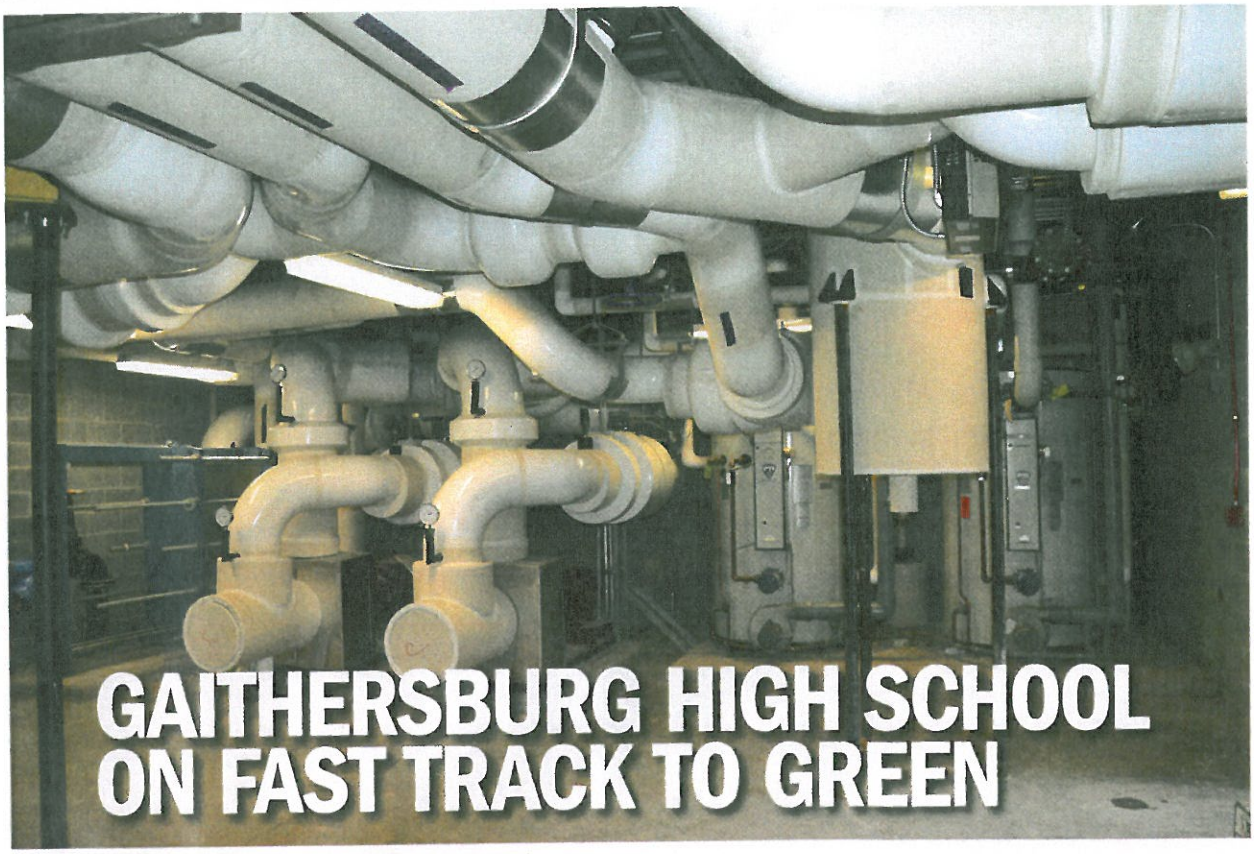
 by John Mesenbrink



GAITHERSBURG HIGH SCHOOL ON FAST TRACK TO GREEN

GAITHERSBURG, MD. — Time. For some, it is a contractor's best friend. For others, it is their biggest foe. For Shapiro & Duncan, Rockville, Md., time was a defining factor of the company's excellence through one of its latest projects.

The new Gaithersburg High School included renovation of an existing 1,000-seat auditorium, construction of a 3rd floor addition to the Performing Arts wing completed in 2005, and complete replacement of the original 1951 school building on the existing 41 acre site, all while the school was in full operation. Through the team's efforts, Shapiro & Duncan was able to step into a two-year project that was less than 40% complete, and in less than eight months — jumping on the project Jan. 21, 2013 — finish the project in time for the original school start date of Aug. 26, 2013. When the bell rang on opening day, the new $95.8 million, state-of-the-art Gaithersburg High School was ready for students.

Putat lorem non utpat, conse venim velesto ea facidunt wismolore

FAST TRACKING

Shapiro & Duncan entered the project behind schedule due to a bond default by the previous mechanical contractor. The project should have been approximately 65% complete, but it was actually less than 40% done. Shapiro & Duncan evaluated the project status, developed a list of tasks to be completed and provided the appropriate manpower, materials and supervision to make sure the project was back on track. "We were brought on board in January 2013 and immediately determined the project status and negotiated contract terms with the bonding company to get the project successfully completed," says Mark Drury, vice president of business development, Shapiro & Duncan. "Within two weeks, we had 60 tradesmen working multiple shifts bringing the schedule back on track to successfully complete the project."

As a result of strict attention to detail, the team was able to make changes to the schedule. "Through our team's review and the information accumulated through our detailed overview process, we were able to revise the existing project schedule with the help of the original subcontractors and construction manager HESS Construction & Engineering," says Stuart Clayton, senior project manager, Shapiro & Duncan. The new working schedule the team developed enabled them to implement the additional workforce necessary to overcome the amount of rework, get the project back on schedule and maintain the project schedule without any further issues.

In a little more than three weeks, the Shapiro & Duncan project management team was able to produce a full set of current contract documents, which included all RFIs and changes to date. Next, the field team did a complete job review and provided detailed equipment and material take-off lists, including items that were on site and items that were missing. "This helped us determine what long lead items would be needed going forward," says Clayton.

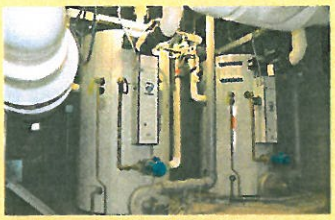
If that wasn't enough, Shapiro & Duncan had to correct past mistakes and inadequacies (see sidebar). One of the hardest challenges of this project was uncovering what the previous contractor had properly installed and completed for the mechanical and plumbing systems. Adds Clayton, "Through our field team's evaluations, we identified a long list of tasks that had to be completed to correct hundreds of deficiencies and meet contract requirements."

INTO THE GREEN

The 420,000-sq.ft. facility is designed to encourage a flexible approach, which accommodates changing educational programs, while maintaining an efficient and cost-effective use of space, including an extensive green roof. The Montgomery County Public Schools (MCPS), forward in its thinking, mandates LEED Silver for all of its projects and Hess Construction & Engineering took it to the next level pursuing LEED Gold for the project. MCPS regularly looks to geothermal systems as a leading option on most of its new construction where feasible based on the long-term savings in operating costs. (The Gaithersburg High School project is awaiting LEED certification; the entire project is not completed, which includes demolition of the remains of the old school, and completing additional athletic fields and courts, as well as a concession stand for outdoor sports activities. Completion of the project is projected for summer 2014.)

The job included piping rework.

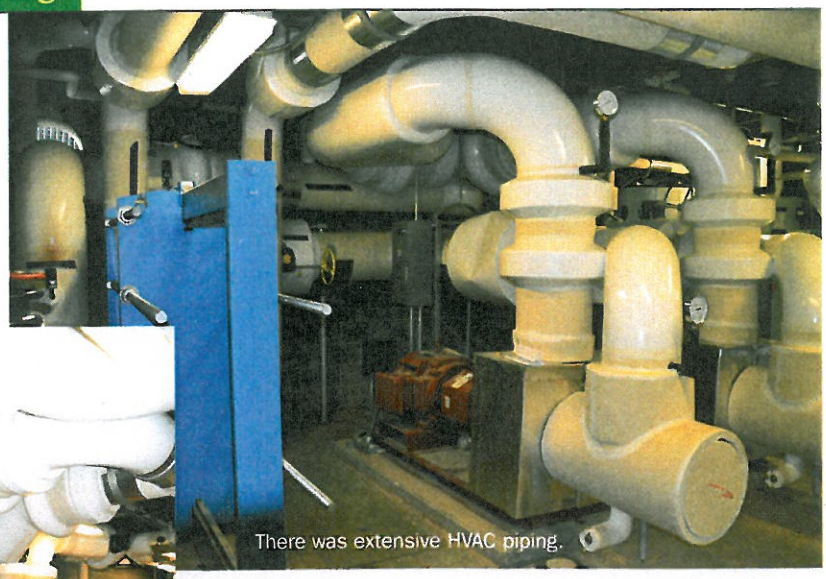
The mechanical system consists of a vertical geothermal well HVAC system that is installed underneath the baseball field, football field and two other adjacent areas. The geothermal piping system is supported by two, 250 HP/3,555 GPM Bell & Gossett (B&G) system pumps that feed 17 Season 4 energy recovery units along with 309 Trane water source heat pumps and two, 40 HP/1,890 GPM B&G condenser water pumps, which support the heat exchanger and the Baltimore Aircoil Co. (BAC) cooling tower.



THE DEFICIENCY LIST

Shapiro & Duncan was met with quite a challenge. Not only were they fighting against time to complete the project, they had to deal with making sure that the installation was done before their arrival was examined, analyzed and corrected. Here is a list of some of the mechanical system's initial problems:

- Removal and replacement of frozen geothermal valves in the valve room.
- Removal and replacement of incorrectly sized and installed HVAC and plumbing sleeves.
- Removal and replacement of incorrectly sized hangers for HVAC and plumbing piping systems.
- Installation of missed isolation valves on the HVAC system.
- Reworking weld joints and valves in HVAC piping.
- Removal of non-specified galvanized piping for air compressor lines and replacement with Type K hard piping.
- Installation of numerous high pipe drains on the HVAC piping system.
- Reworking incorrectly installed Zurn trap primers.
- Installation of missed sink plumbing rough-ins.
- Reworking incorrectly installed condenser water piping and fittings.
- Removal and replacement of gas piping in Science rooms due to leaks from incorrect pipe threading.
- Removal and replacement of PVC waste and vent piping that was found leaking during testing.
- Removal and replacement of incorrectly installed geothermal balancing valves.


There was extensive HVAC piping.

Mitsubishi split system fan coil units provide an alternative source for heating and cooling in specific use areas. The school system utilizes geothermal when appropriate conditions exist. "The Seasons 4 energy recovery units, the condenser water system, the Mitsubishi splits, etc., all contribute to enhance commissioning. All of these together reduce the energy usage to maximize the LEED points achieved," says Drury.


Bell & Gossett pumps.

In addition to the geothermal HVAC set-up, Shapiro & Duncan was responsible for the plumbing at the Gaithersburg High School. "The plumbing is all about water conservation, and the goal is a 30% reduction in water usage, says Drury. Installation of Kohler low-flow toilets — furnished with Bemis seats — equipped with Sloan flush valves helped reduce water use throughout the school. Other critical products that were installed by Shapiro & Duncan include Elkay sinks and faucets; Leonard Valve tempering valves; Jay R. Smith Mfg. Co. drains; Mayer Brothers grease interceptors and sand and oil separator; Watts backflow preventers; Apollo valves; a Syncroflow domestic booster pump package; Maxitrol pressure reducing valves and regulators; and PVI gas domestic water heaters.

Although the overall project installation has been in operation for only a couple of months, "Feedback has been very favorable," says Drury. "I know MCPS is happy that the project was completed on time and that the team was able to bring the LEED Scorecard from the mandated Silver level to the Gold level."


There are 309 Trane water-source heat pumps.