

To: Judith Hempfling

From: Jerry Papania

Subject: Comments related to High and Middle School Building HVAC, Plumbing and Other Issues

## **HVAC**

Air conditioning of the school is accomplished by numerous predominantly roof-mounted condensing units serving designated areas of the building. The age of the units range from 10 to 20 years. Heating of the school is accomplished by three gas fired hot water boilers along with gas fired and electric resistance air heaters associated with the HVAC system air handlers.

A service contract is in place for HVAC system inspection on a quarterly basis by Mechanical Systems of Dayton. Issues requiring attention that are found during routine inspections are authorized for repair on an as-needed basis. Contract HVAC service required outside of quarterly inspection is also handled by MSD. The current HVAC equipment is felt to be adequate to handle current class room heating and cooling loads (the school's gym and hallways are not air conditioned). However the HVAC control system performance is problematic. Replacement of the current control system is likely advisable.

Indoor air quality is also an issue. It is questionable whether current ASRHAE (American Society of Refrigeration Heating and Air Conditioning Engineers) building ventilation standards are being met. This needs to be explored especially in light of the current pandemic. This issue, along with air filter systems, materials and replacement schedules should be addressed by the MPA in their evaluation of the HVAC systems.

## **Plumbing**

The building's plumbing has been repaired and updated over the years. The building's galvanized steel main water service line experienced a leak in an underground inaccessible area over a decade ago and was fitted with a copper liner pipe that is reported to provide adequate flow capacity. It remains trouble free. There is however an underground inaccessible galvanized water line that services the locker room area that could become a problem in the future. In order to address this issue maintenance staff has added valves to the water distribution system during previous building addition construction that will allow this line to be relocated above ground as the need arises or on a preemptive basis. Current technology also allows in-place installation of polymer impregnated liner sleeves in deteriorated piping systems. This is commonly done in a variety of underground applications.

The first floor restrooms have been updated over the years with modern fixtures. Wall and floor surfaces in the two first floor restrooms are ceramic tiled and easily maintained. A comment was noted about the low height of the commodes in the women's restroom. This fixture height is dictated by piping that is not easily modified. There are no student restrooms on the second and third floors of the 3 story portion of the building. There is however a small faculty restroom on those floors.

The school's locker rooms have been upgraded over the years. While shower rooms currently need attention they have reportedly experienced little or no use in the past. Bicycles are currently stored in the men's shower room.

### **Other Comments**

The base of the south brick masonry wall encasing the modular construction lands inside the outer face of the concrete block foundation. This is the result of a construction error. While not a structural problem it results in rain water entering the cores of the concrete block foundation and contributes to the presence of moisture in the crawl space under the modular units. Additionally a previous inspection revealed that there is no vapor barrier in the crawl space beneath the modular units. The air conditioning system for these units is routinely operated throughout the summer months in order to lower the humidity and combat the growth of mold and mildew. This situation could likely be mitigated at little cost by installing concrete mortar cove at the bottom of the south masonry wall to cover the exposed top of the foundation blocks and prevent rainwater infiltration. Additionally a plastic sheeting vapor barrier can be installed over the soil in the crawl space beneath the modular construction.

Most of the facility's original windows have been replaced with thermal pane windows. While they were designed to be able to be opened this feature has been disabled for building security issues when school is not in session.

The design of the three story portion of the building allows most interior walls to be removed allowing the opportunity for extensive reconfiguration of this space.

An unused elevator shaft is located at the west end of the three story construction and could be used as a vertical pipe/wiring/duct chase as needed.

There are aspects of the building that do not meet current Ohio Building Code, OSHA and ADA requirements for new construction. Some may be "grandfathered", some may require upgrade by Building Officials if not addressed by choice.

There appears to be a lack of storage space at the facility as evidenced by materials and equipment being stored in areas intended for other use.