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Craig Dugan © Hedrich Blessing 2008

LEED compliant building practices drove the design of this budget-conscious west side elementary. Insulated masonry cavity wall was chosen for its ability to serve as structure and energy-efficient enclosure, its durability and sustainability, with patterns and colors to inspire.

MULTITASKING MASONRY

Holy Family Lutheran School's loadbearing, energy efficient wall system appears dramatic, most cost-effective

BY ROBIN RANDALL, AIA, LEED AP

Inspired by early 20TH century African Textiles, this tricolored brick patterned façade creates an identity for Holy Family Lutheran School. Built in the shadow of the original red brick Sears Tower and on the campus of the Homan Arthington Foundation which includes the Lawndale YMCA, Park District Community Center and Health Center, brick was the logical material choice for integrating Holy Family with the community. The school's masonry façade multitasks by supporting the structure, providing an energy efficient envelope and inspiring the students with its colorful pattern. FGM Architects designed this new 45,000 sf, Pre-K through 8TH grade school serving underprivileged children on the west side of Chicago to provide more space for the school's increasing population. Formerly leasing space in a church with room for 100 students, the new three-story school provides space for 310 students and 40 preschoolers.

HOLY FAMILY LUTHERAN ELEMENTARY SCHOOL, CHICAGO

ARCHITECT: FGM Architects, Oak Brook
CONSTRUCTION MANAGER: WB Olson, Northbrook
STRUCTURAL ENGINEER: CE Anderson & Associates, Chicago
MECHANICAL ENGINEER: AMSCO Engineering, Downers Grove
MASON CONTRACTOR: Illinois Masonry, Lake Zurich
MASONRY MATERIALS: The Belden Brick Company, BMI Products, Dow, Dur-O-Wal, Grace Perm-A-Barrier, Illinois Brick, Lance Construction Supplies, Northfield Block, Package Concrete/Spec Mix

LEED GUIDELINES TO WHICH MASONRY MAY CONTRIBUTE WERE CONSIDERED IN HOLY FAMILY'S DESIGN

CATEGORY	CREDIT
Energy & Atmosphere	Credit 1: Optimize Energy Performance
Materials & Resources	Credit 2: Construction Waste Management
Materials & Resources	Credit 5: Regional Materials
Indoor Environmental Quality	Credit 4: Low Emitting Materials
Indoor Environmental Quality	Credit 7: Thermal Comfort

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Inspiration for the brick selection came from early 20th century African textiles with bold and repetitive patterns. Colors and patterns are used to enliven the volumes and differentiate the masses. Here, the tricolor banding wraps the wing housing the multipurpose room, art and music classrooms and the library.

MASONRY WINS COST-EFFECTIVENESS CHALLENGE

A major design challenge was to reflect the community in the architecture within tight budget constraints because Holy Family Lutheran School is a private, nonprofit organization that is privately funded through Holy Family Ministries. The masonry played a large role in meeting this goal. The tricolored brick masonry pattern of red, charcoal and cream wraps around the base of the academic wing and envelops the multipurpose room and *specials* teaching wing. Budget was a major consideration in selecting the utility brick façade due to its durability and low maintenance. During the design process there was much discussion of value added materials. Alternatives were researched. WB Olson, construction manager, supported the selection of the brick by adding that long term operational life cycle costs are definitely advantageous.

BOLD AFRICAN TEXTILES TRANSLATED TO BRICK

Inspiration for the brick pattern came from early 20TH century African textiles with bold and repetitive patterns. Each color and pattern has meaning and communicates the ideals and beliefs of the artist. The fabrics selected were abstracted and placed on a utility brick module to translate and not replicate the textile. Colors of the brick were also inspired by the textiles. Extensive research was performed selecting the actual brick colors and textures. Red symbolizes the academic wing and is a light red smooth utility brick. Charcoal gives a depth to the pattern and is a manganese iron spot smooth utility brick. Charcoal is also the color for the brick pavers near the entry that are inscribed with the names of donors to the project. Cream symbolizes the arts wing and is a number 481–483 smooth "A" utility brick from The Belden Brick Company. Cladding the academic wing, the pattern acts as the base and banding between windows. Elsewhere the pattern enlivens the volumes and differentiates the masses.

LOADBEARING, ENERGY EFFICIENT WALL SYSTEM

While providing a cost effective enclosure and identity to the school, the exterior wall also supports the building structure. The exterior envelope of the school is a cavity wall construction of 4″ nominal utility brick, 2″ air space, 2″ rigid insulation and 8″ nominal reinforced concrete masonry units (CMU). The R-value of the wall is 15, 98% higher than ASHRAE 90.1-04 requires for non-residential, above grade walls in Zone 5, creating an energy efficient assembly and also taking advantage of the thermal mass properties of masonry. CMU are loadbearing and support the precast hollow core plank flooring along the perimeter wall. These units are laid in running bond, exposed to the interior of the classrooms and painted with a low volatile organic compound (VOC) product creating a durable interior wall finish. Small 2 x 2 punched windows are located in the façade, low enough for students in each classroom to view the landscape. Masonry lintels have color added to match the charcoal brick. They really help the sill "punch" on the cream brick and blend in the pattern as most sills align with the charcoal brick stripe. Interior masonry edges around the window are highlighted with bright colors coordinated with laminates and floor coverings for each classroom.

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Decorative brick banding continues into the two-story lobby on one feature wall. CMU finished with a low VOC paint is found elsewhere. Cavity wall construction reduces the need for additional finish material on interior perimeter walls.

MASONRY'S ABILITY TO MULTITASK: WHEN ONE MATERIAL OFFERS SO MANY SOLUTIONS TO A PROJECT, IT BECOMES ESSENTIAL AND SUSTAINABLE.

The brick masonry pattern on the exterior also wraps into the interior and is a feature wall in the two-story lobby. Brick speaks clearly to the massing of the building, highlighting this special teaching wing housing the administration on the first floor, computer lab and library on the second floor, music and art rooms on the third floor.

SUSTAINABLE DESIGN AND CONSTRUCTION

As part of this composition, cream color brick frames a two-story "stained glass window" illuminating in an abstract way the religious references of the school. Masonry patterns on the exterior also highlight the volume of the multipurpose room, the heart of the school, which serves as the chapel, cafeteria, gymnasium and before and after school recreation center. Above this center is the green roof and demonstration garden accessed from the third floor and secured by brick parapets. While pursuing LEED certification was cost prohibitive, many sustainable elements are present in the design and masonry construction is just one example. The majority of the brick and block supplied for the project is from a 500 mile radius. Masonry is recyclable and, in keeping with City's requirement, much of the construction waste was diverted from landfills. Masonry products are also produced from abundant natural materials.

Most important to this project is masonry's ability to multitask. When one material offers so many solutions to a project, it becomes essential and sustainable. While providing structure, cost effective and energy efficient exterior enclosure, the masonry also created identity and inspiration. Masonry colors and patterns provide meaning, clearly communicate the massing and architectural idea behind the project and enhance ties to the community. Holy Family Lutheran School succeeds in meeting the goals of Holy Family Ministries to create a permanent gathering space and safe haven for the young people of the community for years to come. ME

Robin R. Randall, AIA, LEED AP, is a senior associate with FGM Architects in Oak Brook. Randall has nearly 20 years experience in creating architectural design to suit both clients' functional needs and aesthetic aspirations. In recent years she has focused on the design of K-12 education and municipal projects with expertise in sustainable design.

A registered architect in Illinois and Washington, she has been an active member of AIA, Association for Women in Architecture, Co-operative for Architecture and the Newhouse Foundation. In her role, she has been published, given presentations, lectured, coordinated programs and more. Randall earned a Bachelor of Science in Environmental Design and Bachelor of Architecture, Cum Laude, from Ball State University, as well as Departmental Honors, Honors College Degree. She received a Fulbright Academic Fellowship and studied at the Royal Academy of Art, Copenhagen, Denmark.
robinr@fgmarchitects.com,
630-574-8300