Rye City School District
April 12, 2016

OSBORN ELEMENTARY SCHOOL EMERGENCY FURNACE REPLACEMENT PROJECT

Background / Course of Action:

The original portion of the building constructed in 1957 has a single built-in-place air handling unit that provides heating and ventilation to the entire 1957 building. The unit is comprised of a fan, filter rack, hot deck and tempered (cold) deck. The hot deck consists of a cased cast iron oil fired furnace. This furnace has been repaired many times over the years and is no longer repairable per the District's service contractor. It may survive the current school year but will not be able to be used in the fall. We have recommended and the District has undertaken to monitor the building for products of combustion in the airstream. To date those test have been negative.

From the unit, pairs of hot and cold deck ducts run to seven (7) areas of the building. Each room in these areas has a supply duct that connects to the hot and cold ducts with a mixing damper that allows further tempering of the air. Fresh air introduced by the central air handling unit (AHU) is exhausted via roof mounted exhaust fans serving many of the spaces, in particular the Auditorium and Gym.

The building has an existing gas service and roof mounted 3" gas piping in proximity to the existing AHU machine room.

The proposed course of action:

- Place two (2) roof mounted high-efficiency gas fired energy recovery units (ERUs) above the Auditorium and Gym and intercept the ductwork currently serving these areas. This will render the ability to operate these spaces independently from the rest of the building and each other. Since these spaces are the major users of outdoor air the ERUs will substantially reduce the energy required to operate them.
- Remove and replace the existing failed standard efficiency oil fired furnace with a new high-efficiency gas fired unit. The existing AHU will be modified as required to accept the new furnace and de-tuned for the reduced airflow requirement of the remaining five (5) zones. The new furnace will likely have to be brought in through a new opening in the existing roof.
- Due to long equipment lead time, it is recommended that the District pre-purchase the furnace and ERUs. We are working on the selection and specification of the equipment.
- KSQ and DBE are in the process of preparing bid documents for the installation of the new equipment with all related ductwork modifications, controls, electrical connections, gas meter upgrade (if necessary), roof, structural, abatement and ceiling work. The project would be bid ASAP in order to complete the work by September school opening.
- The existing oil tank serving the furnace would be taken out of service in accordance with applicable code requirements.
- If funds allow, the existing pneumatically actuated space mixing dampers would be converted to DDC control and integrated into the existing Honeywell system serving the building.