



M A G A Z I N E

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HOME OF LIONS' PRIDE

LIBERTY MIDDLE SCHOOL
OFFERS STATE-OF-THE-ART EDUCATION

BY CLARE DESMOND

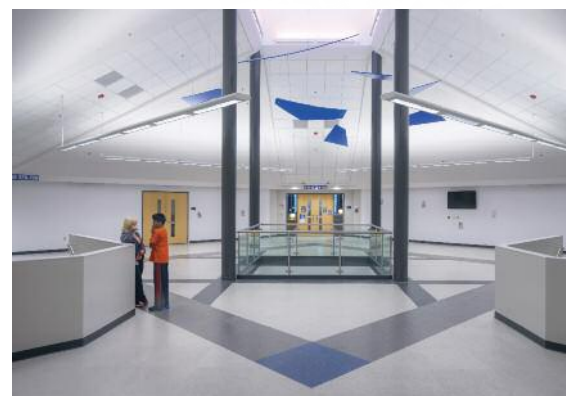
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The 23-acre site at 46250 Cherry Hill Road in Canton used to be a pumpkin patch. Now, it's home to the new Liberty Middle School, a 140,000-square-foot marvel of a school that serves 852 students, but can accommodate up to 900 students, in grades 6-8 in the Plymouth-Canton Community School District. It replaced Central Middle School in downtown Plymouth, which was closed and then sold.

Liberty Middle School is a state-of-the-art facility that combines technology-driven and STEM-driven (Science, Technology, Engineering, Math) education initiatives with collaborative learning spaces. The school boasts, among many other features, computers, digital tablets and all needed technology devices and the power to use them, to prepare students to be college-ready and career-ready for a world that requires competence with them. Other features include two science labs, separated by a 240-square-foot teachers' prep room shared by both labs, two gymnasiums, and a "cafetorium" that combines the auditorium and cafeteria.

The new school also has laboratories for the other three STEM initiatives: Technology, Engineering and Math. All tables and chairs in the labs and other collaborative spaces, like the band room and home economics laboratory, are wheeled so they may be moved around, as students require. They also have the added benefit of creating a friendlier and more welcoming appearance that is beneficial to students because they're not desks, they're furniture.



▲ The 2nd floor commons are beautifully lit with skylights.

◀ The New Liberty Middle School in Canton.

"The overwhelming response from the kids is that they are absolutely blown away by the beauty and layout of the building," said Liberty Middle School Principal James Hunter. "It doesn't look or feel like your traditional school, and the media center doesn't look like a typical media center or a library. The students can't believe how modern it is, and the teachers definitely like it," he added. As for himself, he was ebullient: "I love it, it's a gem!"

The new middle school embodies learning spaces that meet the changing demands of education with spaces that are flexible for current curriculum/teaching methods, and which also have the ability to adjust for future needs and methods. The layout of the building took into consideration the need for a secure and safe environment for building occupants. The school provides collaborative classrooms and collaborative spaces for teachers as well, and the academic wings separate spaces for grades 6, 7 and 8. Other features include two music rooms and a large media center/library with meeting rooms.

Several of the school's classrooms have clear glass windows to the corridors, so that students and others passing by may look in and check out the activities going on inside. And, most importantly, the school is fully wireless, with digital access anywhere throughout the building and grounds. As well, all classrooms are equipped with instructional technology devices such as document cameras, digital projectors, computing devices, audio amplifiers and interactive displays. The school offers 43 instructional classrooms on two floors, including the gyms, STEM labs/rooms, music/band rooms, art, life management, home-ec lab, and more.

IT'S A CAFÉ; NO, IT'S AN AUDITORIUM

The “cafetorium” offers space for students to eat lunch, but a stage at one end of it allows its use as a performance auditorium too. Although it doesn't have full stage rigging, it does have a stage curtain. It can be enlarged by opening the operable partition wall that separates the 5,000-square-foot cafetorium from the 4,200-square-foot auxiliary gym, said Steve Banchemo, senior project manager for McCarthy & Smith Inc., Farmington Hills, the construction manager on the project. The auxiliary gym is smaller than the full-sized regulation gym that the school also has, and the flooring is synthetic multi-sports floor rather than maple wood, as in the full-sized competition gym. There is no seating in the auxiliary gym, but there is seating for 800 in the 9,400-square-foot competition gym. Outdoors, a running track and football field were also constructed.

Visitors enter at the main door on the west side of the south-facing octagonal entrance, with their access limited to the administrative/office area. The door has an electronic lock tied to a camera inside the office area that allows office personnel to view people wanting to enter the school. Visitors must be buzzed into the office area. The school district wanted to ensure secure entrances to all schools. Students may enter the school through any of the doors during specific times, that is, when school opens. At the main entrance, students enter into the commons area through doorway at the octagonal entryway, bypassing the administrative office. Then the doors are



▲ The bright and cheery media center doesn't look like a typical library.



▲ A moveable partition wall separates the auxiliary gym from the “cafetorium.”

locked and only available for egress, said William Weinrauch, senior associate and project manager for the project's architect, TMP Architecture Inc., Bloomfield Hills.

Parking is available on either east or west sides of the building, but pick-ups are restricted: buses drop off and pick up on the west side, autos on the east.

Both TMP and McCarthy & Smith were associated with the Liberty Middle School project for several years before a shovel was turned. Together, they helped the school district in 2012 complete an assessment of its needs, including the pros and cons of renovating the existing Central Middle School in downtown Plymouth versus building new. Both companies also helped develop the bond proposal leading up to the successful bond vote in May 2013.

Voters in the Plymouth-Canton School District approved the \$114 million bond proposal to upgrade all of its facilities and technology to meet today's educational requirements, and for future needs, as well. The bond proposal sought to ensure that all students in the district had access to technology to prepare them for future higher education and employment beyond that will require it. With input from the community and administration, the Board of Education decided to build a new middle school that met

its needs for flexible design, collaborative and team teaching spaces and instructional technology systems and devices. When the bond proposal passed, the Board of Education approved the construction of a new middle school on land in Canton that it

already owned to replace the old Central Middle School.

"A key point was the guiding of the project through site/engineering approvals from Wayne County and Canton Township with the assistance of Spalding DeDecker," McCarthy & Smith President Bill McCarthy said. Spalding DeDecker, Detroit, was the consultant for site work on the project.

CONSTRUCTION BEGINS

Construction on the \$22.5 million school began in May 2014 and was completed on time and on budget when school started in September 2015. The school held its Grand Opening/Dedication Ceremony on Oct. 1, 2015. The construction timeline meant that construction continued throughout one of the coldest winters on record in Michigan. Even before winter, the extremely wet spring, summer and fall of 2014 made exterior work very difficult, and challenged the schedule, McCarthy & Smith's Banchemo said. Banchemo kept the project on time and on budget for the CM, with help from the company's Luke Baxter, superintendent.

In addition to Weinrauch, the project's

architecture gained by the design direction of TMP Chairman John Castellana, FAIA, REFP (Recognized Educational Facility Planner). TMP Architecture has, since its founding in 1959, specialized in educational facilities, and the firm has a long list of awards and accomplishments in doing so. The Liberty Middle School's footprint is a prototype design that TMP has developed for several other school buildings. It features east and west wings at the front and back of the structure that are connected by a north/south wing.

CHALLENGES ABOUND

As many construction projects did, Liberty Middle School's construction suffered the consequences Michigan's very cold 2014-15 winter, and by a very wet spring, summer and fall. Particularly affected by the wet spring was roof installation, and that caused exterior work to fall behind schedule, Banchemo noted. Additionally, completing all of the sitework, paving and landscaping in the spring/summer of 2015, was complicated by Wayne County's Cherry Hill Road Improvement project occurring in



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▲ A moveable partition wall separates the auxiliary gym from the "cafeteria."



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▲
A cedar ceiling at the school's entryway adds beauty and warmth.



▲
The school's kitchen is clad in state-of-the-art stainless steel equipment.



front of the school, and which affected entrances and exits to the school property. As well, the landscaping contractor had to be replaced in the summer of 2015 at a critical juncture of landscape installation. With a tight construction schedule, it was a major effort to get the building enclosed prior to the start of winter. Steel and masonry work on essentially the entire back half of the large school occurred simultaneously. In addition, interior slabs were poured behind roof work, and the second floor slabs were poured in early November 2014. Temporary heating had to be used to maintain workable temperatures throughout the winter months.

Other construction challenges included the extensive coordination of mechanical system, electrical system, and interior wall partitions in much of the school relative to the height of the roof deck. There are sections where the roof pitch is relatively steep. The high ceilings and drywall soffits installation in the media center on the second floor required coordination with many of the trades, as did installation of the terrazzo floors on the first floor. Despite the challenges, the project succeeded. "This project was a success due to the collaboration and team work of all team members – Plymouth-Canton Community Schools, TMP Architecture, all sub-contractors, consultants, engineers and the McCarthy & Smith construction team," Bill McCarthy said.

Design for the new school began immediately following the bond approval, and continued through the start of construction in May 2014. The school was constructed of masonry over backup block, with spray foam insulation in the cavity wall. Alternating bands of red and tan jumbo brick, and some vertical columns of the tan masonry units, add interest and break up



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the large scale of the two-story structure. The building features a five-sided polygon entryway on the south elevation, topped with a cupola and green asphalt shingle roof. Roofing extends to cover the entry sidewalks on the south side, and is embellished with a cedar ceiling. Three of the sides of the entry octagon have glass

curtain walls on the second story, allowing plenty of daylight to enter the media center on the second story.

Flooring on the first floor is terrazzo throughout, and features the school's colors of blue, white and silver. Students were allowed to select new school colors, which are used throughout the building's design,

TMP's Weinrauch said. The colors are also used in representing the school's lion mascot. Flooring for the second floor corridors is an attractive rubber tiling, providing cost savings and diminishing noise.

HIGH EFFICIENCY HVAC

The mechanical system for the new school is a closed loop water source heat pump system. "This system utilizes individual water source heat pumps to provide each classroom and most occupied spaces with individual temperature control," said Robert N. Roop, CPD, LEED AP BD+C, principal with Peter Basso Associates Inc. (PBA), Troy, which provided mechanical/electrical and lighting consulting services on the project. "Spaces that need cooling reject heat to the loop and those that need heating absorb it from the loop," Roop said. "High efficiency condensing boilers add heat to the system as required, and a closed circuit evaporative cooling tower rejects excess heat. Each heat pump received a measured amount of outside air, which has been pre-treated by a dedicated outdoor air system (DOAS) that recovers approximately 70 percent of waste energy."

In order to accommodate the energy and cost efficient HVAC design, the PBA design engineering team incorporated an Energy Management System (EMS) that allows for direct digital control (DDC) of the air handling equipment, central heating and cooling equipment and heat pumps. Although the school elected not to install a geothermal system at this time, the mechanicals installed in the building are capable of handling that type of heating and cooling system should the school choose it at a later date. PBA also provided architectural lighting design consulting services on the project. Working with TMP, the two design firms maximized daylighting in the design of the new school, in order to save on energy costs.

Plymouth-Canton's new Liberty Middle School provides the atmosphere and the tools to successfully prepare its students to meet their challenging and ever-changing world, head-on. ❖



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