heat exchanger along with the vacuum pump have corroded receivers and old pumps.

Recommendations:
Replace the steam condensate pumps/receivers with new. Replace the vacuum pump system as well. Should major upgrades in M-02 or M-03 be undertaken, we recommend a changeover of the boil trim to operate as hot water in lieu of steam. Cost is included in M-02 & M-03.

M-02 Heating & Ventilating Systems:

Observations:
Classrooms – Almost all older classrooms are served by steam unit ventilators with supplemental fin-tube radiation. The units are original to the building and appear to be in fair to poor condition and have well exceeded their expected operating life. Some older classrooms have been upgraded with new hot water unit ventilators with supplemental fin-tube radiation. Newer (renovated areas) are served by new RTU's. A few window air conditioners are present to provide cooling to select rooms. Operating along with the unit ventilators, are exhaust fans, which assist in maintaining building pressure. Some fans were not energized and some appeared in need of repair.

Auditorium - The room is served by steam heating & ventilating (H&V) units. The units are original to the building and appear to be in fair condition, though they have exceeded their expected operating lives.

Gymnasium - The room is served by steam heating & ventilating (H&V) units. The units are original to the building and appear to be in fair condition, though they have exceeded their expected operating lives.

Cafeteria – The cafeteria utilizes steam unit ventilators to provide space heating and ventilation.

Media Center - The media center utilizes a newer gas-fired, heating/cooling rooftop unit.

Miscellaneous Areas – The main circulation corridors utilize hot water cabinet unit heaters, but currently receive no ventilation to the space.

Recommendations:
Spaces such as the classrooms, auditorium, cafeteria and gymnasium should have the HVAC equipment replaced since it has been in service long after its expected operating life. The new equipment will replace the existing equipment in-kind, except that additional outdoor ventilation air will be introduced per today's codes and the new equipment will be fitted with microprocessor controllers to integrate with a building control system. Areas that receive little or no ventilation must be upgraded as required. Conversion of the steam system to a hot water system is desirable for better controllability. Exhaust fan maintenance should be addressed by repairing units where possible and replacing those in bad repair. In addition, boilers should be retrofitted to operate as hot water (instead of steam). New piping, pumps and controls are required. Previously installed heater exchangers can be removed.

M-03 Cooling Systems:

Observations:
Office Areas – The middle school admin area utilizes a newer gas-fired, heating/cooling rooftop unit.

Media Center – The media center utilizes a newer gas-fired, heating/cooling rooftop unit.

Music Room - The music room in the middle school is served by a split system heating/cooling unit.

Recommendations:
Though no immediate upgrades are required, consideration should be given to provide cooling to the classrooms, auditorium, cafeteria and gymnasium. Vertical, self-contained heating/cooling units are recommended for the classrooms, while multiple rooftop units with heating/cooling are recommended for the larger spaces (i.e. auditorium, gymnasium, cafeteria).

M-04 Temperature Control Systems:

Observations:

With the exception of the boilers and newer additions, the control of the heating, ventilation and temperature control of the spaces is accomplished via a pneumatic control system, which is interconnected via P/E switches to a newer DDC system. The DDC system provides global start/stop of the HVAC equipment. The system appears to be marginally adequate for task at hand. The newer renovations have been fitted with new Johnson-Metasys DDC controls.

Recommendations:
While the present system may be functional and familiar to the operating, staff, we recommend that a complete upgrade of the existing pneumatic temperature control system be initiated. A new system of direct digital controls (DDC) should be employed. The DDC system will automate the operation of the HVAC equipment, aid in maintenance efforts, signal trouble alarms and reduce overall building energy usage. The new DDC system should be based on Johnson-Metasys (or another compatible company), which is currently in use in the District.

The system will be networked to a district-wide monitoring system

M-05 Plumbing

Observations:

There are two Art Classrooms at the northwest corner of the building. One class has a solids interceptor below the sink while the corner classroom art sink does not.

The school Kitchen 3-compartment sink does not have a grease interceptor on the waste line.

The second floor student toilet rooms do not have ADA compliant fixtures. The first floor student toilet rooms do have ADA fixtures in the elementary wing. The student toilet rooms at the north east wing and at the center point of the building are not ADA compliant.

There are several wall mounted drinking fountains throughout the building that are operating sufficiently. Not all locations have ADA fountains.

Recommendations:
A solids interceptor should be installed on all art room sinks to protect the waste piping from debris and clogs.

The second floor student toilet rooms should be modified to provide for ADA fixtures.

The existing kitchen 3-compartment sink should have a grease interceptor installed to protect the waste line from clogging.

Drinking fountain locations should have an ADA compliant fixture.

M-06 Fire Protection:

Observations:

There is no dedicated fire water service line to the building. There are limited area sprinklers installed in the Media Center office.

The school kitchen cooking hood is equipped with a chemical suppression system.

There is a storage room adjacent to the Tech. Education at the northeast area of the building were piles of wood is stored without fire protection.

Recommendations:
Provide and install a limited area sprinkler system in the wood storage room adjacent to tech. education.

ELECTRICAL

E-01 Electrical Service

Observations:
The existing electrical service is a 208Y/120 volt, 3000 Amp service with four services disconnect switches. The existing disconnect switches total 2700 Amps. The electrical service is obtained from a PSE&G, 750 kva pad mounted transformer with electric meter number 778015156 and PSE&G account number 12-616-025-2-8.

The peak electrical demand is 256.0 kw or 711 amps which leaves 608 kw or 1688 amps available for future renovations or expansions.

This service also serves the elementary school. There is space for two additional service disconnect switches

There is a dedicated computer distribution system fed through an isolating transformer and serving computer loads through the school

The electric service and distribution equipment looks relatively new and to be in good condition.

There is a TVSS on the main service and a TVSS on the computer distribution panel.

There is no fire pump fed from this service.

There is no generator at this school

Recommendations:
The existing PSE&G service and service equipment is adequate for the current building needs. This system should be cleaned and serviced periodically it insure long life and proper operation.

Should it be decided to fully or partially air-condition the subject building then the electrical service distribution will have to be upgraded.

E-02 Electrical Distribution

Observations:
The electrical distribution system is all at 120/208 volts. There is a normal power distribution system and a computer distribution system. The computer system was installed in the late '90s and appears to be in good condition. The normal distribution system is combination of newer and older (original) panels in the building.

Recommendations:
The existing distribution system serving the school should be tested and serviced periodically to insure long life and proper operation.

E-03 Devices

Observations:
Local receptacles were sparse in some areas and computer areas were fed with surface mounted raceway.

Recommendation:
As the building is block wall construction, any renovation would likely require surface mounted raceway and outlets built into new partition walls. Additional outlets should be provided as required.

E-04 Normal Lighting

Observations:
The majority of the school has been upgraded to modern T-8 lighting. Some of the corridors still have T12 lamps and fixtures. There is also a mix of direct pendant, indirect pendant, and recessed fixtures in classrooms. For the most part this lighting is appropriate for the use. Some classrooms and areas appear dark and should have lighting upgrades to meet the New Jersey School code and the recommendations of Illuminating Engineering Society.

Recommendation:
Upgrade the areas of inadequate lighting with new lighting producing a higher level and quality of light. Additional switching or controls could also be provided to bring the school up to the New Jersey Energy Code. (ASHRAE 90.1)

E-05 Exit Signs and Emergency Lighting

Observations:
The school does not have an automatic stand-by generator so it must rely on batteries for exit signage and egress lighting. Exit signs are located appropriately throughout the school. Many are large older units with incandescent lamps and large batteries. Egress lights are also battery backed wall pack type located throughout the school. It appeared to be deficient in egress lighting.

Recommendation:
Upgrade the Exit signs to newer LED style signs which will reduce power consumption and reduce maintenance. Provide additional egress lighting packs where necessary to provide the minimum 1 foot candle average along the path of egress.

E-06 Exterior Lighting

Observations:
Wall mounted HID fixtures are located around the perimeter.

Recommendation:
Replace/ repair fixtures as required, re-lamp and provide additional fixtures in low coverage areas.

E-07 Fire Alarm

Observations:
The fire alarm system is an Edwards Systems Technology IRC-3 addressable fire alarm system which is a mix of newer addressable and older non-addressable equipment.

This fire alarm system serves both the middle school and the elementary school. Existing system does not meet current requirements. There are missing several strobes and pull stations.

We could not visibly see the hood Ansul system connection to the fire alarm system.

Recommendation:
Proceed with the board of education's plans to replace the fire alarm system in December of 2007.

E-08 Intercom System

Observations:
The intercom is a Bogan Multicom 2000 located on the second floor serving the building serving the middle school.

The system is programmable with output zones and serves the middle school side only.

Classrooms have telephones and no call switches to initiate an intercom call. Calls from the classroom are by telephone handsets.

Recommendation: None

E-09 Clock System

Observations:
The existing clock system is an ISS4 from Institutional Service Corp. and is located on the second floor of the middle school. Although the system looks to be in good operation. There were several clocks which were not in sink or had been replaced with battery clocks. This could be from damaged wiring, shorts or open circuits.

Recommendation:
Replace the existing clock system with a new wireless system.

E-10 Security System

Observations:
The school has an existing security system comprising of motion sensors throughout the first floor corridors and classrooms.

Recommendation: None

E-11 Stage and Auditorium Systems

Observations:

The sound system, lighting and stage lighting systems are overall inadequate for the school's needs and should be replaced.

Recommendation:
Provide modern sound, lighting and stage lighting systems to meet the needs of the school.

E-12 Tele/Data:

Observations:
The telephone service is provided by Verizon PRI-T1, digital circuits and various copper POTS lines. The telephone service is distributed to users over combined voice and data network via Cisco Unity Servers.

Recommendations:
Verify TIA/EIA standards were used for distance limitations, cable mapping, etc. Verify TVSS devices were used on utility and emergency links (faxes, 911, F.A.C.P. dialer, etc.) Verify that all computer power feeds originate from a panel employing a transient
voltage surge suppressor (TVSS) device. If TVSS devices are missing provide and install.