



BRICK ARCHITECTURE

From the Brick Industry Association



The 2014 Brick in Architecture Award Winners



BEST IN CLASS WINNERS



IN THIS ISSUE – DECEMBER 2014

Since 1989, the Brick in Architecture Awards have been one of the most prestigious national architectural award programs featuring clay brick. Architecture firms from around North America enter their best projects to be judged by a jury of their peers.

This year, a diverse panel of architects independently reviewed and scored each of the entries. Based on the technical and creative use of brick in meeting the aesthetic and functional design challenges, the Brick Industry Association is pleased to showcase the following projects which were chosen as the Best in Class in their respective categories.

COMMERCIAL DESIGN

Sundance Square Fort Worth, Texas

A Texas City Goes Big With Brick to Create a New World-Class Business Plaza

With a new world-class plaza and two sustainable mixed-use office buildings as its bookends, the completion of Sundance Square marked the capstone moment to a successful downtown Fort Worth redevelopment. The project features extensive use of clay brick, a material selected for its ability to bring visual cohesion to the surrounding areas and to create a space that invites people to gather and visit.

When assessing the project, the architects considered the site's location, size, and the style of the surrounding buildings. Their goal was to enhance the vibrant street-level retail spaces, to provide appropriate physical enclosure for a top-tier civic plaza, and to continue Fort Worth's tradition of constructing refined and distinct buildings that reinforce the area's timeless and beautiful character.

The architects chose clay brick for its beauty, durability, and ability to stand the test of time. The two opposing buildings, The Westbrook

and Commerce Building, were given solid, yet refined, brick façades that further reinforce the handcrafted feel of the neighborhood

and its pedestrian-friendly character. The Westbrook uses a custom blend of clay brick while the largest façade on the Commerce Building was intended to resemble an old mill building which uses crimson brick. The warm and welcoming plaza is also made with brick pavers. With the owner seeking LEED certification for the project, proximity of sourcing for the local materials was an important consideration.

From the beginning, Sundance Square strove to become the primary public outdoor gathering space in downtown Fort Worth. That vision has been dramatically realized, as it instantly became one of the most significant public outdoor gathering spaces in the entire region.

The project is expected to achieve LEED Certification at the Silver level or above. ■



The two opposing buildings were given solid, yet refined, brick façades that further reinforce the handcrafted feel of the neighborhood and its pedestrian-friendly character.

Architect:

David M. Schwarz Architects

Associate Architect:

Bennett Benner Partners

Landscape Architect:

Michael Vergason Landscape Architects, Ltd.

Builder:

The Beck Group

Manufacturer:

Acme Brick

Mason Contractor:

DMG Masonry

Photographers:

Hedrich Blessing Photographers

Craig Kuhner Photography

Brian Luenser Photography

Credits appear as submitted in entry form

Tozzer Anthropology Building Cambridge, Massachusetts

To Bring Its Anthropology Department Under One Roof, a Harvard Building Relies on Brick to Unite Old and New

After enduring years of scattered offices and classrooms, the Harvard anthropology department desired a new, consolidated space. With the help of Kennedy & Violich Architecture, the 1971 Tozzer Library was transformed from what was originally just a building wing into the independent Tozzer Anthropology Building. In short, the renovation would completely transform the building's envelope and reunite the anthropology department for the first time in over 50 years.

Tasked with strict guidelines from University officials, the architects worked within the administration's following three criteria: the preservation of the existing infrastructure and foundation, an increase of building's square footage by 25%, and the creation of a new public identity for the anthropology department.

The architects chose a brick that expresses an authentic contemporary materiality, yet still resonates with the enduring quality of a nineteenth-century structure. Although the new building uses brick veneer construction, one of its contemporary features is the meticulously corbelled brick detail at the entry.

The building's new entry features inclined courses that exactly follow the massing's geometry. The corbelled brick details were digitally modeled

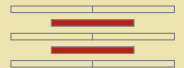
course by course and mocked-up by local masons. A tilted metal stud back-up cantilevers past the second floor, creating a 30-foot brick entry that has no control joints or relieving angles but instead just one custom-designed loose lintel set above the hung brick ceiling.

The main building is wrapped by thin, taught brick bands that express the existing slab, off of which the new brick envelope is relieved. Vertical expansion joints are staggered between floor levels while horizontal expansion joints occur behind recessed soldier courses. With a play of thick and thin, the design creates an authentic brick expression that reflects not only contemporary construction and existing reuse requirements, but also reflects the layered brick of the nearby Landmarked Peabody Museum.

The Anthropology Building was designed to above LEED Gold Certification. ■



The architects chose a brick that expresses a contemporary materiality, yet still resonates with the enduring quality of a nineteenth-century structure.



Architect:

Kennedy & Violich Architecture

Landscape Architect:

Richard Burck Associates

Builder:

Consigli Construction

Distributor:

Spaulding Brick Co.

Mason Contractor:

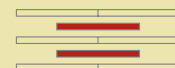
Empire Masonry Corporation

Photographers:

John Horner Photography

Kennedy & Violich Architecture

Credits appear as submitted in entry form



Back of the Yards College Preparatory High School Chicago, Illinois

To Create a Landmark Campus, a Chicago High School Takes Advantage of Brick's Many Design Possibilities

The location of Chicago's new Back of the Yards College Preparatory High School proved to be a tight squeeze. Bound by manufacturing facilities and railroad tracks, the 200,000-square-foot building—along with its athletic fields and parking area—had to fit a site of less than nine acres.

To delineate the different functions of the 1,200-student high school, the architects designed a continuous brick “ribbon wall” to serve as the building's primary design element. This wall snakes back and forth to define three programmatic building volumes representing mind (academic), body (athletic), and spirit (arts). A texture of vertical slot windows of varying widths is overlaid onto the wall to provide a random and continuous pattern. Secondary elements feature masonry walls that connect perpendicularly to the ribbon walls and to the protruding aluminum and glass boxes, which set off the specialty areas in each programmatic volume.

Next, the architects looked to the nature of the brick itself for inspiration. With the verticality of the



slot windows in mind, the architects explored the design of the unit with the overall goal of increasing typical dimensions and providing a variation in unit size to promote the randomness. The design team worked closely with brick manufacturers to ensure special shapes and sizes could be produced and fit within the budget.

The large brick face proved to be important as it allowed the architects to extend a random texture over the brick through scoring. From an onlooker's perspective, the pattern is maximized and holds up visually over a long distance due to the oversized scale of the brick units.

In addition, the design team specified special corner units to ensure continuity of pattern at the corners formed at door and window returns. They curved the corners at each turn of the brick ribbon wall by using brick units that are curved to the 4-foot radius of the wall. This allows the two perpendicular walls to unify into a single serpentine expression without faceting the wall.

In the end, the architects exploited many of brick's design possibilities to create a truly unique and admired new high school.



A continuous brick “ribbon wall” snakes back and forth to define three programmatic building volumes representing mind (academic), body (athletic), and spirit (arts).

Architect:

STL Architects, Inc.

Landscape Architect:

Jacobs Ryan Associates

Builder:

The George Sollitt Construction Co.

Manufacturer:

Taylor Clay Products Company

Distributor:

Metropolitan Architectural Brick, Inc.

Mason Contractor:

Mastership Construction Co.

Photographer:

Ignacio Espigares Enriquez

Credits appear as submitted in entry form

Mercy Health – West Hospital Cincinnati, Ohio

Brick Becomes a Focal Point in Mercy’s New Architectural Brand for Its Hospitals

The new Mercy Health – West Hospital has proven to be an extraordinary place for the delivery of health care, due in part to the uplifting effect of its colorful glazed brick exterior.

The architects embraced a holistic design approach to the project. Connections between architecture, natural light, and landscape promote healing and root the building in its place. The use of color, natural materials, and attention to the entire sensory experience promote a restorative and positive environment. By using high-quality materials and developing an exterior expression that connects to a community’s history, the architects created a 100-year building.

In order to merge architecture and well-being, the architects needed to translate the building’s functionality into its outward expression. They also needed to fulfill the primary design goal of creating a “landmark building, of its place and community.”

Inspired by Ohio’s tradition of art pottery production, the design team used a blue-to-green color palette of the glazed brick that was inspired by ceramics glazes as well as the landform and color of the site. When



taken in the context of the sky and landscape, the architecture continually provides a new experience, changing with the time of the day and the seasons.

The unique exterior façade is composed of 11 colors and 19 shapes of glazed thin brick. The architects developed a system and color matrix only after extensive modeling phases. They started with painted architectural scale models, moving to full-scale foam core mock-ups, then to large-scale computer-generated prints of the pattern, and finally to full-scale mock-ups using the actual materials.

The thin masonry veneer is used in conjunction with a fully insulated wall system, which allows the system to reduce energy consumption and related utility costs by 10% to 40%. Triple-pane glazing, coupled with the insulated precast panels, also provides an efficient thermal envelope to reduce mechanical demand and improve patient comfort.

The aesthetic and technical approach to the distinctive façade has proven so successful that it is now being replicated on other Mercy Health facilities, supporting the organization’s objective of providing a consistent brand system-wide. ■



When taken in the context of the sky and landscape, the architecture continually provides a new experience, changing with the time of the day and the seasons.



Design Architect:

AECOM with Mic Johnson, FAIA, lead designer

Architect of Record:

Champlin Architecture

Landscape Architect:

Meisner + Associates / Land Vision

Builder:

Turner Construction Company

Mason Contractor:

High Concrete Group, LLC

Photographer:

Dave Burk / Hedrich Blessing Photographers

Credits appear as submitted in entry form



Shelbyville Fire Station No. 2 Shelbyville, Indiana

A New Brick Firehouse Sets the Architectural Tone for an Indiana Town's New Planned Development

One can measure the success of any fire department by the courage and sacrifice made by each firefighter and by the sense of security felt by the community they serve. To help the firefighters carry out their 24/7 public service operation, their facilities need to be highly functional, durable, efficient, and comfortable. Additionally, the design of the structures needs to be timeless, well conceived, and provoke a sense of longevity. In the end, a firehouse should be a source of pride in the community.

Shelbyville Fire Station No. 2 is the second new fire station to be built by the City of Shelbyville in the past seven years. It is, however, the city's first station built within a planned development that will include a mix of commercial, retail, and light industrial buildings. Additionally, the fire station required two main programmatic components: appropriate living quarters and an apparatus bay.

The biggest challenges faced by the architects were how to create the massing of the two components and the lack of existing context around the site. As the first building of the development—and sitting



adjacent to additional undeveloped sites—the design had to employ unique, iconic forms in order to state its presence.

Brick became the clear choice for many reasons. First, it is a material that provides the longevity and durability a fire station needs in order to withstand the test of time. Second, unlimited brick detailing and design options allow it to blend well with other materials and fit into any future context. Finally, the brick creates a defined scale that relates the overall massing of the building to the firefighters who interact with it.

Designed and built off of the lessons learned from the city's first station, Station No. 2 stands as an exemplary composition of civic architecture that uplifts the community in a positive way. ■



Brick provides the longevity and durability a fire station needs in order to withstand the test of time.



Architect:
Axis Architecture + Interiors
Builders:
Runnebohm Construction
Garmong Construction Services
Manufacturer:
Pine Hall Brick Company, Inc.
Mason Contractor:
Joe Miller Masonry
Photographer:
Susan Fleck Photography

Credits appear as submitted in entry form



The Plaza at One Loudoun Ashburn, Virginia

Using Patterns and Colors of Brick Pavers, a Northern Virginia Town Created a New Town Center and Sense of Community

The Plaza at One Loudoun is the centerpiece of a new planned town center and has become the heart of Loudoun County, Virginia's "new downtown." The One Loudoun development encompasses more than 400 acres, which are divided into residential, office, and mixed-use areas.

A main goal for the Plaza at One Loudoun was to create an area where people could relax and be part of a unique gathering space. The plaza would be a place for residents and visitors to enjoy its entertainment, shopping, and dining choices. In addition to its central location, the plaza has a modern identity offering a concert stage, electronic tag games, and a summertime interactive water fountain. Throughout it all, the unique brick paving pattern adds a warm, inviting feel for all who are drawn to the area.

Inspired by both the classic American town square and the unique paving patterns found in the piazzas of Italy, this modern design incorporates brick pavers, artificial turf, and planted areas. With so much activity on the plaza, its design had to be balanced, unique, and inviting. By configuring the brick into an intricate paving pattern, the design team divided the space of the plaza by activities, yet still created one cohesive space.



The design team quickly turned to brick pavers as the main surface element because of their great variety of colors and patterns. Basket weave, herringbone, and running bond brick patterns were repeated throughout the design using different colors of brick. The effect creates a design with concentric ellipses and crossing stripes that leads the eye to the center of the plaza and stage. The warm brown and tan brick pavers coupled with the lighter-colored concrete pavers imbue the plaza with an old-world feel. Ultimately, the brick pavers have created one visually stunning design.

Compared to other pavements in the surrounding area, the brick pavers and the plaza itself have been warmly embraced and welcomed by people of all ages. ■



By configuring the brick into an intricate paving pattern, the design team divided the space of the plaza by activities, yet still created one cohesive space.



Architect:

The Eisen Group

Landscape Architect:

The Eisen Group

Builder:

EE Reed Construction L.P.

Manufacturer:

Pine Hall Brick Company, Inc.

Distributor:

Capital Brick & Tile, Inc.

Mason Contractor:

B & R Construction, Inc.

Photographer:

The Eisen Group

Credits appear as submitted in entry form



Thurston Wine House Paradise Valley, Arizona

A Love of Wine and a Stunning Brick Design Combine to Make a One-of-a-Kind Tasting Room

For an avid wine collector and drinker, the addition of the Thurston Wine House to the owner's existing brick residence was an investment in his extensive collection and a statement to one man's appreciation for wine.

The Wine House carefully displays a respect for its context through its materiality and tectonic language while expressing its unconventional program through more formal elements. Embedded into the topography of the site, the project takes advantage of its landscape by using the slope to decrease the visual impact of structure, allowing unblocked views of the valley and mountains beyond. The southeast elevation, however, reveals the building's massiveness as the curvilinear shape suggests the path to an inconspicuous garden gate concealing the Wine House below.

The structure is uniquely constructed with a triple-wythe shell. The internal wythe uses concrete masonry units (CMU) and absorbs the variety of structural conditions, acting alternately as a 12 ft-8 in. tall retaining wall and a 12 ft-8 in. cantilevered wall throughout the building's elliptical construction.



Where submerged, the outer wythe is again composed of traditional CMU construction. However, as it emerges above grade, the courses transition to clay brick. Rejecting any superficial finish coat, the inherent qualities of the brick are celebrated and the signature of each brick's handmade lineage is exposed.

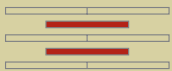
The design provides a variety of very singular, and yet collective, experiences, all of which enrich the program. The entertaining capability of the existing house flows seamlessly to the Wine House's rooftop terrace, offering the perfect setting to enjoy a glass of one's favorite wine with guests. As one descends the adjacent stairs into the wine room itself, the brick ascends skyward and the running bond throughout the project gives way to stacked bond coursing at the entry door.

As the project is partially underground, the Wine House also benefits from the thermal storage capacity of the brick by greatly reducing the demand of the mechanical systems throughout the year.

Every design detail reinforces that brick masonry was the ideal choice for this project. ■



Rejecting any superficial finish coat, the inherent qualities of the brick are celebrated and the signature of each brick's handmade lineage is exposed.



Architect:

Jones Studio, Inc.

Mason Contractor:

Randy Gregory Masonry, Inc.

Photographer:

Ed Taube Photography

Credits appear as submitted in entry form



Millennium Place Boston, Massachusetts

A New Brick Residential Building Feels Right at Home in Historic Boston Commercial District

Millennium Place, a 256-unit residential building, is one of the newest, upscale additions to downtown Boston. In a prime location on the commercial spine of Washington Street, the brick building sits along a pronounced and important bend in Boston's historic district. Taking inspiration from its wedge-shaped lot, Millennium Place boasts wedge-shaped bay windows arranged in a radial pattern.

When it came to choosing the exterior material, the owner required a low-maintenance, durable, and dense exterior envelope. Moreover, the aesthetic needed to attract a range of homebuyers in this high-end historical neighborhood. Brick met all the criteria by connoting stability, having a deep architectural tradition in the area, and having a high preference among home buyers.

The choice of brick went beyond concern for retail sales and classic styling. Continuity in the community also played a large role, so the design team sought to visually link the building to the



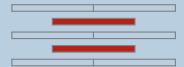
rich historic texture of the early twentieth-century structures on the east side of the street. The brick's beige color further echoes the surrounding area. During the 1900s, Roman-size brick was heavily used in this district of Boston. The same type of brick was used on Millennium Place to evoke these centuries-old structures, only this time with a newer, high-performance exterior that today's modern brick delivers.

To further capitalize on brick's design strength, a blend of three brick colors was employed to create a variegated surface as well as capture a rich interplay between light and shadow. Additionally, the use of full deep-raked mortar joints helped express the individual brick and created a strong visual texture. Each corner was articulated to define a threshold at the intersections, and at the pedestrian level, special details and character were incorporated, reminiscent of other local decorative details.

Millennium Place incorporates many sustainable design features and is pending LEED Silver Certification. ■



Brick connotes stability, and by virtue of its deep architectural tradition, attracts a wide range of homebuyers.



Architect:

Handel Architects

Landscape Architect:

Richard Burck Associates

Manufacturer:

Taylor Clay Products Company

Distributor:

Brick Tech Architectural

Mason Contractor:

Suffolk Construction

Photographer:

Prudente Photography

Credits appear as submitted in entry form



Indigo House Port Colborne, Ontario, Canada

Brick Protects This Lake House from All Four Seasons of Extreme Canadian Weather

High above the Canadian shores of Lake Erie, the Indigo House sits on a precipitous bluff. It stands as a sculptural “object in the landscape,” towering against the harsh elements and stark wilderness of the Lake Erie shoreline.

Given this extreme location, the designers at Cindy Rendely Architecture investigated construction methods and materials that were suitable for the site’s extreme four-season weather. They concluded that this unique home required a permanent, non-fading impervious finish that could withstand severe abuse from the elements. Therefore, ceramic glazed brick units were specified for much of the exterior wall space since they are highly durable and resistant to damage caused by freeze-thaw cycles. A brick exterior provides a robust and durable cladding while also psychologically enclosing the inhabitants within a strong building envelope. At once, it creates a relaxing interior environment sheltered from the unpredictable outdoors.

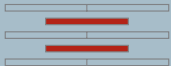


Aesthetically, the idiosyncratic blue glazed brick reflected the vibrant personality of the owners and provided the contemporary aesthetic they desired. Elongated Norman-sized brick were used to accentuate the building’s horizontality of long, linear forms that anchor the building to its site. Composed of three connected volumes, the geometry of the house takes its cues from critical sightlines that direct one’s view towards the lake from every room. The angles of the building are derived from the property lines, and they were detailed with custom-sized corner brick which provided a continuous glazed surface around the building’s sharp, acute corners.

The glossy blue brick cladding on the building runs all the way to the ground and anchors the house to its site. And yet, its stacked volumes and hovering forms reach out to the sky above. The home truly is a unique sculptural element that at once blends in and stands out in its environment. ■



The glazed blue brick exterior at once creates a relaxing interior environment that is also sheltered from the unpredictable outdoors.



Architect:

Cindy Rendely Architecture

Distributor:

Thames Valley Brick and Tile

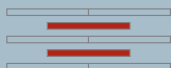
Mason Contractor:

Cecchini Masonry, Ltd.

Photographer:

Tom Arban

Credits appear as submitted in entry form



Read the following learning objectives to focus your study while reading the article below. To receive 1.0 AIA LU/HSW credit, follow the instructions found at the end of the article which direct you to complete the AIA questionnaire found at www.gobrick.com/ArchitectCredit.

Learning Objectives

After reading this article you should be able to:

1. Apply the correct provisions of the building code when designing anchored masonry veneer and masonry backing of cavity walls.
2. Detail critical elements of brick masonry cavity wall construction to ensure proper performance, including cavity, weeps, and flashing for drainage; vertical and horizontal joints for movement; and units and mortar for masonry.
3. Discuss where thermal bridges occur and the best practices for improving the energy efficiency of a brick masonry cavity wall.
4. Identify air barrier category types, the proper position for an air barrier in a cavity wall, and the appropriate material, assembly, or whole building tests to achieve an energy-efficient cavity wall according to the energy code.

This is an excerpt of the full article. The full text and questionnaire can be found online at www.gobrick.com/ArchitectCredit.

Cavity walls were first built in the United States as early as 1850 and introduced into the building code in 1937. Today, masonry cavity walls are used extensively throughout the United States in all types of buildings and are often regarded as the premier masonry wall system.

Brick masonry cavity walls consist of two wythes of masonry separated by a cavity or air space and connected by corrosion-resistant metal ties (anchors) as shown in Figure 1. The exterior masonry wythe is either solid or hollow brick, while the interior masonry wythe may be solid brick, hollow brick, structural clay tile, or hollow or solid concrete masonry units. The material for each wythe depends on the required wall properties and features. The cavity between the two wythes may be either insulated or left as an air space. The interior surface of the cavity wall may be left exposed or finished by conventional means.

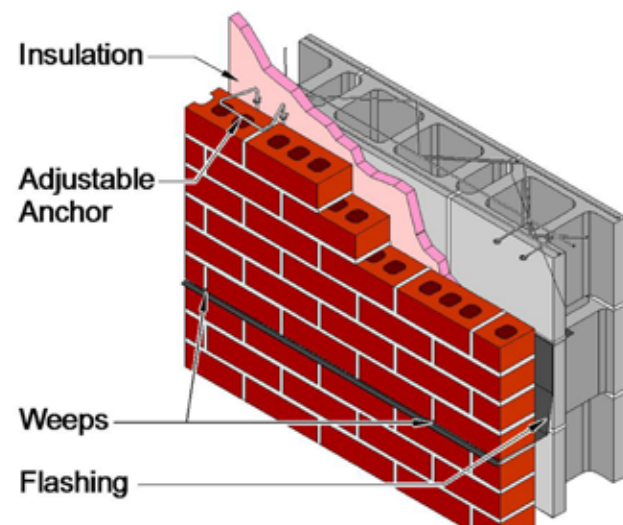


Figure 1. Typical Brick Masonry Cavity Wall

Most brick masonry cavity walls constructed today consist of an exterior wythe of brick veneer and a structural masonry backing. No axial loads are applied to the veneer wythe. Structurally, the brick veneer must be able to carry its own weight and transfer lateral loads, from wind or earthquakes, through the ties to the masonry backing. The masonry backing is designed to carry all of the lateral loads and, if loadbearing, the vertical loads, including the floor and roof gravity loads. Both the exterior and interior wythes of historical cavity walls were designed as loadbearing, however this is rarely done today.

Brick masonry cavity walls can offer superior performance in a variety of areas.

- *Resistance to moisture penetration* – A brick masonry cavity wall is designed as a drainage system. When it is properly designed and built, a cavity wall is exceptionally resistant to water penetration through the entire wall assembly.
- *Acoustics* – A brick cavity wall contains 1) a hard surface which reflects 95 percent of the sound waves, 2) much mass to absorb the 5 percent of sound waves that penetrate the wall, and 3) an air space that acts as a sound insulator.
- *Fire Resistance* – A 14 in. masonry cavity wall of nominal 4 in. (102 mm) brick veneer and nominal 8 in. (203 mm) concrete masonry backing can easily achieve a 4-hour fire resistance rating.

CODES AND STANDARDS

The 2012 *International Building Code* includes provisions for masonry in Chapter 21 and for anchored masonry veneer in Chapter 14. Each of these *IBC* chapters reference portions of the 2011 *Building*

Code Requirements for Masonry Structures (TMS 402-11/ACI 530-11/ASCE 5-11) for the design of loadbearing and non-loadbearing masonry (for the backing), and for the design of anchored masonry veneer. The masonry code provisions stipulate that two methods exist for the design of anchored masonry veneer: 1) the prescriptive requirements, and 2) the alternate design provisions. Most designers are familiar with the prescriptive requirements which are the basis for the requirements discussed throughout this article. However, the alternate design provisions may be used to design all or portions of the anchored masonry veneer on a project, especially if a detail such as a cavity wider than 4-1/2 in. (114 mm) is needed in order to accommodate a thicker layer of insulation.

DRAINAGE WALLS

The concept of the drainage wall assumes a heavy, wind-driven rain will penetrate the brick veneer. When it does, the wall is designed to convey the water to the cavity or air space behind the veneer. The water flows down the back face of the brick veneer where it is collected on flashing and redirected out of the wall system through weeps as shown in Figure 2.

Cavity. The drainage cavity or air space provides a means to drain water which penetrates the brick veneer. The specified distance of the air space between the two wythes is recommended to be at least 2 in. (51 mm) and required to be no less than 1 in. (25 mm) in order to minimize the possibility of mortar bridging the air space. The maximum distance allowed by the prescriptive provisions is 4-1/2 in. (114 mm) between the back of the veneer and the outside face of the interior masonry wythe (backing) unless the anchors are rationally designed by the alternate design provisions of the Masonry Code. If this distance is exceeded and rational design provisions are used, additional or stronger anchors may be required. When insulation is placed in the air space, the clear distance between the back of the brick veneer and the insulation must be no less than 1 in. (25 mm).

Flashing. Flashing materials should be waterproof and durable, and sufficiently tough and flexible to resist puncture and cracking. In addition, the exposure of flashings subject to deterioration from UV light should be limited. Flashing should not deteriorate when in contact with metal parts, mortar, sealants, or water. Flashing should also be compatible with adjacent adhesives and sealants. It is

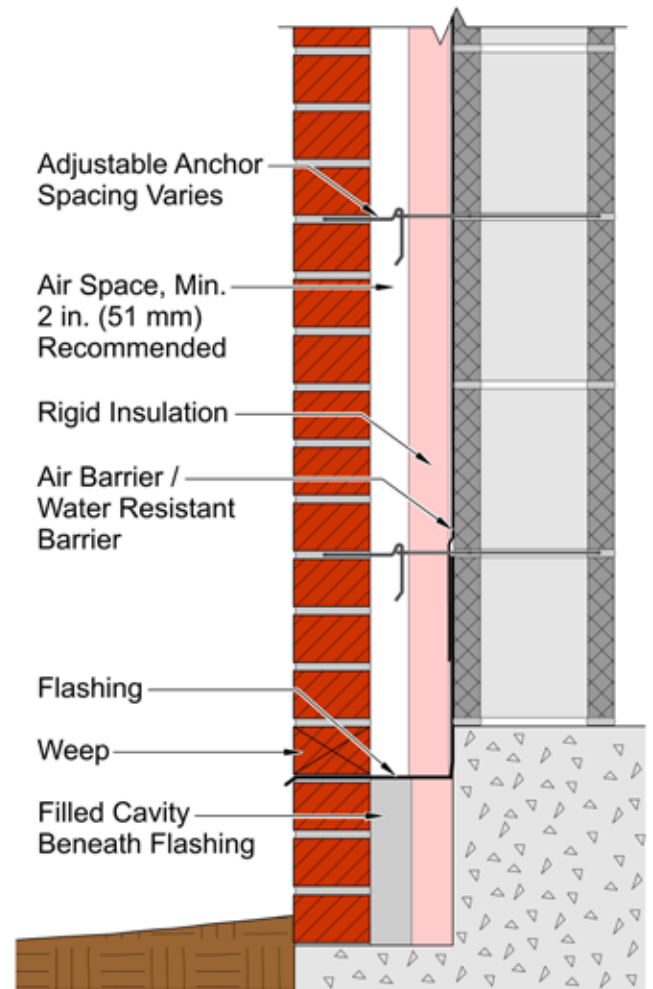


Figure 2. Drainage Cavity Wall

suggested that only superior flashing materials be selected, since replacement in the event of failure is extremely expensive. For more information on flashing, refer to BIA *Technical Notes 7 Series*.

Water is collected on flashing at the bottom of an air space, directed toward weeps, and channeled to the exterior faces of walls. Flashing must be placed at all locations where an air space is interrupted. These include above and below all window and wall openings, above all shelf angles, at the bases of walls, and under copings at parapets. Flashing should extend vertically up the backing a minimum of 8 in. (203 mm). If drainage materials that catch mortar are placed at the bottom of an air space, the flashing at the base of the wall may need to extend further up the backing. This ensures that the flashing extends above the height of the drainage material and helps deter water that migrates across mortar on the drainage material from entering the backing. Where a separate air barrier/water-resistive barrier is installed,

it should lap the top of the flashing a minimum of 4 in. (102 mm). Individual flashing pieces should be lapped at least 6 in. (152 mm) and sealed with a compatible adhesive or mastic to avoid water running under adjacent flashing pieces.

Where flashing is discontinuous, such as over and under openings in a wall, the ends should be turned up at least 1 in. (25 mm) into the next head joint to form an end dam that channels water out of the wall. Flashing must extend at least to the exterior face of the brickwork and not terminate within. When possible, flashing should extend beyond the face of the brickwork to form a drip. A stainless steel or metal drip edge should be used to extend flashing subject to UV deterioration.

Weeps and Vents. Weeps through the brickwork permit water to exit the wall and should be placed immediately above the flashing. Open head joint weeps are preferred and a maximum spacing of 24 in. (610 mm) on center is recommended. If wick or tube weeps are used, a maximum spacing of 16 in. (406 mm) on center is recommended. Wicks should be at least 16 in. (406 mm) long and extend through the brick into the air space and along the back of the brick. Most building codes require weep openings to have a minimum diameter of 3/16 in. (4.8 mm). Non-corrosive metal, mesh, or plastic screens can be installed in open head joint weeps if desired to deter insect access and water infiltration.

Open head joints placed at the top of an air space function as vents and help reduce moisture buildup in the air space by promoting ventilation. Vents should be spaced at the same horizontal spacing as weeps and should be centered between weeps.

Foundation. Foundations of brick, concrete masonry, or concrete are typically used to support masonry cavity walls. Detail base flashing and weeps a minimum of 6 in. (152 mm) above grade to allow the

drainage system to function properly. Weeps should not be placed below grade. When possible, the elevation of the brick shelf in the foundation that supports the brick veneer above should be lower than the elevation of the finished floor. Brickwork below the base flashing should be detailed as a barrier wall system by completely filling the cavity or air space with grout or mortar to minimize water penetration as shown in Figure 2. Through-wall base flashing prevents rising damp, a condition where ground water is drawn into the brickwork by capillary action, which can result in staining and efflorescence. The finished grade should be sloped away from the wall to provide positive drainage.

Brickwork should extend below grade only when special provisions are made in detailing and construction to minimize water penetration. The building code does not explicitly address brick veneer below grade. To avoid extending brick veneer below grade, the brick shelf in the foundation may be constructed above the final grade. If brick veneer is desired to be below grade in northern climates, then the soil immediately adjacent to the brickwork should provide adequate drainage. If the soil does not drain well, then a French drain may be installed between the soil and the wall, consisting of a gravel fill with a fabric filter surround and a drain pipe or tile below, sloped a minimum of 1/8 in./ft (10 mm/m). Alternatively, a drainage medium may be installed on the surface of the brickwork below grade, such as a drainage mat or a drainage board.

Continue Reading Online

The remainder of the technical discussion on *Energy-Efficient Brick Masonry Cavity Walls* may be read online. Details on shelf angles, lintels, expansion joints, and control joints are included. Information related to creating an energy-efficient design by limiting thermal bridges, selecting and placing an air barrier, and selecting and installing insulation is presented. To access the online content, go to www.gobrick.com/ArchitectCredit.

BIA Technical Notes on Brick Construction

The Brick Industry Association's (BIA) *Technical Notes on Brick Construction* have long provided guidance on brickwork to the design and construction professions. The information provided in the preceding technical discussion and in all issues of *Technical Notes on Brick Construction* is based on the available data and the combined experience of BIA engineering staff and members. The information must be used in conjunction with good technical judgment and a basic understanding of the properties of brick masonry. For further recommendations on cavity wall construction, refer to the *Technical Notes 21 Series* at www.gobrick.com.

GOLD WINNERS

COMMERCIAL

St. John and Associates

Location: Cullman, Alabama
 Architect: Cohen Carnaggio Reynolds
 Manufacturers: Acme Brick
 Cherokee Brick & Tile Company
 Mason Contractor: Chad Bentley Masonry Contractors, LLC

EDUCATIONAL (COLLEGES & UNIVERSITIES)

Health and Social Sciences Building, University of Massachusetts Lowell

Location: Lowell, Massachusetts
 Architect: Cambridge Seven Associates, Inc.
 Builder: Gilbane Building Company
 Manufacturer: Hanson Brick
 Mason Contractor: Empire Masonry Corporation

HEALTH CARE FACILITIES

University of Iowa Healthcare, Iowa River Landing

Location: Coralville, Iowa
 Architect: Neumann Monson Architects
 Builder: J.E. Dunn
 Manufacturer: Glen-Gery Corporation
 Mason Contractor: Moyle Masonry, LLC

MUNICIPAL / GOVERNMENT / CIVIC

Lake County Government Center Expansion

Location: Tavares, Florida
 Architect: Heery Design
 Builder: Charles Perry Partners, Inc.
 Manufacturer: Taylor Clay Products Company
 Mason Contractor: Beeler Barney & Associates Masonry Contractors, Inc.

W. E. Hunt Recreation Center

Location: Holly Springs, North Carolina
 Architect: KlingStubbins
 Builder: John S. Clark Company
 Manufacturers: Endicott Clay Products Company
 Lee Brick & Tile Company, Inc.
 Distributors: Custom Brick Company, Inc.
 General Shale, Inc.
 Mason Contractor: John S. Clark Co., LLC

PAVING & LANDSCAPE ARCHITECTURE

Triangle Park

Location: Lexington, Kentucky
 Architect: Reese Reinhold Design
 Manufacturer: Pine Hall Brick Company, Inc.
 Mason Contractor: Tramontin and Associates

RENOVATION / RESTORATION

St. Paul Catholic Church

Location: Chicago, Illinois
 Architect: Jaeger Nickola Kuhlman & Associates, Ltd.
 Builder: Zera Construction
 Manufacturer: Glen-Gery Corporation
 Distributor: Illinois Brick Company
 Mason Contractor: Ward Contracting & Building Restoration

RESIDENTIAL – MULTI-FAMILY

2201 North Pershing Drive

Location: Arlington, Virginia
 Architect: SK+I Architecture
 Builder: Harkins Builders
 Manufacturers: The Belden Brick Company
 Endicott Clay Products Company
 Distributor: Potomac Valley Brick & Supply Company
 Mason Contractor: C.A.I. Builders

RESIDENTIAL – SINGLE FAMILY

California Ranch House

Location: Cloverdale, California
 Architect: Styles Design
 Builder: Joseph Styles Construction
 Mason Contractor: Ricky Mac Masonry

SILVER WINNERS

COMMERCIAL

77H

Location: Washington, District of Columbia
 Architect: MV+A Architects
 Builder: Clark Builders Group, LLC
 Manufacturer: Redland Brick Inc.
 Mason Contractor: Telligent Masonry, LLC

The Fresh Market Pittsburgh

Location: Mt. Lebanon, Pennsylvania
 Architect: api(+)
 Manufacturer: The Belden Brick Company
 Mason Contractor: Harris Masonry Inc.

EDUCATIONAL (COLLEGES & UNIVERSITIES)

Life Science Laboratories

Location: Amherst, Massachusetts
 Architect: Wilson Architects, Inc.
 Builder: Whiting-Turner Contracting Company
 Manufacturer: Morin Brick Company
 Distributor: Spaulding Brick Company, Inc.
 Mason Contractor: Chabot & Burnett Construction

MUNICIPAL / GOVERNMENT / CIVIC

Roy Kelly Intermodal Terminal and Parking Garage

Location: Bryan, Texas
 Architect: Powers Brown Architecture
 Manufacturer: Acme Brick
 Mason Contractor: D&H Masonry

PAVING & LANDSCAPE ARCHITECTURE

River Street Streetscape

Location: Batavia, Illinois
 Architect: Altamanu, Inc.
 Landscape Architect: Altamanu, Inc.
 Manufacturer: Whitacre Greer Co.
 Mason Contractor: LPS Pavement Company

RENOVATION / RESTORATION

Capitol Broadcasting Co. Headquarters Addition and Renovation

Location: Raleigh, North Carolina
 Architect: Szostak Design, Inc.
 Builder: LeChase Construction Services, LLC
 Manufacturer: Endicott Clay Products Company
 Distributor: General Shale, Inc.
 Mason Contractor: Chapin Masonry

Temple-Pittman House

Location: Knoxville, Tennessee
 Architect: Brian Pittman
 Builder: Justin Smith
 Manufacturer: Glen-Gery Corporation
 Distributor: General Shale, Inc.
 Mason Contractor: Kenny Jordan

University of Richmond – Queally Hall

Location: Richmond, Virginia
 Architect: Worley Associates Architects
 Builder: Worley Associates Architects
 Manufacturer: Glen-Gery Corporation
 Distributor: Shade & Wise Brick Co., Inc.
 Mason Contractor: Capital Masonry Corporation

RESIDENTIAL – MULTI-FAMILY

Chelsea Park

Location: New York, New York
 Architect: GF55 Partners
 Builder: Artimus Construction, Inc.
 Manufacturer: Glen-Gery Corporation
 Mason Contractor: Artimus Construction, Inc.

RESIDENTIAL – SINGLE FAMILY

Stowers Residence

Location: Knoxville, Tennessee
 Architect: William Andrews Architecture
 Builder: Hickory Construction
 Manufacturer: General Shale, Inc.
 Distributor: General Shale, Inc.
 Mason Contractor: Hickory Construction

BRONZE WINNERS

COMMERCIAL

F & H Building

Location: Bozeman, Montana
 Architect: Locati Architects
 Builder: Martel Construction
 Mason Contractor: Marks & Hanson, Inc.

One Fulton Square

Location: Flushing, New York
 Architect: Margulies Hoelzli Architecture
 Manufacturers: The Belden Brick Company
 Endicott Clay Products Company
 Mason Contractor: Top 8 Construction

EDUCATIONAL (COLLEGES & UNIVERSITIES)

University of Arkansas Student Services Center

Location: Little Rock, Arkansas
 Architect: Polk Stanley Wilcox Architects
 Builder: CDI Contractors
 Manufacturer: Acme Brick
 Distributor: Acme Brick
 Mason Contractor: C B Masonry, Inc.

MUNICIPAL / GOVERNMENT / CIVIC

Village of Tinley Park - 80th Avenue Train Station

Location: Tinley Park, Illinois
 Architect: Legat Architects, Inc.
 Manufacturer: Taylor Clay Products Company
 Distributor: Metropolitan Architectural Brick, Inc.
 Mason Contractor: Mike Cachey Construction Company

PAVING & LANDSCAPE ARCHITECTURE

Mechanic Street

Location: Haddonfield, New Jersey
 Architect: Remington & Vernick Engineers and Affiliates
 Landscape Architect: Remington & Vernick Engineers and Affiliates
 Manufacturer: Pine Hall Brick Company, Inc.
 Distributor: Church Brick Company
 Mason Contractor: Asphalt Paving Systems

RENOVATION / RESTORATION

Buist Academy for Advanced Studies

Location: Charleston, South Carolina
 Architect: Stubbs Muldrow Herin architects
 Builder: MB Kahn
 Mason Contractor: Tryco Masonry, LLC

CITTA 50

Location: Washington, District of Columbia
 Architect: Bonstra | Haresign ARCHITECTS LLP
 Builder: Camden Builders
 Manufacturers: The Belden Brick Company
 Endicott Clay Products Company
 Distributor: Potomac Valley Brick & Supply Company
 Mason Contractor: Manganaro Midatlantic, LLC

The Pomeroy Apartments

Location: Chicago, Illinois
 Architect: Pappageorge Haymes Partners
 Associate Architect: Architrave, Ltd.
 Builder: McHugh Construction
 Manufacturer: Bowerston Shale Company
 Distributor: Illinois Brick Company
 Mason Contractor: MBB Enterprises

RESIDENTIAL – MULTI-FAMILY

61 Fifth Avenue

Location: New York, New York
 Architect: Alta Indelman
 Builder: PAV-LAK
 Distributor: Belden Tri-State Building Materials
 Mason Contractor: L and G Masonry Corp.

Camden South Capitol

Location: Washington, District of Columbia
 Architect: WDG Architecture
 Builder: Donohoe Construction Company
 Manufacturers: Taylor Clay Products Company
 Endicott Clay Products Company
 Mason Contractor: Genco Masonry

Post Carlyle Square - Block O

Location: Alexandria, Virginia
 Architect: SK+I Architecture
 Builder: Clark Builders Group, LLC
 Manufacturer: Glen-Gery Corporation
 Distributor: Capital Brick & Tile, Inc.
 Mason Contractor: United Masonry

RESIDENTIAL – SINGLE FAMILY

Classic Brick Georgian

Location: Greenwich, Connecticut
 Architect: Douglas VanderHorn Architects
 Builder: Significant Homes, LLC
 Manufacturer: Glen-Gery Corporation
 Mason Contractor: V & Y Construction LLC

All credit information appears as it was provided in the entry by the architect or BIA member company.

BIA would like to thank this year's judges for their efforts and expertise.

Beth Greenberg, Dattner Architects

Evan Gunn, The Clark Enersen Partners

Charles Hilton, Charles Hilton Architects

Imran Kifayat, The Preston Partnership

Marlan Laurenzi, Franck + Lohsen Architects

Jeffrey Lee, Clark Nexsen / Pearce Brinkley Cease + Lee

Dominic LoGalbo, Harding Partners

Jon Moore, Moore2Design, LLC

Hamid Noughani, Assemblage Architects

Paul Urbaneck, SmithGroupJJR

Tim Wise, American Structurepoint

Al York, McKinney York Architects



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www.gobrick.com/ArchitectCredit

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- Brick Veneer With a Backing of Cold-Formed Steel Framing (1.0 AIA LU/HSW)
- Color and Texture in Brickwork (1.0 AIA LU/HSW)
- Color and Patterns in Brickwork (1.0 AIA LU)
- Construction Administration of Brickwork (1.0 AIA LU/HSW)
- Energy-Efficient Brick Masonry Cavity Walls (1.0 AIA LU/HSW)
- Specifying Brick for Durability and Beauty (1.0 AIA LU)

For questions, contact Tricia Mauer
at tmauer@bia.org or 703.674.1539.



Let the Brick Industry Association know about your firm's projects that reflect excellence in design using clay brick. Your project will be considered for publication in upcoming issues of *Brick in Architecture*.

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