

## Case Study

### Muller Trading Company- Masonry Walls- Historical Building

#### GEOGRAPHICAL AREA:

Lake County, Illinois

#### ISSUE:

Looking to increase the energy efficiency of a historical 1800's building, while also keeping the unique brick look of the building intact.

#### SOLUTION:

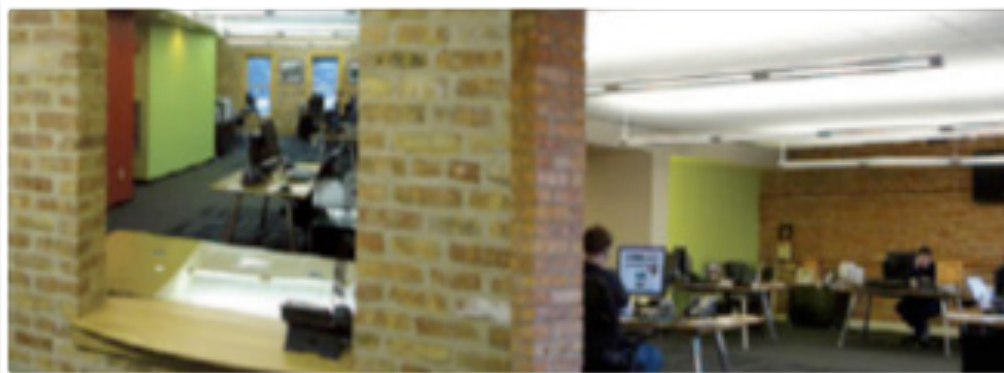
EnergyProtect™

Coverage: 3-coats

#### RESULTS:

- ✓ Provided building with thermal resistance resulting in a reduction energy consumption.
- ✓ Provided mold, moisture and UV resistance.
- ✓ Clear coating allowed for the beauty of the historical building to shine through
- ✓ Long lasting - 5-10 years.

## Award Winning Energy Saving and Asset Protection Coatings



Bleck and Bleck Architects were tasked with using LEED guidelines to increase the energy efficiency of an historical 1800's building, while also keeping the unique brick look of the building intact.

EnergyProtect™ was applied to masonry walls to improve thermal resistance, reduce energy consumption, and provide UV and moisture resistance.

Excerpt from Masonry Edge Magazine:

"A challenge in reusing old masonry buildings is dealing with the energy envelope. Owners and designers love the interior appearance of the old, raw common brick walls. The typical wall is three solid wythes of brick thick, with no cavity for insulation to be injected. Infiltration can be addressed with various coatings, but until recently nothing could be done about thermal transmission.

Nanotechnology is a field that has shown tremendous promise in the area of materials science. The nanoparticles can be suspended in a low VOC medium and applied much like a paint."

-Full Article Attached below or available for download :[http://www.synavax.com/pdf/CaseStudies/2011/MasonryEdge\\_2011.pdf](http://www.synavax.com/pdf/CaseStudies/2011/MasonryEdge_2011.pdf) -



**Muller Trading Company**  
Libertyville, IL

**Architect and Structural Engineer**  
Bleck & Bleck Architects, Libertyville, IL

**General Contractor**  
Stuckey Construction, Waukegan, IL

**Mason Contractor**  
Etolen & Buchanan, Zion, IL

**Masonry Materials**  
Acme Brick, The Belden Brick Company, Northfield Bend

**Completion Date** January 2009

**Total Project Budget** \$1,950,000

**Masonry Budget** \$350,000

**T**he Village of Libertyville lies about 40 miles north of Chicago in the center of Lake County. Incorporated in 1837, this former county seat grew along Milwaukee Avenue until a fire largely destroyed the wood frame buildings in 1895. Subsequently, village leadership mandated that all buildings in the downtown commercial district be built of masonry. It was about this time that Samuel Jochiem built the Libertyville Bakery, a two-story masonry structure with about 1,000 sf per floor. It was attached to a wood frame house that had survived the fire.

In later years, as the downtown went into decline, numerous façade changes occurred with ugly ersatz tudor features and gabled aluminum façades covering large portions of the brick exterior. In the 80s, the town enrolled in the National Trust for Historic Preservation's Main Street program to revive the downtown. Main Street addresses the variety of issues that challenge traditional business districts using a community-driven, comprehensive strategy incorporating organization, promotion, design and economic restructuring. Libertyville has been one of the most successful communities in the country in restoring economic strength and character

Triple-wythe brick buildings from the late 1800s retain their old-world charm, while receiving 21st century masonry cavity wall addition and futuristic nanotechnology application for improved thermal transmission.

# Muller Trading Company

After

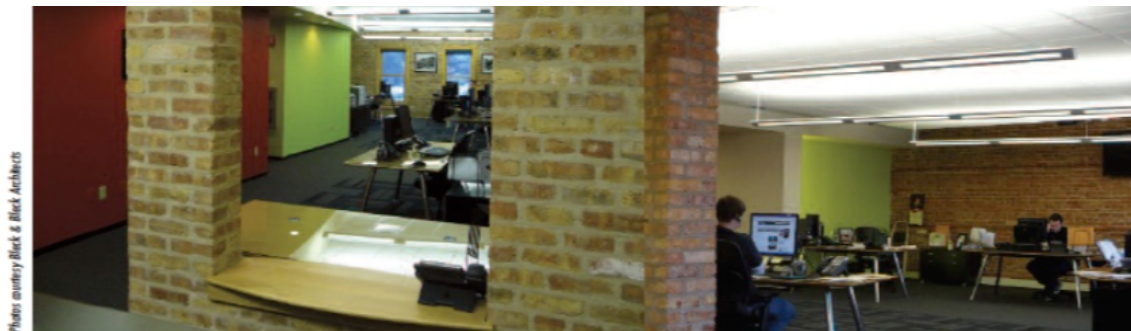
Local Company Embraces Community's Commitment to "Main Street" in restoring economic strength & character

By Robert Bleck, ALA, LEED AP



## CASE STUDY

## Award Winning Energy Saving and Asset Protection Coatings



Inside the second floor office space, the original Chicago common brick is exposed for warmth and beauty, as well as acoustic comfort.

to its downtown streetscape. A 1997 winner of the Great American Main Street Award.

## Zoning Requirements Meld with Design Outcomes

When the locally-owned Muller Trading Company purchased the 545 North Milwaukee building in 2004, it was in a sorry state of repair and too small to meet the company's needs. The intent was to house the Muller offices on the second floor and develop restaurant space on the first floor. Zoning restrictions at the time required a portion of the lot be reserved for parking, limiting the building addition

to 1,900 sf. This phase of the work was expected to accommodate the next five to seven years of business growth. After two years it became apparent that the growth was going to necessitate a more rapid expansion. The building next door was available and plans for expansion began.

Having been the design chair of the Main Street Libertyville committee for four years, I had a good understanding of the Village's goals for new development, signage and streetscape in keeping with the historic nature of the neighborhood. As a member of the parking commission, I knew Libertyville was planning to build a parking

garage on city property nearby. Working with the administration, amendments were written to the zoning code to allow full site use and off-site parking by allow-

Zoning requirements gave tremendous incentive to save as much of the existing masonry structure as possible

ing the business owner to purchase spots in the new parking garage to offset the spots required by the code. In addition to allowing the owner to take full advantage of its entire lot for expansion, it keeps







## CASE STUDY Additional Information

## Award Winning Energy Saving and Asset Protection Coatings



A rather plain wall was visually enhanced with brick corbels, a picture frame of rowlocks around a herringbone brick feature and split limestone lintels and sills, more in keeping with the period architecture.

the lot lines more uniform and allows for potentially more attractive façades to the rear of the building. Being of the mindset that we are never just building a new building, but rather an addition to the community encouraged the incentive to find the best possible option to benefit all parties.

### Design is about solving problems and more importantly, stirring the human soul

Those same zoning requirements gave tremendous incentive to save as much of the existing masonry structure as possible. Had the decision been to tear it down, the owner would have had to provide new parking for the existing area that was replaced as well as the new addition. By reusing the existing structure, requirements were only to provide parking for the addition. Since parking provisions were handled as a fee in lieu of parking, saving the masonry structure saved over \$100,000 in fees.

### Structural Improvement; Visual Enhancement

Saving the structure presented the design team with many challenges. Once the layers of exterior siding were removed as

### ►► Economic Strength and Character

well as the interior stud wall, it was discovered that the lintel which the front wall sat on was missing welds causing a rotation and horizontal deflection of 3". Exacerbating the situation was the use of coreless fire brick in the original which added significant weight and overloading of the steel. Since the plan included additional height added to the façade, it became necessary to replace all of that section of wall. This created the opportunity to correct some awkward window spacing and add some needed detail to what was a very plain wall. It also allowed insulation with more effective modern methods. Once the brick was removed from the lintel, it shifted back into place and was welded

to the plate upon which a new brick wall was built.

Four second-floor windows had no original symmetry. We enhanced the appearance by lining up the windows and adding split limestone sills and lintels, complementing the 19th century village architecture. A "picture frame" of rowlocks around a herringbone brick feature adorns the space above each pair of windows. The building's name and completion date were carved into a piece of limestone set into the wall. At the owner's request to be maintenance-free, decorative brick corbels and a copper cornice were added along the top.

### Updating the Energy Envelope

A challenge in reusing old masonry buildings is dealing with the energy envelope. Owners and designers love the interior appearance of the old, raw common brick walls. The typical wall is three solid wythes of brick thick, with no cavity for insulation to be injected. Infiltration can be addressed with various coatings, but until recently nothing could be done about thermal transmission. Nanotechnology is a field that has shown tremendous promise in the area of materials science. The nanoparticles can be suspended in a low VOC medium

and applied much like paint. These coatings cannot be measured for R-values as testing requires 1" thick material. However, other tests have indicated a 30% reduction in thermal transmission. We have only had one partial winter to test the validity of this system, but the early experience has been very promising.

Masonry cavity wall system provides a thermally efficient R-value of 19 for the addition. CMU provides foam-filled cores, an air barrier, 1" closed-cell extruded polystyrene rigid insulation, air space then brick veneer. Inside, the CMU is furred out to allow for another 1½" of rigid insulation, then drywall.

### Green Design: Just Do It

When Bleck & Bleck embarked on this project, it was not our stated intent to do a green building. We were familiar with LEED and admire its goals. However, the client was not interested in pursuing the rigorous administrative portion of the process, but had no objection to incorporating LEED concepts. The decision was made not to seek certification, but design and build to those standards anyway. I once read a comment from a LEED proponent who stated he hoped in the future that designers would not talk about green concepts, that they would be assumed as a given strategy.

What is stopping designers from doing that now? It is my belief that design is about solving problems and more importantly, stirring the human soul. Green design in itself is great for the former and less successful for the latter, but needn't be. Ultimately good design should be both. To borrow from that famous sporting goods company, "just do it".

For the new construction, we did what we always do. The block came from a local northern Illinois manufacturer. The stone is from Indiana. The brick came from Ohio. We have long been fans of these local and regional suppliers. The quality is excellent so logic dictates we use them. The fact that LEED would award points for these decisions is secondary. That logic of making the best choices extended throughout the project. Since the owner was occupying the adjacent space during construction, the kind thing to do is keep



## CASE STUDY Additional Information

### Award Winning Energy Saving and Asset Protection Coatings

the VOCs down for both health and productivity reasons. Carpeting has high recycled content but, more importantly, it allows fun patterns and colors to be used. The owner participates in triathlons and often trains during the lunch hour. That created the need for bike parking and a shower. The roof structure has 24" of insulation depth to eliminate the need for a dry pipe fire protection system. High efficiency lighting reduces operational costs. The cable-hung fixtures make lamp changes safer (lower ladders). It also creates glare-free illumination. The random placement reinforces the informal business mood. These and many other decisions happened in this manner. We made rational decisions that just happened to be green.

Muller Trading Company is a growing produce brokerage company serving all markets in the Americas. Growers throughout North and South America are connected to grocery suppliers in the United States. The long term organizational plan for the company is to break the US market into five geographic regions with a team servicing each region. The architectural plan reflects that breakdown. The nature of the business requires open communication, therefore, there are no private offices. Two conference rooms allow private conversation to occur when necessary. Open sightlines allow team members to keep visual contact. High performance ceilings and soffit baffles help control acoustic spillover. Walls have the least effect on acoustic performance which allows us to expose the old masonry where possible. Thick masonry mass contributes to sound isolation from the outside traffic noise. The irregular surface of brick and mortar absorbs some sound, while reflecting some back into the space making it acoustically comfortable without need for additional materials.

Bleck & Bleck was able to deliver this project, which contains about 14,000 sf, for a cost of approximately \$150 per square foot. This includes an allowance of about \$350,000 to build out the vanilla box 5,000 sf retail space on the first floor. This is demonstrable proof that green design can be delivered at reasonable costs. ■■■

**Robert Bleck, ALA, LEED AP**, is an owner and partner of Bleck & Bleck Architects in Libertyville, IL. Bleck & Bleck is a family-owned, NCARB certified company with more than 50 years of experience encompassing a wide variety of projects from schools, banks, retail centers and offices, processing plants, recreation centers and amusement parks. Each project is seen as a unique opportunity to create structures of beauty that will stand the test of time. Bleck is active in the Village of Libertyville Historic Preservation and Main Street Libertyville. He received his BS in Architectural Studies from University of Illinois and his Master of Architecture from Rice University. [rbleck@bleckarchitects.com](mailto:rbleck@bleckarchitects.com) | 847.247.0303





**Make a statement with color**

*Premier Glazed™ - Apple Red*

The beauty of Premier Block's architectural concrete masonry units is in the details. From their expansive palette of vibrant colors, to their superior quality and lasting durability, Premier Block's products offer greater freedom of expression.

- Build and finish in a single trade
- Cost effective
- Reduced operational and life cycle costs
- Mold and Fire resistant
- Enhanced design flexibility
- Proven performance

See why Premier Block's complete product line can open up a new world of design possibilities.



**Chicago Block & Brick**  
(708) 458-8130  
[www.chicagoblock.com](http://www.chicagoblock.com)  
Please contact our sales department for more information.

**PREMIER**<sup>®</sup>  
BLOCK CORPORATION

(888) 395-5584  
[www.premierblock.com](http://www.premierblock.com)

Ultra  
PREMIER  
PRESTIGE  
Elite