



J.M. VEROSTKO, INC.
MECHANICAL ENGINEERING CONSULTANTS

"ENGINEERING EXCELLENCE"

Considerations regarding replacement of existing boilers at MS/HS:

1. The existing boilers are steam, with two being very old and one newer unit that was installed in 2008. The boilers being replaced are large and will probably need cut into pieces to remove. In addition, the new boilers may need broken down for the basement installation. There will be pipe modifications and valving required to allow the system to properly operate. **An estimate to replace these boilers with minor pipe upgrades is \$300,000 - \$350,000.** This cost only includes the HVAC and plumbing components for the boilers replacement. **This price does not include any hazardous abatement that may be required, control upgrades or mechanical system code deficiencies (outside air ventilation, improper equipment efficiencies, etc.) or building pipe and equipment upgrades.**
2. **The cost to replace the boilers as noted in item #1 and to replace all the piping, valving, terminal units and other heating equipment that is 87 years old and needs replaced is \$1,700,000 - 2,000,000.** This number will also have a ceiling component at locations where piping is being replaced. There may be opportunities to expose pipes below the ceiling. **This range does not include any air conditioning or upgrades to the building make-up air and/or ventilating units.** The controls will be upgraded with the boiler and new unit vents, etc.
3. **There are many code related and energy efficiency items that are deficient with the heating system presently in place.**
 - a. Steam is the hardest system to control with very little separate controllability.
 - b. Building is deficient in ventilation air. This coupled with no air conditioning is a very tough learning environment.
 - c. **Controllability of each classroom is not possible. The control system is pneumatic with many thermostats and components not working properly.**
 - d. **Most of the equipment in the facility will not meet the minimum energy codes and guidelines.** All newer, high efficiency equipment (boilers, chillers, fan motors, pump motors, etc.) are designed to meet and exceed these minimum energy requirements.
 - e. When the original facility was built, the engineering design was not as aware of energy conservation and energy depletion as we are today. Modern engineers almost always design with LEED principles even when the projects aren't LEED certified.
 - f. Longevity - The forced air systems (AHU's with VAV boxes) offer separate control labor for each space, very high efficient equipment and many years of reliable service. This system is installed in 75-80% of the new schools and many of the renovation projects.