

November 28, 2014

Dr. Kevin Nohelty
Assistant Superintendent for Business Operations and Human Relations
Harvey School District 152
Administrative Center
16001 Lincoln Ave.
Harvey IL 60426

Re: Brooks Middle School
Air-Handling and Condensing Units
STR Project No. 14090

Dear Dr. Nohelty:

Per the September 10, 2014 meeting with your Board, our mechanical engineer, AMSCO, reviewed the condition of the existing equipment at Brooks Middle School holistically. Here are their findings and recommendations.

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The existing HVAC system in the building is in most part original equipment from when the building was first built. The existing system is as follows:

HEATING PLANT

- **Description:** 2 Burnham 4FW-345-4S-LB gas fired hot water boilers with an efficiency of less than 80%. Hot water is piped from the boiler room to VAV boxes, cabinet unit heaters and air handler coils.
- **Condition**
 - The boilers are in poor condition and are both leaking. They are considered beyond their useful life.
 - The water distribution system throughout the building appears to be in good condition.
- **Recommendations**
 - The existing boiler and pumping system within the boiler system should be replaced with a new, 96% efficient boiler system. The pumping system should be replaced with a new constant primary/variable flow secondary pumping system reducing energy usage as heating demand decreases.

COOLING SYSTEM

- **Description:** The building's cooling requirements are provided with 3 direct expansion R-22 condensing units located on the roof. These condensing units are connected to air handling units AH-1, AH-2 and AH-3. The condensing units that serve AH-1 and AH-2 are 80-ton units and the unit that serves AH-3 is a 10 ton unit.

- **Condition**
 - The two 80 ton condensing unit are in a failing condition and are requiring major repairs if additional service life is to be expected with that under consideration these units should be considered beyond their useful life.
 - The ten-ton condensing unit although still functioning should be schedule for replacement.
- **Recommendations**
 - The two 80-ton condensing units along with the associate air handlers should be replaced as a complete high efficiency solution. The new condensing units would be high efficiency type with digital scroll compressors that would modulate with the cooling demand for an energy efficiency increase of 25 to 30%.
 - The ten-ton condensing unit along with the associate air handler should be replaced as a complete high efficiency solution. The new condensing unit would be high efficiency type with digital scroll compressors that would modulate with the cooling demand for an energy efficiency increase of 25 to 30%.
 - The gymnasium is not currently air conditioned if there is a desire to cool the space and new condensing unit and air handling system would need to be provided. The ductwork in the space would also need to be insulated and a durable canvas jackets applied.

VENTILATION SYSTEMS

- **Description:** The building's ventilation needs is provided through 4 air-handling systems. There are two air-handling units' AH-1 and AH-2 that are heating/cooling variable air volume units that feed the classrooms and library. The spaces served by AH-1 and AH-2 are provided with variable air volume boxes with hot water reheat. There is an air-handling unit AH-3 that is a constant volume heating/cooling unit that feeds the office area. There is an air-handling unit AH-4 that is a constant volume heating only unit that feeds the gymnasium.
- **Condition**
 - The air-handling units are in fair condition but are nearing the end of their useful life.
 - The variable air volume boxes (VAV) are original pneumatically controlled boxes that are out of date and need the end of their life.
- **Recommendation**
 - Replace AH-1 and AH-2 air handling units with new modular air handling unit with new DX coils and hot water coils. Install frequency drive on fans for variable air volume operation.
 - Replace AH-3 air handling unit with a new modular air handling unit with new DX coil and hot water coil.

- Replace AH-4 as a heating only system with a new air handling unit with hot water coil.
- Replace all VAV boxes with new.

TEMPERATURE CONTROLS SYSTEM

- **Description:** The existing temperature controls system for the building is the original pneumatic controls. There is a central controls compressor in the boiler room along with the pneumatic control panels.
- **Condition**
 - The controls should be considered inefficient and out of date.
- **Recommendation**
 - As part of a total building update a new Direct Digital control system should be installed that could provide fine-tuned operation of equipment resulting in an energy savings within the building of approximately 15%.

Budgets

- Refer to the attached spreadsheet Mechanical System Preliminary Budget, dated, September 15, 2014. We would like to review these estimates with you and the Board to determine a direction for the work.

Schedule

- We believe it is in the best interest of District 152 to bid this project no later than early March 2015 to obtain quality competitive bids. To do achieve this bidding schedule, it is imperative that we have direction on project scope prior to Christmas 2014.

Professional Services Fees

Professional services fees are in addition to the construction budget show above and include architecture and MEP engineering. The fees below also do not include customary reimbursable expenses, such as printing, reproduction, delivery, messenger, mail and other out-of-pocket expenses made in the interest of the project.

- We propose a fee of eight point five percent of the cost of construction (8.50%)

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We believe this letter provides the information you need to make an informed decision. We look forward to discussing the various options and solutions at our meeting with you on December 8, 2014. If you have any questions regarding this report or any other matter relating to this project, please do not hesitate to call me.

We appreciate this opportunity to continue our long-term relationship with you and Harvey School District 152. Thank you for this opportunity to serve you.

Sincerely,
STR Partners LLC

A handwritten signature in black ink, appearing to read "Jan T. Taniguchi". The signature is fluid and cursive, with a large initial "J" and a long horizontal stroke at the end.

Jan T. Taniguchi, AIA, LEED-AP
CEO/Managing Principal

cc: Colby Lewis
Thomas Allen
Dan Wesley

Attachment: Mechanical System Preliminary Budget

MECHANICAL SYSTEM PRELIMINARY BUDGET

BROOKS MIDDLE SCHOOL

STR Project No. 14090

9/15/14

	HEATING	COOLING			VENTILATION				CONTROLS
	Replace 2 Boilers	Replace two 80-Ton Condensing Units	Replace one 10-Ton Condensing Unit	Add A/C to Gym: New Condensing Unit and AHU	Replace AH-1 And AH-2	Replace AH-3	Replace AH-4	Replace VAV Boxes	New Head-End DDC Control
Equipment: Boiler	\$275,000								
Equipment: Condensing Units		\$160,000	\$40,000	\$80,000					
Equipment Air Handling Units				\$80,000	\$160,000	\$60,000	\$60,000		
Ductwork Modification				\$60,000	\$40,000	\$10,000	\$10,000		
Ductwork Insulation				\$100,000					
Lifting/Settling		\$12,000	\$6,000	\$10,000					
Refrigerant capture and recycle		\$10,000	\$4,000						
New DX Piping to AHU		\$24,000	\$12,000	\$12,000					
Electrical connect/reconnect		\$20,000	\$10,000	\$20,000	\$20,000	\$10,000	\$10,000		
Controls		\$35,000	\$17,000	\$45,000	\$45,000	\$22,500	\$22,500		
Roofing		\$10,000	\$8,000	\$10,000					
Interior Allowance				\$10,000	\$15,000	\$15,000	\$15,000		
Test and Balance				\$10,000	\$8,000	\$4,000	\$4,000	\$24,000	
New VAV Boxes Piped and Installed								\$324,000	
New Thermostats								\$80,000	
Ceiling Removal, Reinstallation								\$40,000	
Equipment DDC Control System									\$85,000
Subtotal	\$275,000	\$271,000	\$97,000	\$437,000	\$288,000	\$121,500	\$121,500	\$468,000	\$85,000
Contingency	\$55,000	\$54,200	\$19,400	\$87,400	\$57,600	\$24,300	\$24,300	\$93,600	\$17,000
Contractors OH&P	\$49,500	\$48,780	\$17,460	\$78,660	\$51,840	\$21,870	\$21,870	\$84,240	\$15,300
Total Construction Budget	\$379,500	\$373,980	\$133,860	\$603,060	\$397,440	\$167,670	\$167,670	\$645,840	\$117,300

STR