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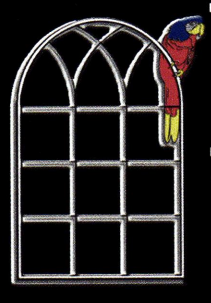

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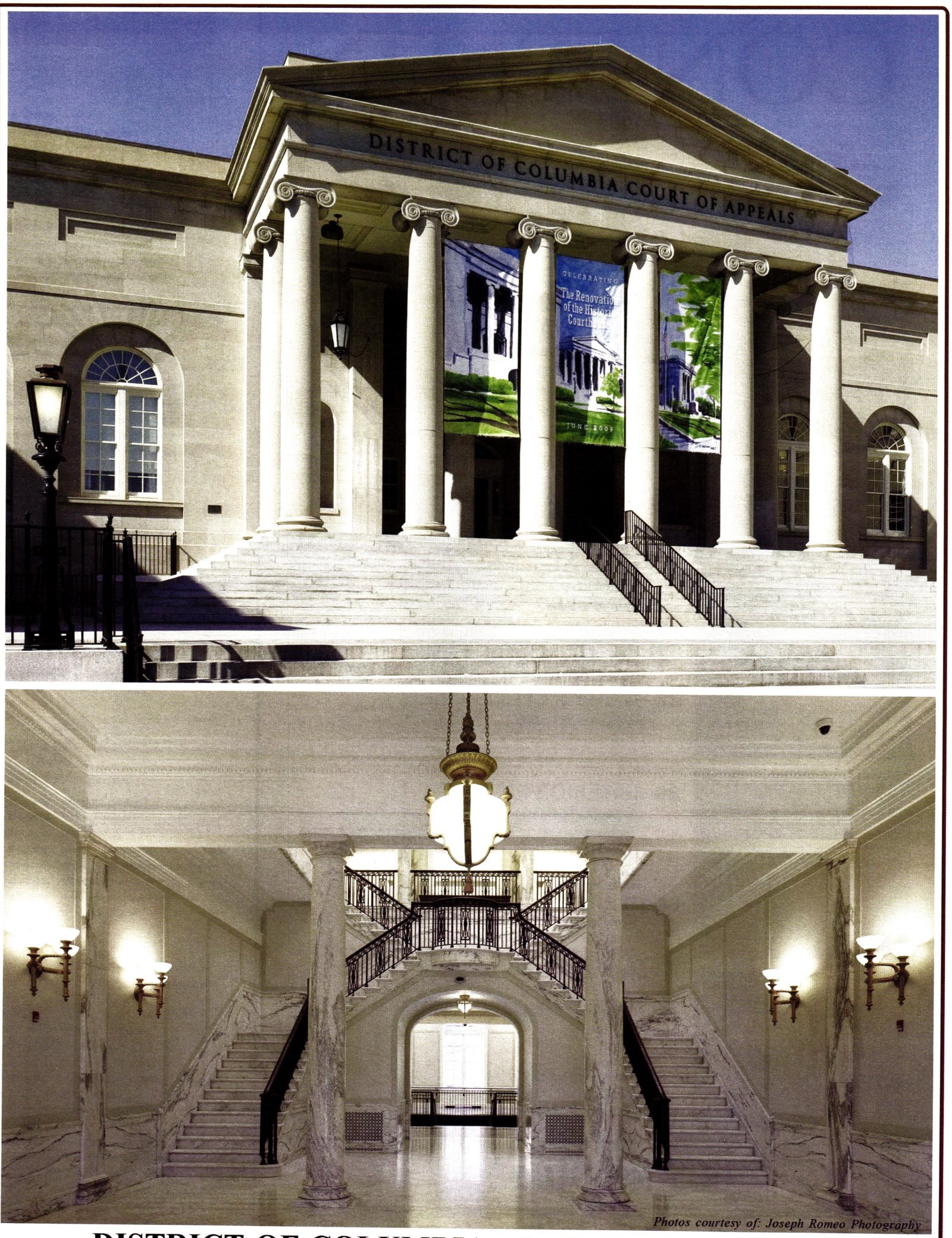

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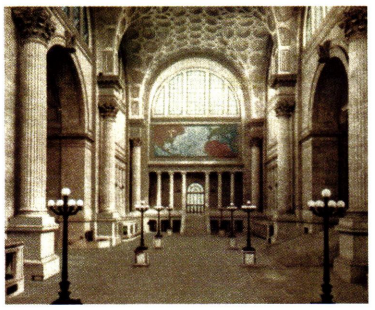

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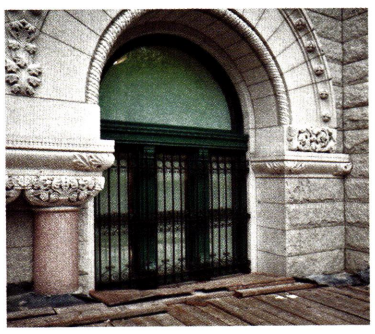

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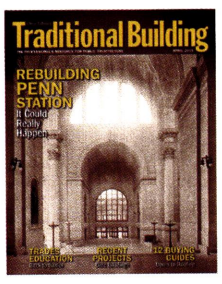

A view of the majestic interior of McKim's original Penn Station in New York City. See page 10. Photo: Library of Congress.

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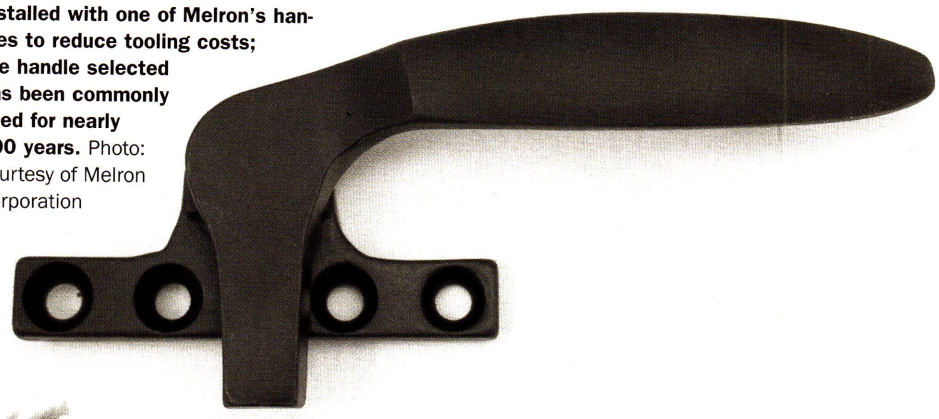
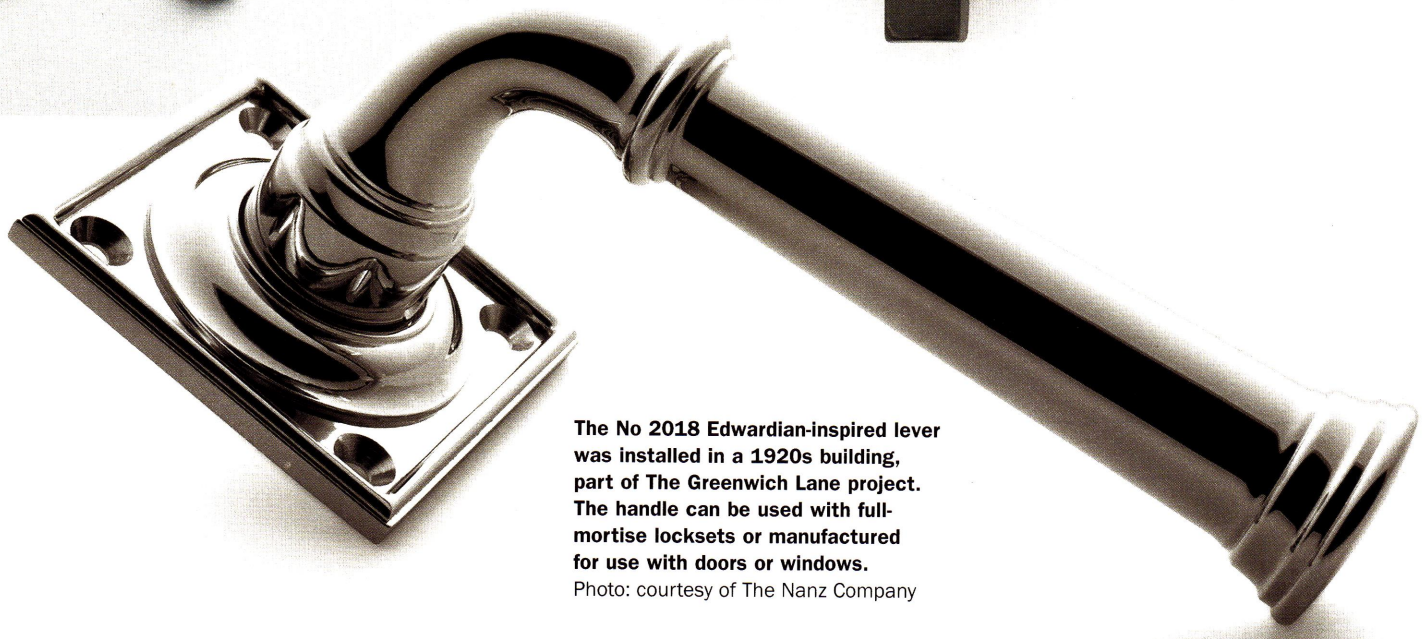
By Annabel Hsin

DOOR & WINDOW HARDWARE

Al Bar added extra support in the hinges for use with the heavy mahogany doors at the Illinois State Capitol – some of the doors weighed 250 lbs. Photo: Matthew Rades



The base of the original window hardware for CBS Columbia Square in Hollywood was replicated but installed with one of Melron's handles to reduce tooling costs; the handle selected has been commonly used for nearly 100 years. Photo: courtesy of Melron Corporation



The No 2018 Edwardian-inspired lever was installed in a 1920s building, part of The Greenwich Lane project. The handle can be used with full-mortise locksets or manufactured for use with doors or windows. Photo: courtesy of The Nanz Company

First Impressions

Oftentimes when projects are faced with budget constraints, there is a strong temptation to cut corners on door and window hardware. While it's usually among the last items installed on a project, door hardware is the first thing a visitor will touch when interacting with the building, and thus it is the hardware that gives the first impression. If the project goal is to convey a sense of excellence, quality and permanence, the hardware is the perfect vehicle to deliver this message. Featured here are three projects with quality hardware that have either made it to installation or are in its production stages.

Illinois State Capitol: West Wing Renovation

In 2009, plans were made for the $50-million renovation of the Illinois State Capitol's West Wing. In addition to restoring the capitol back to its original 1870s appearance, they included upgrades for life safety, ADA accessibility and security. Like most traditional buildings, the Capitol had suffered inappropriate modifications over the years.

Vinci Hamp Architects (VHA) of Chicago, IL, oversaw the renovation and they worked closely with Al Bar Wilmette Platers of Wilmette, IL, to reproduce the door hardware. "The door hardware had been modified over the years and there were fragments and incomplete pieces all over the place," says David Hrabal, AIA, senior associate at VHA. "Luckily, throughout the whole building we were able to find parts and pieces to form a complete set. Our goal was to take this archaic set of hardware on the original doors and try to make them suit modern needs for a functional office building."

The VHA team developed a hierarchy for the doors that included doors for main entrances, corridors, offices and closets. Al Bar fabricated hardware suites for each level. The three sets of copper-clad wooden entry doors, for instance, called for custom-designed hardware. "We created several designs for the VHA team to choose from," says Greg Bettenhausen, president of Al Bar. "After a design was selected, our sculptor handcrafted originals to create molds that are injected with wax. The waxed models are placed on a tree and dipped in plaster to create shells. Once the plaster is dried and the wax is removed, bronze is poured into the plaster shells. The last step is to polish and plate the hardware before installation. We used the lost-wax method to fabricate all the hardware for the capitol."

Completed in 2014, the renovation project was so successful it received AIA's National Honor Award for Interior Architecture and won Project of the Year from Landmarks Illinois. "Al Bar was great to work with," says Hrabal. "They had a deep understanding of the hardware, which gave them the confidence necessary to deliver an outstanding product."

CBS Columbia Square

In 2007, Schofield, WI, based Melron Corporation president Debbie Flood decided to incorporate 3D printing technology into her firm's manufacturing of sand-cast architectural hardware. "Utilizing 3D printing technology and laser scanning, Melron has

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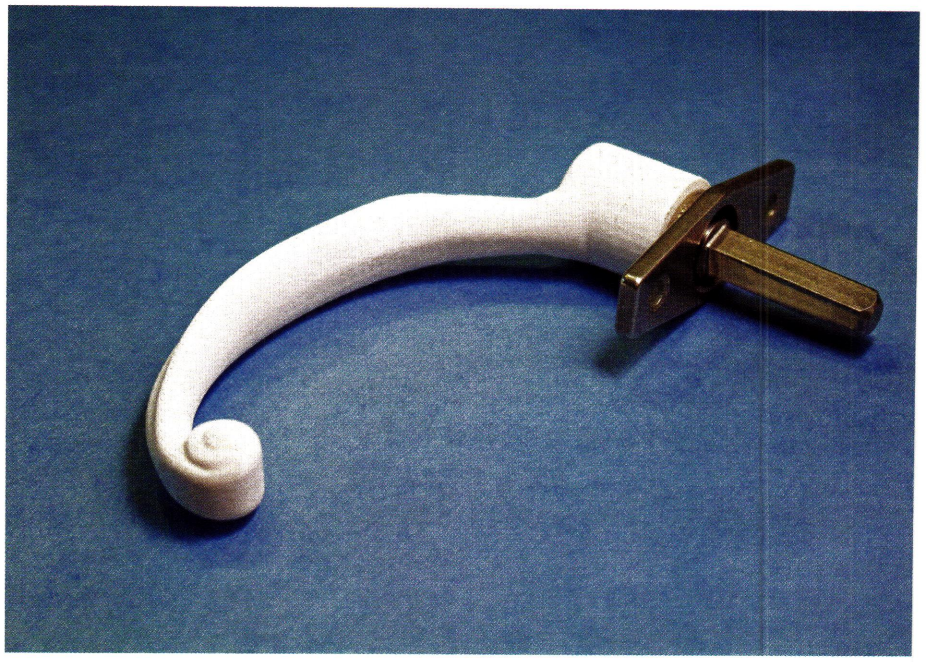
BELOW, LEFT: A hierarchy for the doors at the Illinois State Capitol included doors for entrances, corridors and offices. Al Bar fabricated hardware suites for each level. Photo: Tom Rossiter

BELOW: Al Bar used the lost-wax method to fabricate all the bronze hardware for the Illinois State Capitol. Photo: Tom Rossiter

BOTTOM: Melron Corporation produces functional 3D printed prototypes using ABS plastics of the hardware that can be installed in the window to test for fit, form and function. Photo: courtesy of Melron Corporation



been able to condense the product development cycle," says Flood. This equipment and the ability to produce all tooling in house has made it possible for the firm to maintain control of the entire process, and thus oversee the full evolution of new hardware.

In the case of historical hardware, 3D printing is often used in conjunction with laser scanning to replicate hardware design. Melron produces functional 3D printed ABS plastic prototypes for approval, and can deliver a cast sample in a matter of weeks, Flood explains. A functional prototype is a high strength plastic assembly that can be coated for client presentation to reflect the original finish, and can be installed on the window or door to test for fit, form and function. Aluminum and plastic tooling that can accommodate both large and small custom jobs, is also produced in house.

Historic hardware replication can be approached in three ways, says Flood. The existing hardware can be exactly replicated, hardware can be replaced with historic hardware from our extensive pattern library, or the historic handle design can be replicated and adapted to work on window systems with modern energy efficiency and functionality.

In 2013, Melron worked with Crown City Hardware to replace the window handles on CBS Columbia Square in Hollywood. Built in 1938, the studio fell into disrepair in the late '80s and was slated for demolition after the last radio station moved out. In 2012, it was acquired by Kilroy Realty Group and is now being renovated as part of a 4.7-acre mixed-use project.

"Our client decided to replicate the base of the original hardware so the lock would fit properly on the existing window, but chose to use a standard Melron handle instead of replicating the original," says Flood. "The handle selected was chosen because it has been commonly used for nearly 100 years. We were able to provide the

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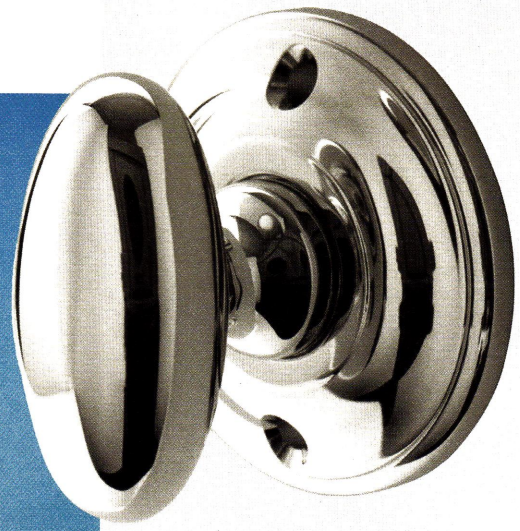
The Greenwich Lane in NYC is a collection of five multi-residential buildings and five townhouses all connected by a large shared basement and common outdoor spaces. The Nanz Contract Division is manufacturing several hardware suites to complement the different architectural styles of each building, with one common suite uniting the public and amenity spaces. Photo: courtesy of The Nanz Company



RIGHT: The No 4065 oval thumbturn, installed in the mid-century building at The Greenwich Lane, features a rose enriched with a shallow stepped ogee; it can be used with Nanz full mortise locksets. Photo: courtesy of The Nanz Company

historic look for windows while minimizing tooling costs."

The Greenwich Lane

Over the last 25 years, The Nanz Company in New York City has established a name for itself as a reliable manufacturer of custom high-end residential hardware. Several years ago, the firm branched out to form the Nanz Contract Division in response to the demands of the high-end real estate development market. "We began exploring alternate methods of manufacture to allow for lower cost per piece in high quantity runs while maintaining our quality standards and continuing to manufacture domestically in New York," says Joe Roth, director of the Nanz Contract Division. "The Greenwich Lane project is a testament to our ability for on-time and on-budget development projects."

Located in the West Village neighborhood of New York City, The Greenwich Lane project is a collection of five multi-residential buildings and five townhouses all connected by a large shared basement and common outdoor spaces. The developer, Rudin Management Company, decided to use different architectural styles for each building and requested that the hardware follow suit. The Nanz team used several hardware suites, one for each building, with a common suite uniting all public and amenity spaces.

"To accommodate high-quantity manufacturing, additional tools were made for holding items within machines to facilitate multiple machining stages for multiple parts simultaneously," says Roth. "Lights-out manufacturing was introduced for all initial machining stages so we can produce throughout the night and new mechanisms were made to feed brass into these machines. The longest portion of lead-time is the hand-finishing stages, which is the same for standard single-family projects and Contract projects to maintain the Nanz high-quality standards.

"Although the job is still in progress, we certainly see it as a success so far," notes Roth. "All buildings are moving smoothly through production (slightly ahead of schedule, in fact) and we are getting ready for our first shipments."

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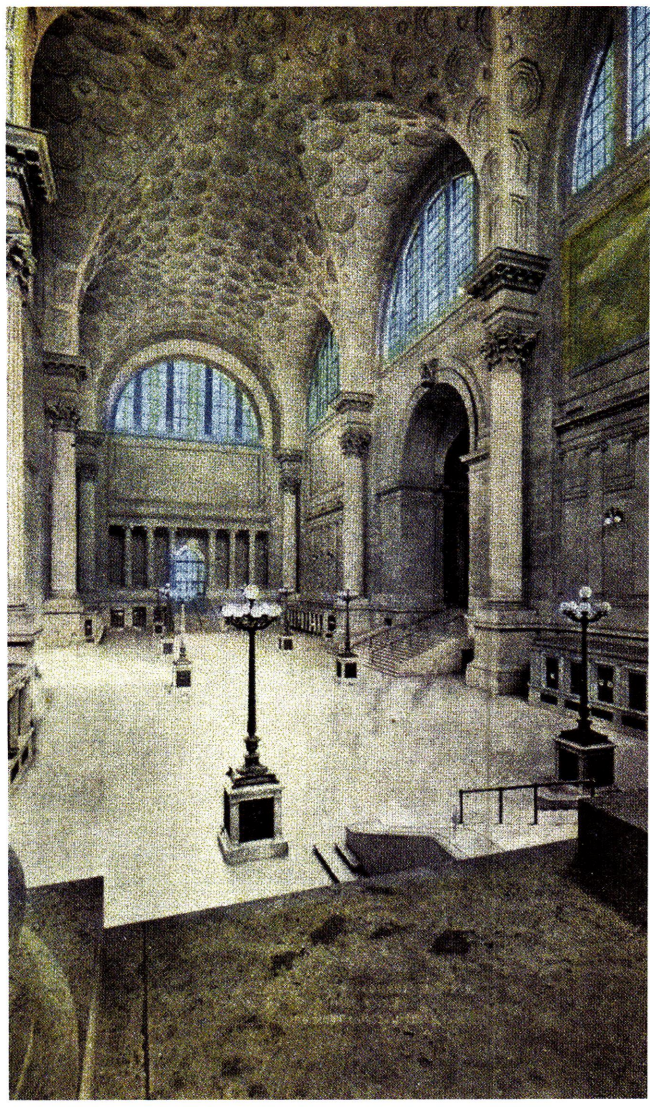


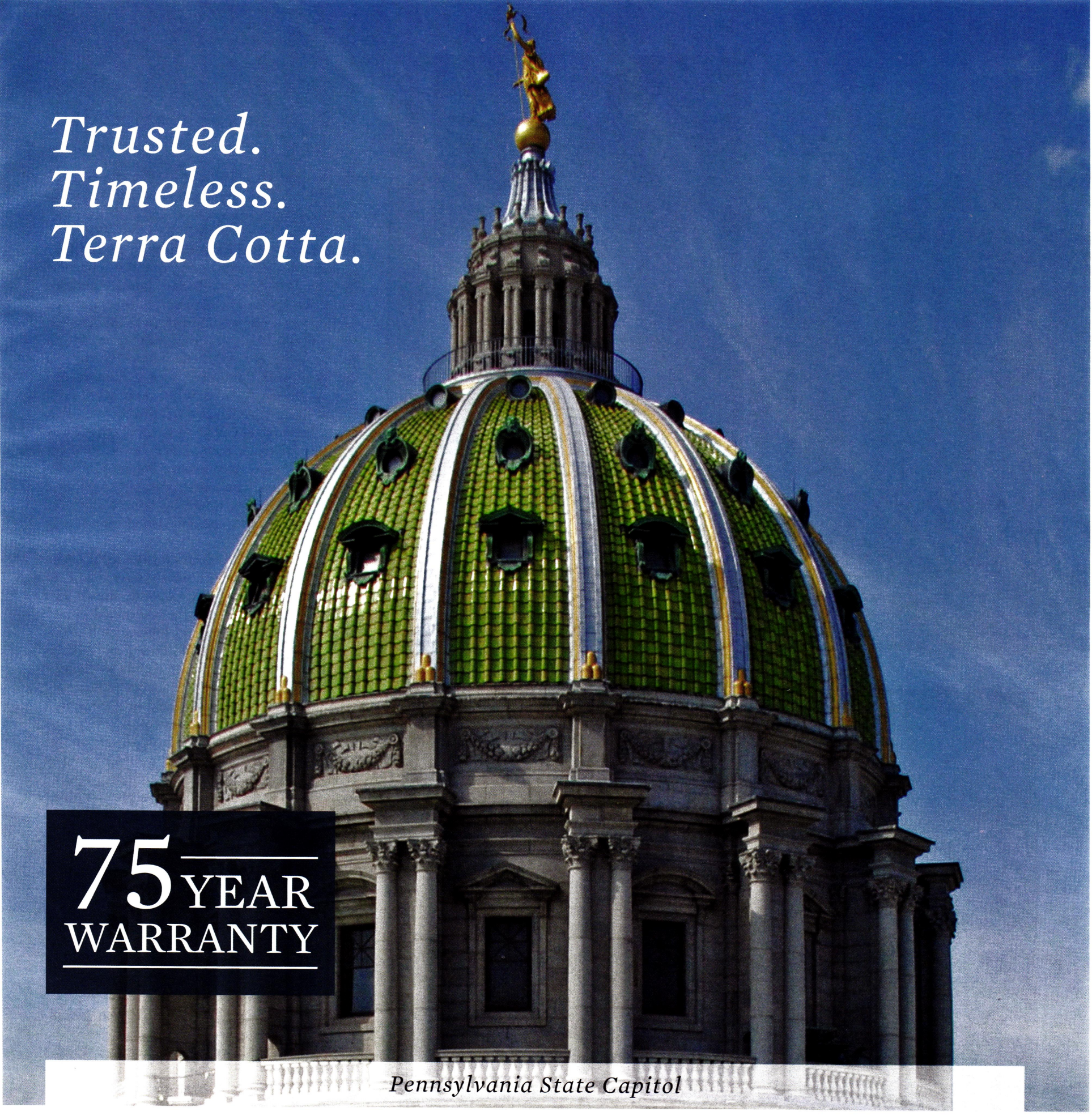
Penn Station's immense main waiting room was clad in travertine marble, with a vaulted and coffered ceiling that soared 150 ft. above the marble floor. Eight colossal 60-ft. Corinthian columns, sitting on massive 20-ft. pedestals, gave visual support to the ceiling. Light poured in from eight 33-ft. high Diocletian windows. Photos: Historic postcards unless otherwise noted

Rebuilding McKim's PENN STATION

A visionary new plan not only rectifies an appalling act of architectural vandalism, but also radically improves passenger circulation at a critical transit hub, and creates badly needed civic space in a dreary part of New York City. **BY CLEM LABINE**

Though demolition occurred more than 50 years ago, citizens of New York City – and lovers of beautiful architecture everywhere – still mourn the loss of Charles Follen McKim's majestic Pennsylvania Station. The demolition of that magnificent building is still remembered as one of the greatest civic blunders ever committed. That's why there are cries of startled disbelief – commingled with hope and jubilation – when people hear details of the new plan that would bring McKim's Beaux-Arts masterpiece back from the ash heap of history – and solve two other major urban problems in the bargain.

"The Plan to Rebuild Penn Station" is the brainchild of Richard W. Cameron, principal designer at Atelier & Co., Brooklyn, NY, and one of the original founders of the Institute of Classical Architecture & Art. The Rebuild Penn Station plan has three major elements: (1) Reconstruct the grand spaces of the original Penn Station; (2) Create a modern transit hub that connects two subway lines, two commuter railroads, and Amtrak; (3) Redevelop the area in and around Penn Station to create a world-class urban destination – like Rockefeller Center. McKim had envisioned his splendid rail terminal as the centerpiece of a spectacular City Beautiful project – but he died before



Pennsylvania State Capitol

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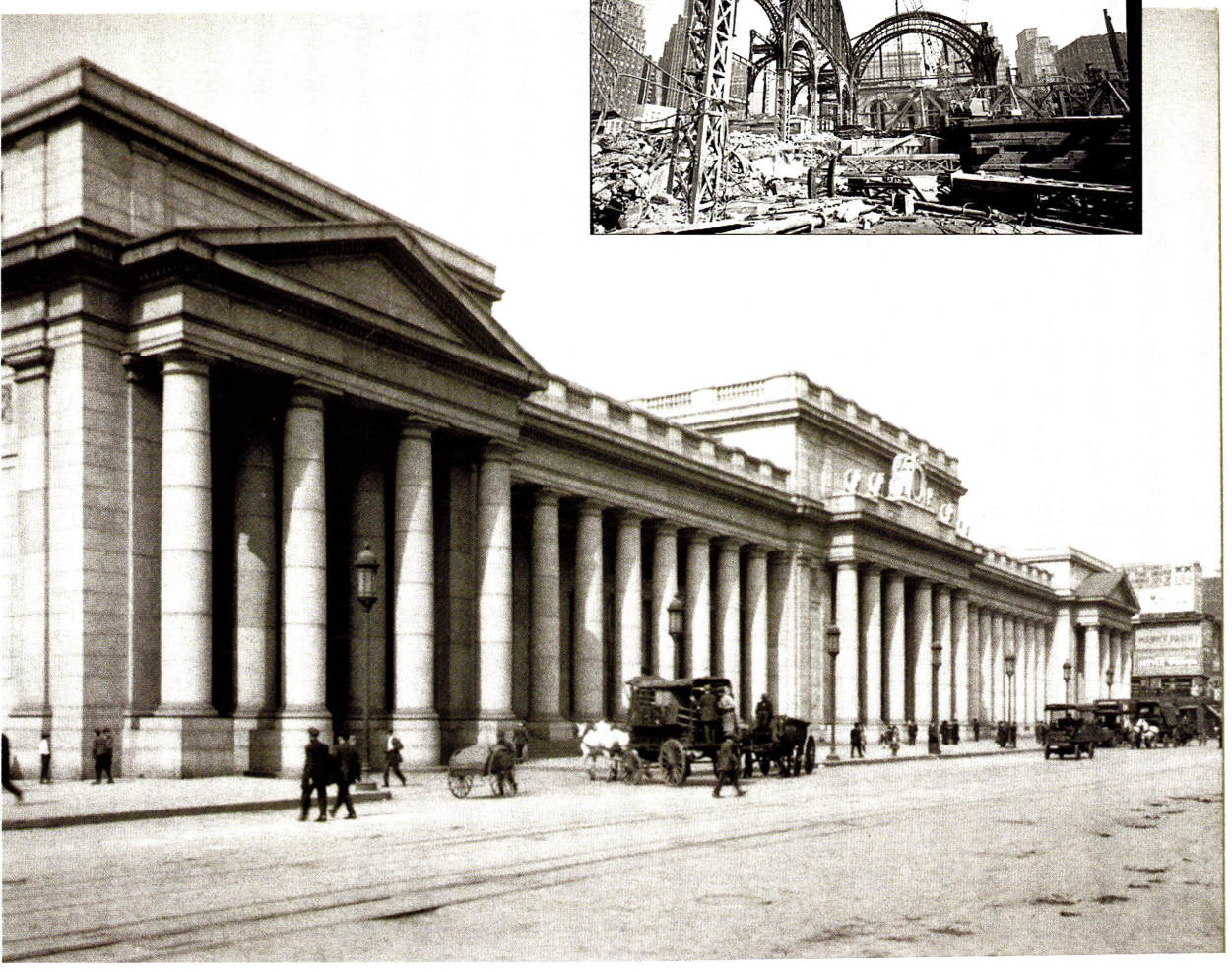


INSET: It took three years – from 1963 until 1966 – to totally demolish and dispose of McKim's vast and solidly built Beaux-Arts masterpiece. Seen here are the vestigial remnants of the main waiting room's steel skeleton.

TOP: A colonnade of 35-ft. pink granite Doric columns extended 430 ft. along the Seventh Avenue elevation. The main entrance portico at the façade's center was surmounted by a 7-ft. dia. clockface in an ornate classical frame carved by sculptor Adolph Weinman.

ABOVE: This bird's-eye view of the main entrance portico on Seventh Avenue shows the central passage that led visitors down an arcade lined with European-style shop fronts. Rising in the center of the building, marked by massive Diocletian windows, are the walls of the vast main waiting room.

his full dream could be realized. "The time is right," Cameron declares, "to complete McKim's glorious urban vision."

Technically and Economically Feasible

Cameron makes a convincing case that rebuilding McKim's Penn Station is both technically and economically feasible. For starters, architectural design development costs would be dramatically less than for a "blank slate" Modernist exercise in abstract geometry that is the current fashion. Archives at the New York Historical Society contain 353 original McKim Mead & White drawings of Penn Station that can be digitized and used to jump-start the design process. Unlike so many of today's new sculpture-buildings, there would be no complex engineering issues to be resolved because the building is based on time-tested principles. Additional construction savings would be realized since the original excavations and foundations are already in place.

Preliminary cost estimates for the rebuilt Penn Station and transit hub, which serves close to 600,000 passengers per day, would be around $2.5 billion – much of which can be covered by air-rights transfers and municipal bond sales. By contrast, the elaborate new World Trade Center Transit Hub by Santiago Calatrava cost around $4 billion – and serves fewer than 50,000 train commuters daily.

A rebuilt Penn Station would give New York back its monumental gateway of which it was robbed in 1963. Today's train passengers are required to navigate a depressing warren of gloomy passages instead of passing through McKim's sequence of inspiring vaulted spaces. In Vincent Scully's oft-quoted comment about Penn Station, formerly "one entered the city like a god." Now, "one scuttles in like a rat."

The original Penn Station was built between 1901 and 1910, inspired by the Baths of Caracalla in Rome. The classical edifice was a stunning achievement of both engineering and aesthetics: Its steel frame sheathed in pink granite and travertine, with 84 Doric columns and lofty halls with 150-ft. coffered ceilings, created one of the largest covered public spaces in the world.

Built totally with funds from the Pennsylvania Railroad under the guidance of its visionary president, Alexander Cassatt, the privately owned building was more than a train terminal: It was also a gift to the entire city of New York. Rich in classical architectural detail and built of high-quality materials, the monumental building set a standard for excellence in civic spaces. It was an awe-inspiring public realm where the poorest citizen could feel like nobility.

A Rationalized Transit Hub

Penn Station's facilities today handle nearly 600,000 passengers daily, making it the busiest transit hub in North America – and probably the most bewildering. The second element of the Rebuild Plan will streamline what currently is a confusing jumble of passenger connections between two subway lines, the Long Island Railroad (LIRR), New Jersey

LEFT: The passenger concourse, which provided ready access to all the train platforms, was the station's other major space. Unlike the grand classical waiting room, the concourse with its exposed steel structure and glass canopy expressed modernity and efficiency.

ABOVE: This 1906 drawing by Jules Crow, of McKim, Mead & White's office, reveals McKim's dream of framing Penn Station with a ring of classically inspired buildings. It shows 32nd Street looking west, and illustrates that construction of Penn Station required the closing of 32nd Street west of Seventh Avenue.

"Make no little plans. They have no magic to stir men's blood..." – Daniel Burnham

Transit commuter lines, and Amtrak.

The original Penn Station was designed primarily for the intercity passengers of the Pennsylvania Railroad – traffic that is today handled by Amtrak. But today's intercity traffic accounts for less than 10% of Penn Station's passenger flow; the balance being daily commuters from the LIRR and NJ Transit. Currently, these commuters have to pick their way through an underground maze that rivals the Minotaur's Labyrinth. To make a truly efficient transit hub, service areas for these daily commuters must take top priority.

Like all Beaux-Arts buildings, the logical layout of McKim's original vast floor plan permits many adaptations for modern uses without compromising the basic architectural beauty of the structure. With Amtrak operations moved to the other side of Eighth Avenue, ample room is created for highly improved services and passenger amenities for the 500,000 daily riders on the LIRR and NJ Transit – along with improved connections to the Seventh and Eighth Avenue subways.

Centerpiece of a Great Urban Destination

The third component of the Rebuild Plan is completion of McKim's vision of the great train station as the centerpiece of a beautiful urban ensemble. The Rebuild Plan accomplishes this by (a) re-purposing some of the interior spaces of the massive building, and (b) creating a great urban outdoor room on the north side of the station.

Besides its function as a passenger terminal, the colossal dimensions of the station building also provide enormous possibilities for creating a dining, shopping and entertainment Mecca. For example, the two huge light wells behind the Seventh Avenue façade could be fitted with glass canopies that would provide prodigious amounts of additional sunlit interior space.

In addition, McKim's floor plan presents multiple opportunities for contemporary adaptations. Originally, visitors entering from the Seventh Avenue portico encountered a long arcade lined with shops. Travelers then came upon a loggia that functioned as a transition space to dining facilities; on one side was a lunchroom, with a more formal dining room opposite. Large office spaces were available above the dining level. Straight ahead from the loggia was the grand stairway leading down to the main waiting room.

The immense waiting room of travertine marble – running almost the entire two-block width of the building – was Penn Station's showpiece. The vaulted and coffered plaster ceiling floated 150 ft. above the marble floor, visually supported by eight colossal 60-ft. Corinthian columns. Natural light flooded the great room through eight 33-ft. high Diocletian windows. Containing ticketing and baggage checking services, the vast waiting room never failed to impress and uplift anyone who entered.

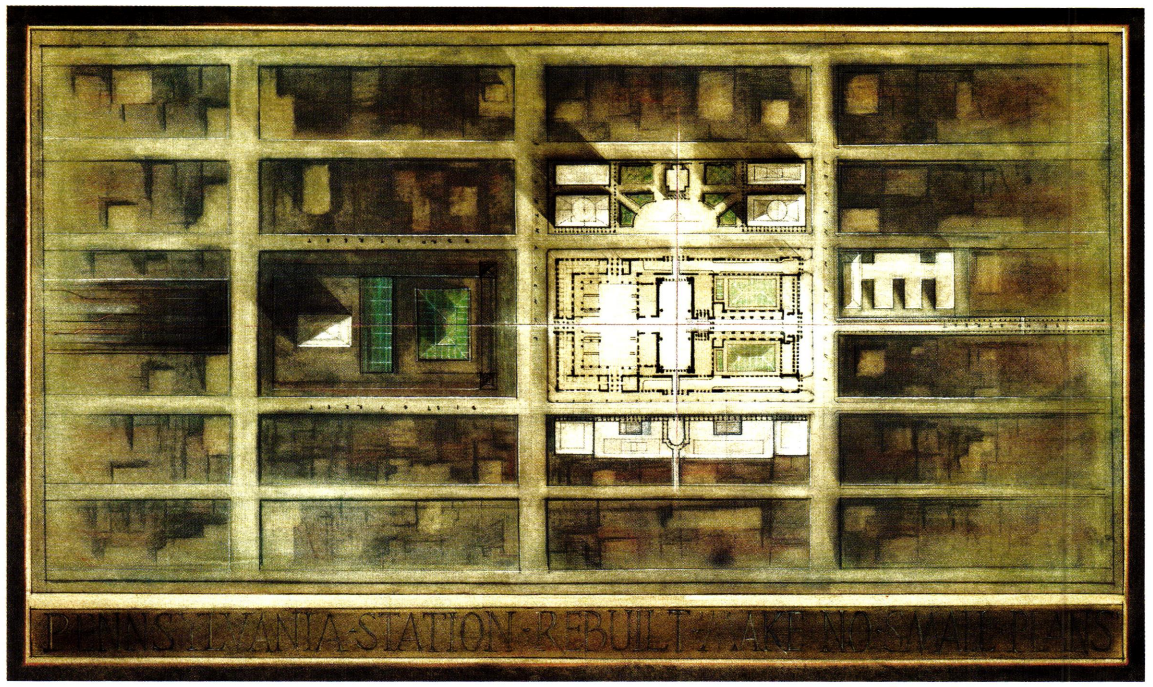
From the main waiting room, passengers processed to the second major area – the passenger concourse on the Eighth Avenue side that provided easy access to all the intercity railroad platforms. The immense concourse floor was studded with slender steel columns supporting an overhead glass canopy – creating the effect of a crystal palace. Glass blocks embedded in the floor allowed light to filter down to the track level.

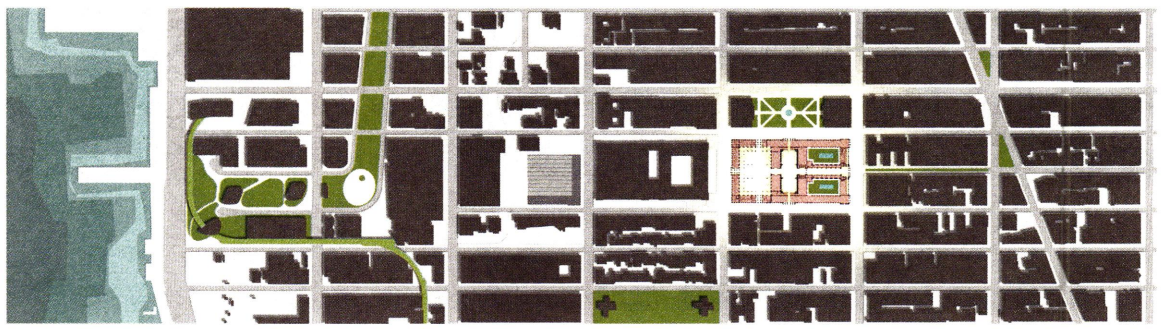
But beyond repurposing spaces contained within the station itself, the Rebuild Plan also realizes McKim's vision of transforming the area north of Penn Station into an urban plaza that could become one of New York's most inviting locations. Besides Rockefeller Center, New York City does not have any great urban gathering places in the manner of Europe's famous plazas, such as the Piazza Navona. Cafes, shopping, theaters, open space, public seating,

Rebuilding Penn Station Would Make Henry Smile

This year marks the centennial of the birth of Henry Hope Reed (born September 25, 1915), father of the present-day Classical revival. In 1968 – at the height of Modernist supremacy – Henry founded Classical America, an organization that subsequently became part of the Institute of Classical Architecture & Art. Henry spent his lifetime fighting to reverse the tide of Modernist ideology that was stripping our cities of beauty, harmony and order.

Of Henry's many quotable quotes, this is quite typical: "If we once accept the consequence of the present fashion as a form of nihilism, then the Modern can no longer be termed 'progress'." This quote can surely stand as Henry's comment on the proposal to replace the banal Modernist pastiche that is the current Madison Square Garden with a majestic classical masterpiece. Energetic advocacy for the Rebuild Penn Station Plan is certainly a most appropriate way to mark the centennial of Henry's birth. – CL





TOP: At the original Penn station, visitors arriving from Seventh Avenue (right) passed through a long arcade lined with shops and dining facilities, then entered the grand main waiting room (center). After getting tickets and checking baggage, passengers progressed to train platforms via the large passenger concourse (left). The plan also shows a schematic of the great outdoor room on 33rd Street envisioned under the Rebuild Plan. Drawing: Atelier & Co.

ABOVE: This digital map from the water to Herald Square shows both the new Hudson Yards development and a reintroduced Penn Station plan. It illustrates how Penn Station is embedded in the heart of Manhattan's street grid. The proposed great outdoor room is shown just north of the station – enhancing the project's role as a major urban destination and tourist attraction. Map: Atelier & Co.

fountains and plantings envisioned in the Rebuild Plan would be sure to turn the area into a veritable people-magnet.

The success of the High Line Park on Manhattan's west side – with its subsequent spectacular increase in real estate values – has demonstrated how beautiful public spaces can trigger economic development. And the High Line Park has virtually no convenient public transit access as compared with the vast transportation network at the Penn Station transit hub.

The Inevitable Objections

A program as visionary as the Plan to Rebuild Penn Station will draw instant criticism. The Modernist establishment will surely argue that a new Penn Station should be "innovative and contemporary" – meaning that it should be an exercise in abstract geometry. But, in fact, the Rebuild Plan is the most radical and innovative idea that has been put forward – and will attract a lot more public attention. Manhattan is already jammed with Modernist glass-and-steel abstractions, so a great new classical Penn Station would not only be big news, but also an act of civic redemption.

There are also a number of contemporary precedents for rebuilding lost architectural landmarks, such as the Cathedral of Christ the Savior in Moscow, and the historic centers of Warsaw, Dresden, and Echternach, Luxembourg. And, of course, restoration of major train stations has also proved economically successful in cities like Washington and Denver.

Another objection will be that plans for the new Moynihan Station on Eighth Avenue, proposed for the former Farley Post Office building, preempts the Rebuild Penn Station Plan. But even if it is built, the Moynihan Station (now estimated to cost $1.5 billion) will only serve 40,000 Amtrak passengers – leaving the other 500,000 daily LIRR and NJ Transit passengers still suffering in their dismal underground tunnels.

The last major objection to the Rebuild Plan is that it will require the relocation of Madison Square Garden… and the current Garden owners have declared they have no intention to move. However, the owners of Madison Square Garden have only eight more years left on their location's 10-year lease. New York City has given the owners a tax abatement incentive (said to be up to $16 million per year) to keep the Knicks and Rangers in Madison Square Garden. In the opinion of inside observers, if that tax abatement were made transferable to a new location, moving Madison Square Garden would suddenly seem much more feasible to its owners.

The Rebuild Penn Station Plan will return to New York City its magnificent gateway that will offer a dignified welcome to commuters, tourists, and businesspeople from across the city, suburbs, and the entire East Coast. Even more important, the rebuilt Penn Station will be an economic engine that draws visitors and New Yorkers alike to what can become one of the most vibrant parts of New York City. We owe it to future generations to fill the hole in the physical and spiritual fabric of the city created by the barbaric acts of 1963. The plans are in place; all that's needed is political will.

Editor Emeritus Clem Labine is the founder of Traditional Building, Period Homes, *and* Old House Journal *magazines. He also launched the* **Palladio Awards** *program in 2002, and is the namesake of the annual* **Clem Labine Award** *for creation of beauty in the public realm.*

RECOMMENDED READING

Conquering Gotham: Building Penn Station and Its Tunnels, by Jill Jonnes. Penguin Books, 2007.

A major selling point of the Rebuild Plan is its creation of big improvements in amenities for 500,000 daily commuters on the LIRR and NJ Transit – along with better connections to the Seventh and Eighth Avenue subways. This watercolor of a William Helburn photograph from the 1950s is reinterpreted as modern day (i.e. hipster, kiosks and the current year being 2024). Drawing: Jason Grimes, Atelier & Co.

Trades Education in the New Century

WHERE DO YOU GO TO LEARN THE TRADES NEEDED TO PRESERVE HISTORIC BUILDINGS? VARIOUS SCHOOLS AND PROGRAMS AROUND THE COUNTRY OFFER HANDS-ON TRAINING.

BY GORDON BOCK

RIGHT: Students at Belmont College restored this four-seat outhouse as part of a community field lab project in Deersville, OH. They reconstructed the two windows, built new sills, replaced a half dozen clapboards, and scraped, primed and repainted.

Since the 1960s, the preservation movement has made gigantic strides in creating a workforce to care for historic structures – historians, architects, planners, government agencies – everything it seems except people to actually do hands-on work, in a traditional and sensitive manner, on the fabric of the historic buildings themselves. Back in 2003, *Traditional Building* cited just four significant courses of study aimed at the historic building trades. In 2011, when this writer reviewed the landscape, we could push the number to 11 of varying ilks – an improvement, but minimal for a country the size of the United States. Today the head count has dropped to nine with some new names, thankfully, but not enough to even replace programs that succumbed not so much to poor enrollment, but lack of support and recognition.

How can this be? While interest in buildings a half-century and older may be difficult to gauge, their growing numbers – estimated to soon reach half the national building stock – is not. "I think we're starting to see that public awareness is where the real problem is," offers Rudy Christian, past executive director of the Preservation Trades Network. "The feeder network for students that need to be in these schools and programs just doesn't exist yet."

With the shop and home economics classes of yore long gone, he notes that many students graduate from high school with little exposure to hands-on careers or activities of any kind. This might seem natural for the high-tech 21st century, until you read below how many preservation programs attract adult students who seek the experience with traditional building materials and construction methods they find missing in their education – and more satisfying. Building the "feeder network" Christian describes is not going to happen overnight, but spreading the word about the following programs – or telling *Traditional Building* about any that should be added to the list – will help.

Belmont College, St. Clairsville, OH

Offering an Associate of Applied Science (AAS) in Building Preservation/Restoration since 1989, Belmont College is among the longest-running programs of its kind. Repurposing the facilities of a mining program that followed the decline of local rust-belt industries, Belmont's BP/R program has continued to grow to a current enrollment of about 33 students. "A lot of people pursue the preservation trades as a kind of second career," says David R. Mertz, program coordinator. "They don't want to sit behind a desk anymore, or they've got a four-year degree in history, and they come to us to get the technical side."

The Belmont program seeks to give students a broad understanding of historic buildings, in part so they can find where their interests lie. "We see trades training basically as a three-prong effort: 1) the academic side – classroom work studying, say, wood species or how materials deteriorate; 2) the technical side – learning a hands-on skill or technique; and 3) the experiential side – where students go out and get a job working for somebody who is an expert."

Students are required to complete three field labs, often at a historic house about 10 minutes from the campus. "It's a workshop, a lab – not a linear construction project," says Mertz. A typical lab class might be flat-plastering a room or rebuilding a brick wall. "The goal is not to get the house done, it's to have every student experience a wide variety of processes and activities, to take something from beginning to end."

New to the program are community field labs, intensive two-week classes that are just like a contracting job. "We take on projects at government or non-profit properties – sometimes on a national level, sometimes regional, and sometimes local." Recent field labs include re-roofing the spring house at Stratford Hall Plantation in Virginia, and restoring two decorative windows at the historic sheriff's residence in St. Clairsville. Here students not only learned to bend wood into the teardrop shapes of the window grid, but researched the

ABOVE: Preservation carpenter Steve O'Shaughnessy at North Bennet Street School (left) works with a student in the shop. Photo: Heather McGrath

FAR RIGHT: Daniella Helline, a student at the American College of the Building Arts, is working on a joint project with Fort Dorchester State Park, SC, to show the footprint of some of the homes in the State Park.

RIGHT: Phil Jacob, a junior specializing in carpentry at American College of the Building Arts, cuts a beam for a shed at the school.

historic processes, from kerfing to steaming – all beyond a building budget limited to new windows. Says Mertz, "We try to do projects that help with larger goals too."

North Bennet Street School, Boston, MA

As unique as it is pioneering, the Preservation Carpentry program at North Bennet Street School continues to thrive at one of the oldest (1885) craft and trade schools in America. Begun in 1987 as an addition to long-running NBSS courses, such as furniture- and cabinet-making, piano technology and bookbinding, the Preservation Carpentry curriculum combines, according to literature, an introduction to contemporary residential construction with a thorough grounding in pre-20th century New England house construction.

"It's a two-year program that enrolls 13 students each semester," explains Nancy Jenner, Director of Communications and Strategic Partnerships. "Each student has a dedicated bench and works on projects both independently and as a team. Students work both in the shop and on-site."

While students are encouraged to seek work experience during the summer between terms, each academic year includes fieldwork, typically in collaboration with historical sites and non-profit museums. "One amazing project the program worked on over the past few years is the restoration of the First Parish Church of Dorchester, including the steeple lantern and the windows," says Jenner. Another is the rehabilitation of the 1753 Hatch Mill in Marshfield, MA, where the first-year preservation carpentry class worked on one of the last water-powered up-and-down sawmills in the United States.

The program is designed to "challenge students at all levels, from the novice with little hands-on experience to advanced students" and typically includes women as well as men. Graduates receive a certificate and seek work in diverse organizations, from custom millwork companies and private contractors to non-profit museums and the National Park Service.

Jenner notes that while the program itself hasn't changed since 2011, the location has. "In 2013 the school moved from its historic home to a new site five blocks away (the former city printing plant and area police station) with space for the entire school."

American College of the Building Arts, Charleston, SC

Another unique school that continues to gain traction is the American College of the Building Arts (ACBA), the only such program of study to date to offer both two-year AAS and four-year Bachelors degrees in hands-on trades. Created in the wake of Hurricane Hugo, which in 1989 left Charleston swamped with damaged buildings but short of repair craftspeople, the school graduated its first Bachelors class in 2004.

"I think what distinguishes us from some schools is that we don't require students to focus just on historic preservation or just on new construction," explains Elizabeth Vice, Director of Institutional Advancement, "we require that they focus on both."

Across all four classes of the school, enrollment stands at about 37 full-time students, but with plans to reach 250. "Our oldest freshman a couple of years ago was 42; this year the youngest is 17," notes Vice, "and we are about one-quarter female, the result of a push to enroll more women and minorities." For each degree, students must complete the necessary credit hours in general education coursework as well as in one of the Craft Specializations: Architectural Stone, Carpentry, Forged Architectural Iron, Masonry, Plaster, and Timber Framing.

"On the liberal arts side, we're known for our small class size and making sure that every subject we teach ties back in some way to the history and function of architecture and materials," says Vice, who notes that this spring, the school will begin work on its new home, a historic former trolley barn acquired in part through a donation from the city.

LEFT: A student runs a plaster cornice at Savannah Technical College.

RIGHT: A student at Savannah Technical College planes a window sash using 19th-century hand planes.

Eight-week internships with actual businesses are required. "Students learn skills and how to work with a team towards real deadlines and real expectations – not just in a collegial environment," says Vice. She adds that one of the program's goals is for students to go out and get real jobs, so classes are involved in a lot of projects off-campus, going out and bidding jobs then performing the work.

Careers after graduation are as varied as the students themselves. "Right now, we have two recent graduates who are doing interpretation at Colonial Williamsburg, which is a pretty good market for students who don't want to, say, go into business."

Savannah Technical College, Savannah, GA

In October 2014, Savannah Technical College brought its Historic Preservation and Restoration Program under the roof of the newly founded Center for Traditional Craft. "The center includes not only the two-year Historic Preservation program," says Stephen Hartley, Department Head of Historic Preservation, "but also involves a lot more in terms of research and writing about traditional craft."

There will also be short courses called the Historic Homeowner's Academy for people interested in continuing education about historic buildings. "It's a new initiative to expand the school's reach," he says, "and to engage the community better in understanding craft." Scheduled for 2016, the Academy is designed for owners and residents of historic properties as a way to introduce them to proper repair techniques as well as the processes of design review and applying for historic tax incentives.

Popular even before it expanded to an AAS degree in 2009, Historic Preservation and Restoration is a generalist program, according to Hartley. "All students have to take all the different trades, but our strong points are metalworking, plaster and stained glass. We also offer classes in masonry and carpentry and related skills."

He says the current enrollment, which is both part-time and full-time, is running about 35 students. The school also offers a Historic Preservation Diploma and a Historic Preservation Technician program for those who want to enter the preservation workforce as either contractors or apprentice workers. "We've found that people want to engage with these materials and learn these crafts," he says, "so we're starting to get a lot more students that already have degrees – whether in preservation or not."

To complement their classroom and laboratory education, students also work on actual historic sites. "We collaborate with certified non-profits, so if one needs our assistance, we'll help with the understanding that the non-profit provides the materials, and we provide the labor at no cost." Repairing plaster at Green Meldrum National Historic Landmark is a recent project. "We concentrate on deferred maintenance," says Hartley, "so as not to take away jobs from the contractors that are going to hire our graduates when we're done."

Clatsop Community College, Astoria, OR

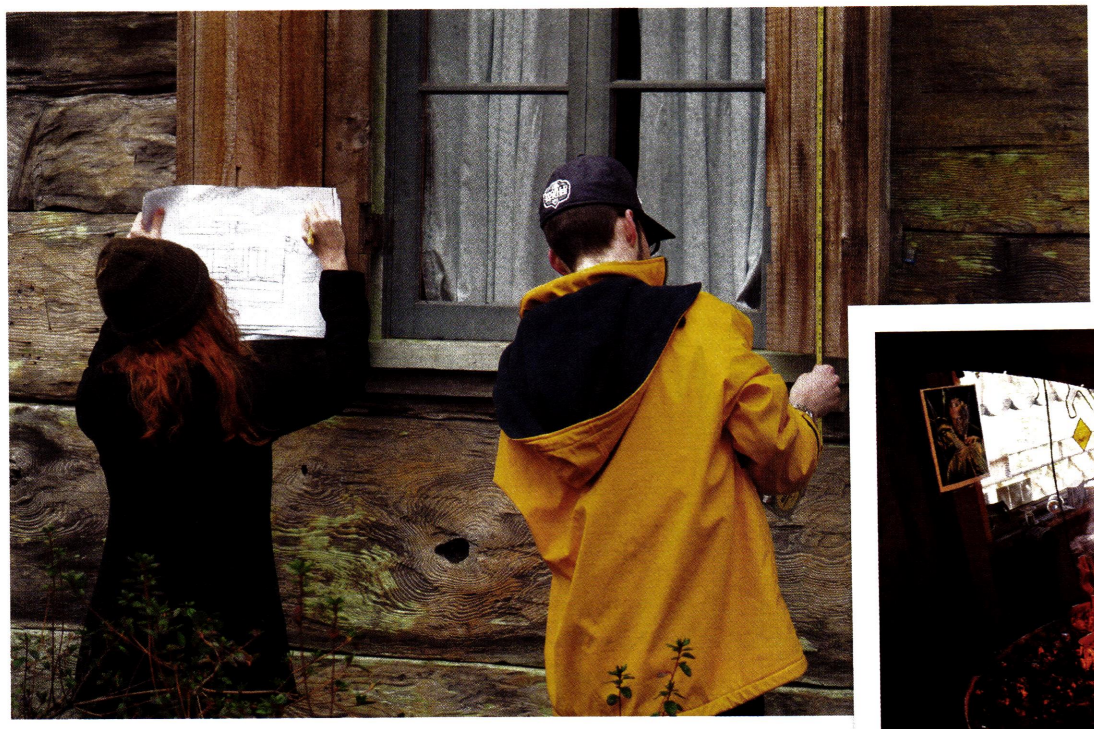
Slipping under our radar in 2011, the Historic Preservation program Clatsop Community College is nonetheless relatively recent, beginning in 2009. "We're in one of the oldest cities west of the Rockies, dating from the fur trading post set up by John Jacob Astor's men in 1811," explains Lucien Swerdloff, coordinator and faculty, who helped originate the program, "so we have a fairly large inventory of buildings from the 1880s on, and a really strong culture of historic preservation in the region."

Swerdloff explains that while community colleges typically draw a diverse mix of students, at Clatsop it's even broader. "Our age range is currently from about 20 to 60; we've had students as young as 18 and as senior as 70 – and from all different backgrounds." There's the familiar mix of folks who have already worked in traditional construction and related fields such as design, or are seeking a career change. "A fair group are old-house owners who want to learn skills to work on their properties." Enrollment is currently about 18 students, "a number we're happy with because we always intended the program to be small," he says.

Clatsop offers a two-year AAS degree in Historic Preservation, and a one-year certificate. "We have three basic course categories," says Swerdloff, "general college education requirements (writing, mathematics, etc.), history/theory courses, and hands-on skills courses." He notes that the program strives to give students a broad background, and "we really try to emphasize building documentation – historic research, drawings and photographs – so you know what's there before you begin work."

Developing partnerships with other organizations is a big – and vital – part of the program. "They give us projects students can work on, and a lot of the adjunct instructors lead workshops in plaster repair, wood restoration, or blacksmithing." Swerdloff says they work regularly with the Oregon SHPO and non-profits and government organizations, such as the Lewis and Clark National Historical Park.

"At the 1899 Knappton Cove Quarantine



LEFT: Students at Clatsop Community College document a log cabin.

BELOW: Blacksmithing is also taught at Clatsop Community College.

BELOW: Joe Armstrong (right), roofing instructor at Edgecombe Community College, describes the quality of slate during a preservation program at the State Capitol in Raleigh, NC.

BELOW: A student completes a mantel he built for the Norfleet House, an early 19th-century farmhouse relocated to the campus for restoration. It now serves as a classroom and laboratory for the program at Edgecombe Community College.

Station, now a museum, we rebuilt the porch, restored windows, and will do plaster workshops this spring," he adds. Graduates may pursue further education in historic preservation, architecture, construction management or planning, or work in the preservation trades for preservation organizations.

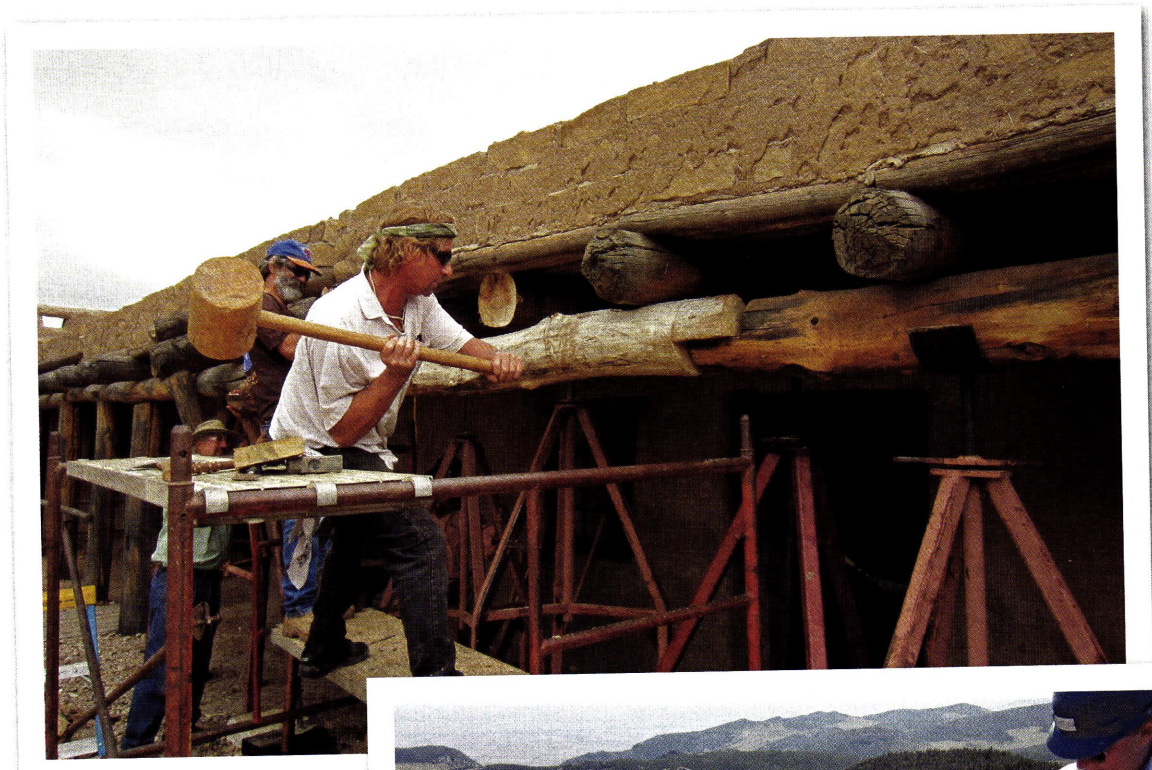
Edgecombe Community College, Tarboro, NC

Located in the history-rich corner of rural Northeastern North Carolina, the Historic Preservation Technology program at Edgecombe Community College draws 8 to 12 part-time and full-time students each year from across the state to take part in the only program of its kind in the region.

"We graduated our third class last spring," says Monika Fleming, who has been the program's chair since its inception in 2008.

The focus is teaching the hands-on skills necessary to repair and restore old buildings in the field: carpentry, masonry and roofing. Student lab/work situations can be at historic buildings, such as a local historic Rosenwald African-American School, as well as Norfleet House, an early 19th-century farmhouse relocated to the campus for restoration that now serves as a classroom and laboratory for the program. "The masonry class this semester is finishing the piers," says Fleming. "Other classes are learning about painting, timber framing and carpentry."

Edgecombe strives to meet the diverse needs of its historic building audience with educational opportunities at all levels. "We have added two more certificates to our program," says Fleming, "so that now we offer a two-year Associates degree, a one-year diploma, and three different certificates for folks who just want to learn some skill, but not the entire program." The school also continues to run weekend classes, and will host a preservation trades show in late April 2015 and participate in the National Trust Conference on Rosenwald Schools later in June.



LEFT: Lamar Community College in Colorado has partnered with HistoriCorps to train students in onsite projects. Students here are re-roofing the Kennaday Fire Lookout Tower in the Medicine Bow-Routt National Forest, WY.

RIGHT: A student at Lamar Community College/ HistoriCorps is removing the old wood shingle roof on the Black Mountain Lookout Tower in the Bighorn National Forest, WY.

OPPOSITE, TOP: Dr. Dick Schmidt of the Timber Framers Guild demonstrates lateral torsional buckling.

OPPOSITE, BOTTOM: Preservation carpentry students work on historic properties during the two-year program. Photo: courtesy of North Bennet Street School

Bucks County Community College, Newtown, PA

Another long-running course of study that has developed a singular approach is the Historic Preservation program at Bucks County Community College. "Next year we'll be celebrating 25 years," says coordinator Patricia Fisher-Olsen, "and over the last seven years, everything has really shifted over to the online arena, which we started offering in 2007." She says online is increasingly where people want to take their education. "There's so much more that can be brought to an online classroom these days, and we have a really good technical campus that's helped us a lot." Courses are offered both on-campus and online, including workshops, fieldwork and internships.

As uncommon as the approach is, so is the student base. "On a regular basis, we probably have about 35 students in the program," says Fisher-Olsen, "but we've got students from coast to coast and have had as many as 80; it ebbs and flows." As she explains it, the program's reach is to people who want preservation education but, so to speak, don't want to pay for a Master's degree – or who already have a Master's degree. "They could be architects or planners or folks working for an engineering firm or their town that want to augment their credentials, so they come to us." As an example, she says they've had many people from the National Park Service enter the program. "We also get a lot of carpenters and masons that need preservation education to move up to their next level. These folks bring a wealth of information and another perspective to the classroom."

Graduates of the program earn a 24-credit certificate, "college-level work for college credit," stresses Fisher-Olsen, "not continuing education credit." The school hopes to offer an AAS in Historic Preservation in the near future. In the meantime, students can earn an Associates in History with a concentration in Historic Preservation by taking an extra semester of courses to get the full certificate with the Associates.

Lamar Community College, Lamar, CO

In another creative approach to trades education, Lamar Community College has partnered with HistoriCorps® to reinvent their Historic Building Technology program as a field-based preservation school. "The partnership started winter of 2013, with the first year mostly spent building the curriculum around the core field school," says Natalie Henshaw, educational programs manager at HistoriCorps, "and now the focus is on enrollment," which stands at five students and growing across the program.

HistoriCorps is a non-profit entity created to fill the needs of the Forest Service and other land management agencies to restore their vernacular buildings in remote sites. "Our mission is very simple," explains executive director, Townsend Anderson. "It's historic building rehabilitation on public lands that engages volunteers, veterans, students, Conservation Corps members and youth." They stress maintenance and repair, he says, which is at the core of historic preservation.

The Lamar program then is based upon the same idea, where students go out on HistoriCorps projects and learn in the field. "The advantage is they're not learning about timber framing in a classroom," says Henshaw, "they're actually out doing timber framing, or out restoring a roof, and learning how building rehabilitation works on-site, including the business skills, such as completing a project on time and within budget." Since HistoriCorps projects are in remote sites, classes pack in all the tools and experts, do the work, then pack out.

Each semester is made up of two online classes and a field school, which usually runs three to four weeks, says Henshaw. "So a student can go to a field school, and then they can be online." Accreditation is in the form of what the school calls 'stackable certificates.' As she explains, "If you complete semester one, you earn a certificate; if you complete semester two, you earn a second certificate; if you complete semester three and your general education requirements, then you earn an Associates degree."

As if this were not creative enough, Henshaw adds that the program is non-location-specific. "HistoriCorps projects can happen around the

country, so a student in West Virginia could go to a HistoriCorps field school in West Virginia or Wyoming, and then take the online classes from their home. They don't necessarily need to be in Southeastern Colorado."

Timber Framers Guild, Amherst, NH

In America, formal building trades apprenticeships have a history of being few and far between, especially since the 1940s, but we're happy to report that the program launched by the Timber Framers Guild (TFG) in 2010 is going strong. Created in response to the industry's need for trained personnel, as well as to set standards for the craft and what skills and abilities a timber framer should have, the apprenticeship is a three-year combination of study and on-the-job training.

"The goal of any trade education is not to limit the learner in any way," explains Curtis Milton, chairman of the program. "A lifelong learner with motivation can be what he or she chooses. What better path to a career as a designer or architect than training and experience as a builder?"

Apprentices work full-time under a registered journeyworker, while also completing specialized training through providers such as technical schools, online courses and Guild events. Though the program concentrates on timber framing, parts of the training reach across other trades, such as safety and first-aid and forklift operation – especially in regard to moving long and large timbers.

"So far our four graduates are still involved in the industry," says Milton, who adds that while exact numbers are difficult to pin down, as many as 10 individuals have found work just through the contact form on the TFG website Apprenticeship page.

The program complies with the Department of Labor regulations for an apprenticeship. To be considered for enrollment, prospective apprentices need to be employed under a registered journeyworker, meet the program requirements, and make a financial commitment to the program that allows it to fund the training of the apprentice and the journeyworker.

Gordon Bock, an instructor in Historic Preservation at Drew University 1997-2014, lists his 2015 lectures, workshops and keynotes at www.gordonbock.com.

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A City's Centerpiece

PROJECT: Rehabilitation of Atascadero City Hall, Atascadero, CA

ARCHITECT: Pfeiffer Partners Architects, Los Angeles, CA; Stephanie Kingsnorth, AIA, principal

GENERAL CONTRACTOR: Diani Building Corp., Santa Maria, CA.

ABOVE: Following the devastating San Simeon earthquake in December, 2003, the Atascadero City Hall has been restored and rehabilitated to its original 1918 design intent by Pfeiffer Partners Architects. All photos: Tim Griffith unless otherwise noted

LEFT: The Atascadero City Hall was completed in 1918. Photo: courtesy of Atascadero Historical Society

Founded in 1913 as a utopian community by Edward Gardner Lewis, Atascadero, CA, was the first colony west of the Mississippi. To attract people to the area, Lewis commissioned a prominent San Francisco firm, Bliss and Fayville, to design a centerpiece for the new colony. Construction began in 1914 and was completed in 1918.

The result was a 58,000-sq.ft., symmetrical four-story structure designed in the shape of a Greek cross. It incorporates two central rotundas; the more ornate one on the ground floor, with a diameter of 56 ft., reaches a height of 40 ft. The upper rotunda is actually a 56-ft. 9-in. wide octagon that is 44 ft. high.

The building served as headquarters for the Colony Holding Corporation until the 1920s when the enterprise went bankrupt. Then came real estate offices, a bank and a number of different schools, including a boys' boarding school. The County of San Luis Obispo acquired the building in 1950 and used it as a Veteran's Memorial. Finally in 1952, the county moved its offices into the building. When the City of Atascadero incorporated in 1979, the building became the City Hall.

Along the way, it was listed on the National Register of Historic Places in 1977 and was made a California Registered Historical Landmark in 1984.

Also in the 1980s, portions of the interior were painted pink and blue for the filming of the movie, *My Blue Heaven*.

Everything changed when the 6.5 San Simeon earthquake hit central California on December 22, 2003, sending city employees diving for cover as debris fell around them. The damage was so severe that the building was red tagged and had to be abandoned. Pfeiffer Partners Architects was brought in to restore the City Hall under FEMA guidelines, but the project turned out to be much more extensive.

"We had no historical information. Nothing," says Stephanie Kingsnorth, AIA, principal, Pfeiffer Partners Architects. "We didn't know the structure. We didn't know why the damage happened the way it did." The architects brought in a laser scanning company, As-Built Services, and they were able to create plans and exterior elevations. This, however, didn't show how the building was constructed. Kingsnorth explains: "We had to crawl every inch to see how it was put together."

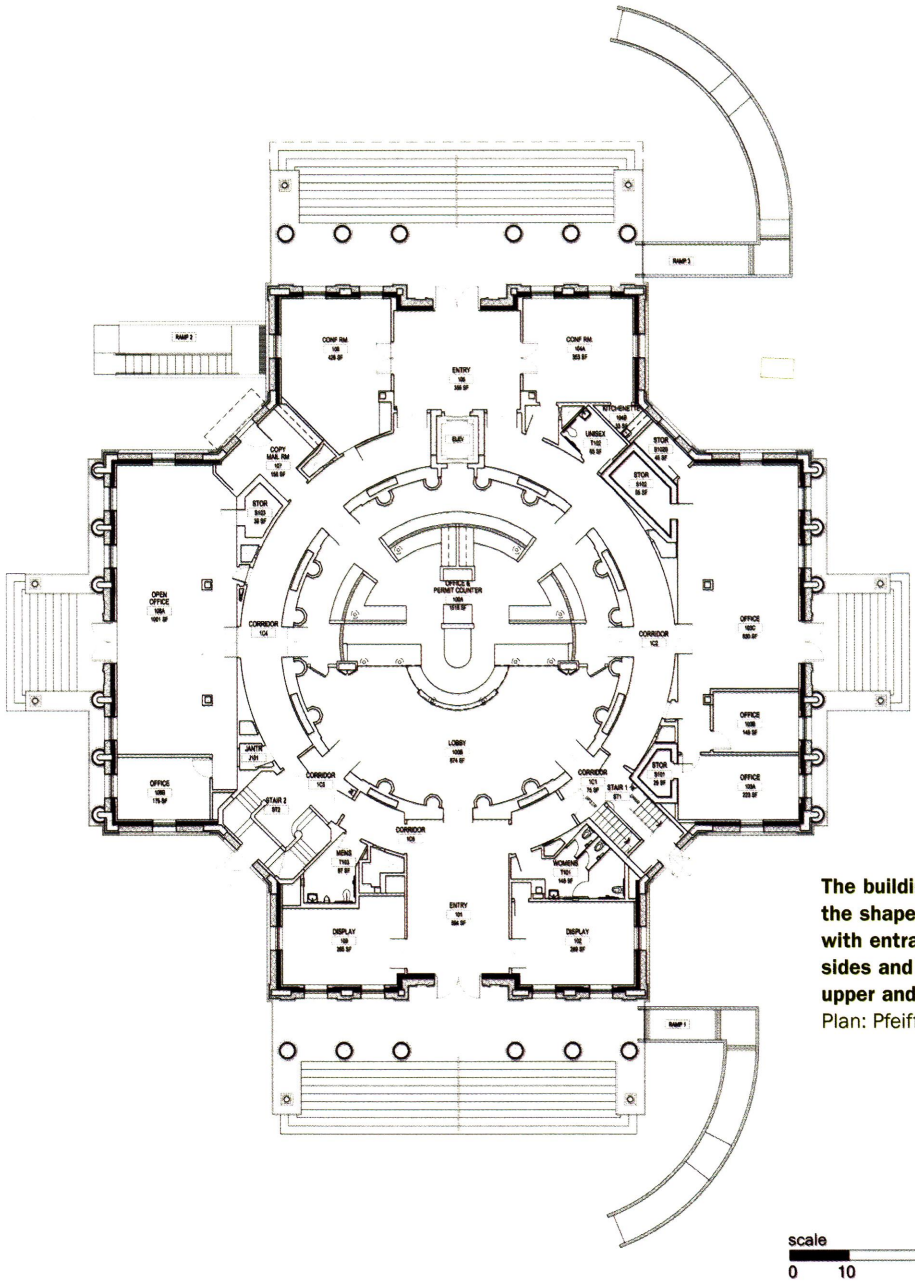
The only other bit of evidence about the building were photos taken during the original construction. These were supplied by the Atascadero Historical Society. This group was formed after Lewis' death when his house was cleared out and his belongings put out for garbage pick-up. A group of citizens knew this was valuable information, so they saved it. These became the first records of the historical society. Kingsnorth credits the society with providing invaluable, helpful information during the restoration and rehabilitation of the City Hall. "We couldn't have done it without them."

What the Pfeiffer team discovered from its research was that the building was actually two structures. The first through third floors was a concrete frame with exterior masonry walls. Past the third floor, it was basically an unreinforced masonry building, with a very light steel frame.

Also, the boys' school had added wood-frame structures on the fourth floor. "We found that some of these were sitting on leftover loose pieces of masonry. None of these bizarre construction methodologies were documented anywhere," Kingsnorth says. "That two-part structure explained why there was so much damage when the earthquake hit. The top twisted in a different direction from the first three floors."

"This was one of the most complicated projects we have ever worked on," she notes, adding that funding it was one of the complications. One of the major funding sources was FEMA, which will pay only to get the building back to the condition that it was immediately before the earthquake. They will also provide hazard mitigation funds, which paid for a modest percentage of the cost to upgrade the building seismically.

"In our opinion the building had some inherent faults caused by decades of multiple uses before the earthquake and the city also wanted to do additional work, to bring the building back to its original intent and beauty," she notes. "So we had to draw it as two separate projects. The first set of drawings was for FEMA repair and hazard mitigation, and the second set of drawings was of additive alternates and upgrades that the city sent out to bid, to make the building better. We had one contractor dealing with two distinct sets of drawings and keeping all of the billings separate."



The building is designed in the shape of a Greek cross with entrances on all four sides and two rotundas, upper and lower, in the center.
Plan: Pfeiffer Partners Architects

Another funding complication arose when the State of California dissolved all City Redevelopment Agencies and reclaimed previously allocated funds in October, 2011. However the California Cultural Heritage Endowment rallied behind the project and supported it with a $2-million matching funds grant. The grant allowed the city to recreate some of the historic elements that had been removed over time, such as the entry doors and transoms and the missing balusters at the top of the building. "These were really big visual elements," says Kingsnorth.

The reconstruction of the damaged fourth floor where the masonry had started peeling off, was an important part of the project. "We had to deconstruct the entire top of the building down to the mezzanine in the fourth floor, down to the bare bones, and then rebuild it."

This phase included removing all of the structures that had been added when it was a boys' school. Only two of the structures were rebuilt, reducing the weight on the building and allowing more light into the rotunda by re-exposing windows that had long been covered. "The team agreed to rebuild anew, instead of repairing horrible construction," she says.

"Everything on this level is a combination of salvaged material and new. It was reconstructive surgery," says Kingsnorth. "The masons were amazing. They had to build a whole new masonry wall blending new with old. There were 11 different colors of brick on the exterior, so we had to color match to get the right combination. We did numerous mock-ups." Pacific Clay was the supplier of the masonry and the work was done by local masons, Boydston Masonry of Atascadero.

The roof was repaired and restored by King's Roofing of Patterson, CA, using tile supplied by MCA Clay Roof Tile, Corona, CA. They were able to re-use 85% of the existing roof tile, but only 20% of the upper rotunda masonry was salvaged material. The rest of the salvaged masonry was used to repair damage lower on the building where is was more readily apparent to the general public.

As for the balusters on the exterior of the upper rotunda, Kingsnorth explains "it was really an endeavor to get it right. We had no drawings, only photos that showed it from a distance. It was all about the artistry to get it to where it is today." The new balusters were created by Gladding McBean.

Other improvements to the exterior included

OPPOSITE: Now restored, the elegant lower rotunda is the main entrance to the building.

LEFT: Initially, the lower rotunda was used as a museum. Photo: courtesy of the Atascadero Historical Society

BELOW: Because the upper floor (rotunda) had a separate structural system from the rest of the building, it twisted in a different direction during the 2003 earthquake, causing severe damage. Photo: Pfeiffer Partners Architects

replacing the aluminum doors that had been added in the 1970s with new steel doors designed to look like the original doors. These were made by Hope's Custom Crafted Windows & Doors. In addition, the south entry (the building had four entries, one on each side) was returned as the main entry.

"When we got the project, the front door had moved to the east side of the building for security reasons," says Kingsnorth. "We said we needed to work to get the entry back to the south side where it was originally. We put in new doors on all four sides, but the east and west doors are for egress only."

The project also involved significant improvements to upgrade the appearance and functionality of the interior. For example, the lower rotunda, originally designed as a museum to show off the Colony's agricultural accomplishments, had become a dark, gloomy room over the years. The architects re-opened interior overlooks to bring in natural light and all of the eyebrow windows were made into light boxes. "This made it glow with electric light and natural light," Kingsnorth points out. "It had been kind of like a tomb. The city was amazed."

The lower rotunda ceiling, originally white and sparsely painted at the time of the earthquake, was repainted in historically correct colors. "We had no information to guide us, so we developed a scheme and selected historically appropriate colors," says Kingsnorth. Local painters from Channel Coast Corporation of Santa Barbara, CA, did the work using Frazee paint.

In the upper rotunda, the ceiling had been covered in direct-glue acoustic tiles. It was rebuilt using acoustical plaster, returning it to a smooth plaster surface. The original skylight that had long been covered was rebuilt as a light box, enhancing the light in the rotunda.

The decorative plaster in both rotundas and throughout the building was rebuilt and repaired by SLO Plastering of San Luis Obispo. "I can't speak highly enough of the artisans on this project," Kingsnorth notes.

Not only is the building restored to its former beauty, it's also much stronger than it used to be so

ABOVE: Now restored, the 44-ft. tall upper rotunda was completely rebuilt. The badly damaged decorative plaster was restored and lighting was enhanced by creating a light box where the original skylight had been.

TOP RIGHT: During restoration, the upper rotunda was stripped down to the bare bones, and rebuilt.

RIGHT: New sidelites around the doors bring more natural light into the circular corridors.

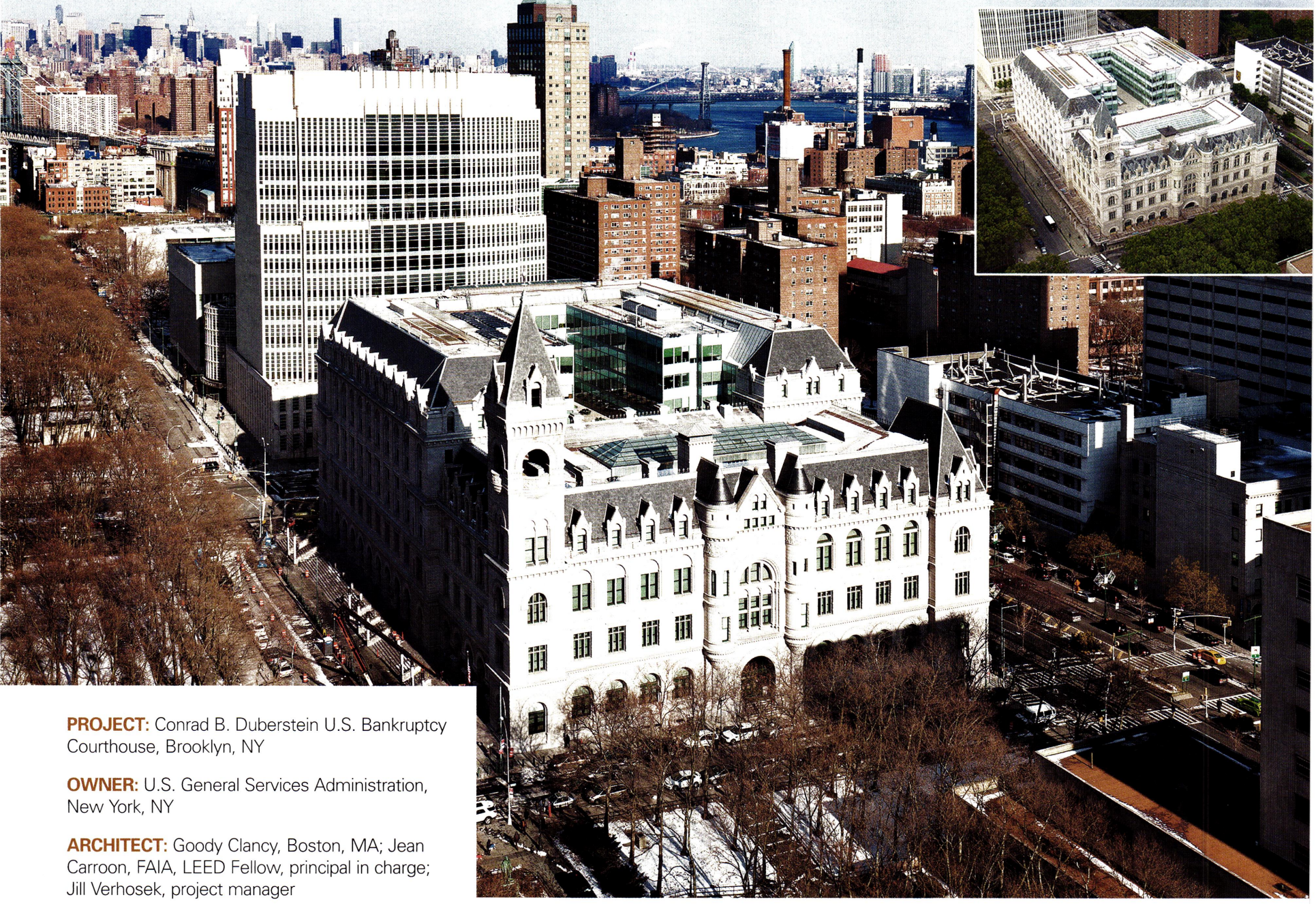
it's ready to withstand another earthquake. "Almost all of the 'improvements' were critical to the repair of the building, not just its upgrade," says Kingsnorth. "These included the installation of 248 micro-piles, new shotcrete on the interior of the exterior walls on floors 1-3 that is now tied to the original masonry using helical anchors, and the installation of FRP (fiber reinforced polymer) on the interior of the rebuilt upper rotunda."

As for LEED certification, the city opted not to pursue it, but it did work with sustainable elements. "The masonry building itself is sustainable," says Kingsnorth. "We reused rooftop tile and masonry wherever possible, and everything new meets the energy requirements for the state of California. We also did low-flow fixtures and other elements, but the city was so strapped for funds that they decided not to go through the LEED process."

The 58,000-sq.ft. historic rehabilitated City Hall reopened in April, 2013. Originally estimated at $35 million, the 10-year project came in at $21.7 million. The building has been brought back to its original intent and is once again the centerpiece of the city.

– Martha McDonald

New historically styled steel doors were fabricated for all four entries, replacing aluminum doors (inset) that had been previously installed.



PROJECT: Conrad B. Duberstein U.S. Bankruptcy Courthouse, Brooklyn, NY

OWNER: U.S. General Services Administration, New York, NY

ARCHITECT: Goody Clancy, Boston, MA; Jean Carroon, FAIA, LEED Fellow, principal in charge; Jill Verhosek, project manager

Exterior Facelift

One of Brooklyn's most elegant historic buildings is the Conrad B. Duberstein U.S. Bankruptcy Courthouse in the heart of the downtown civic area. The original building, measuring approximately 230x130 ft. was designed by Mifflen E. Bell, supervising architect of the U.S. Treasury Department. Planning and design began in 1885 shortly after the opening of the Brooklyn Bridge. Completed in 1892, the four-story Romanesque Revival granite-faced masonry building with bearing walls was built around a central atrium and skylight. It originally functioned as a post office and courthouse with four courtrooms.

By the 1930s, Brooklyn's postal service needs had expanded and the courthouse was expanded as well. James A. Wetmore, acting supervising architect of the U.S. Treasury Department, designed a seven-story addition in the same style. This approximately 230x190-ft. U-shaped building more than tripled the size of the building, adding two more courtrooms and created a structure that filled a city block. It was completed in 1933.

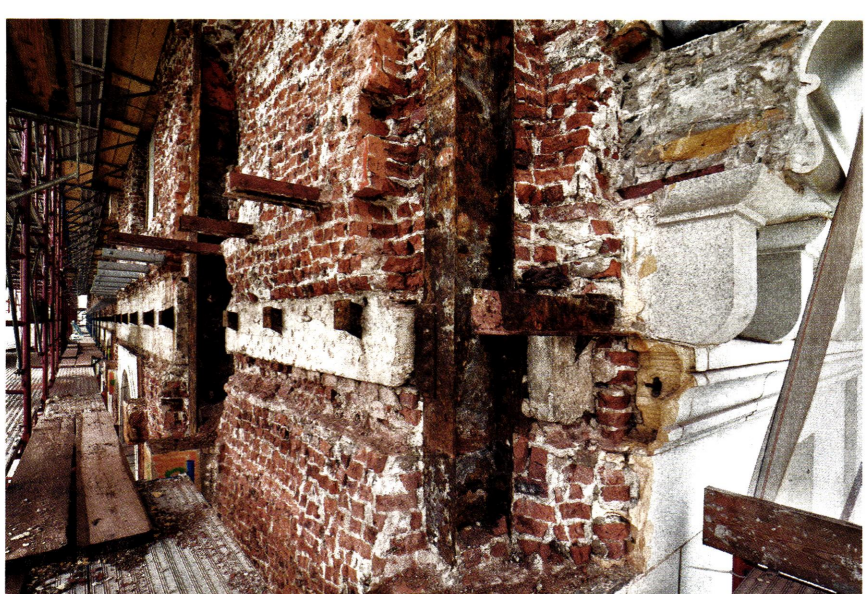
The original granite-faced masonry building with bearing walls features a slate mansard roof and wood windows. A 180-ft. tower at the southwest corner is one of the notable features and other ornament such as round tourelles, arched windows, belt courses and carved ornament have made the building stand out in the area.

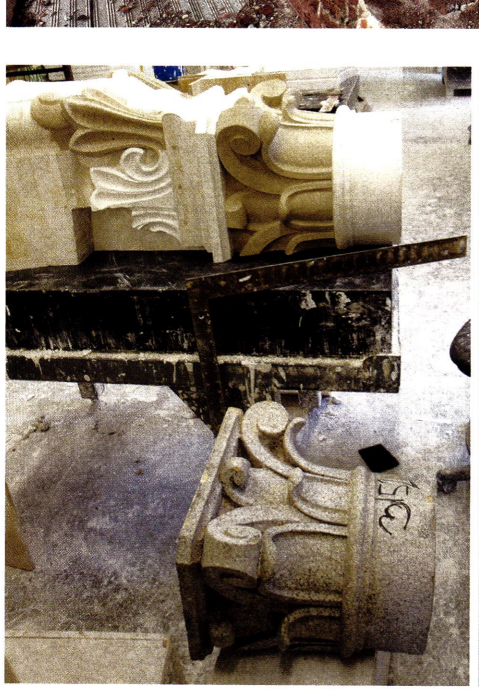
The addition, while similar in appearance, is a different structure. The exposed basement, first floor, second floor window surrounds and transition bays are granite-faced masonry, but the majority of the building is terra-cotta cladding embedded in and anchored directly to brick back-up with ferrous metal fasteners and embedded steel columns.

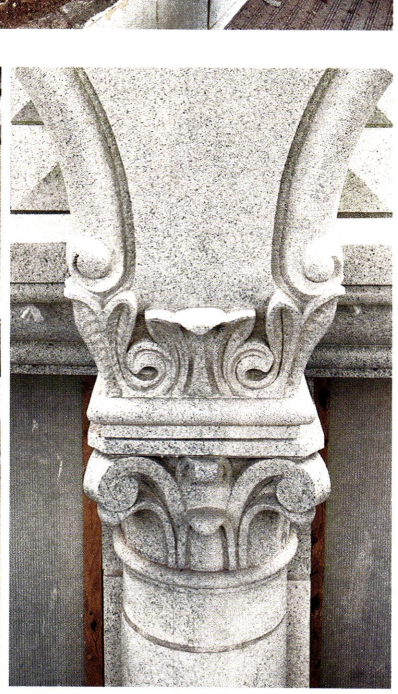
In 1966, the building was designated a New York City Landmark and in 1974 it was listed in the National Register of Historic Places. In 1999, the General Services Administration (GSA) purchased the building.

A $200-million interior restoration led by R.M. Kliment & Frances Halsband Architects of New York City was completed in 2005. This included the insertion of a four-story, 85,000-sq.ft. curtain-wall addition into the courtyard of the Wetmore building. It cannot be seen from the street. (*Traditional Building*, April 2007)

The next phase was the restoration of the historic exterior, including windows and roofing. This six-year, $60.96-million project was led by Goody







Clancy of Boston. The survey and investigation phase lasted two years; then after three months for bidding, construction took four years and was completed in late 2013.

Vertical Access of Ithaca, NY, was brought in to do a hands-on survey of the exterior, using industrial rope access. Aerial lifts were not possible because of site constraints.

Speaking of the site, it was one of the major challenges. Because the fully occupied building is located in a busy downtown area with lots of pedestrian traffic, the sidewalks and entrances had to be kept clear. To deal with this situation, sidewalk bridges were constructed and all staging, materials storage and trailers were positioned there. In addition, during window repair and restoration, window boxes were built to protect the occupants from noise and debris, and to protect their privacy.

The scale of the job was immense. To summarize, approximately 75,000 sq.ft. of granite and terra-cotta façades were repaired. Approximately 16,000 pieces of terra cotta were replaced as well as 25,000 sq.ft. of slate roofing along with the sheet-metal flashing and gutters. In addition, 1,200 wood windows were restored – and all of this was done while the building was fully occupied.

"This project is quite unique because of the way the GSA structured the process," says Jean Carroon, FAIA, LEED Fellow, principal in charge. "From the selection of

OPPOSITE: The 600,000-sq.ft. Conrad B. Duberstein Courthouse building fills a city block in downtown Brooklyn, NY. The Romanesque Revival structure was built in two phases; the original portion was completed in 1892 and the larger addition, built in the same style, was completed in 1933. Goody Clancy led the recent restoration of the exterior. All photos: Christopher Payne

THIS PAGE, CLOCKWISE FROM TOP LEFT: Manufactured to look like the granite on the original building, the terra-cotta façade of the 1930s building was in fair to poor condition. The composite wall consisted of terra cotta embedded in and anchored directly to brick back up with ferrous metal fasteners and embedded steel columns and concrete framing.

The new terra cotta was installed with a collar joint between it and the brick back-up to allow for movement between materials. All exposed existing steel was repaired and painted and all new terra cotta anchors are stainless steel.

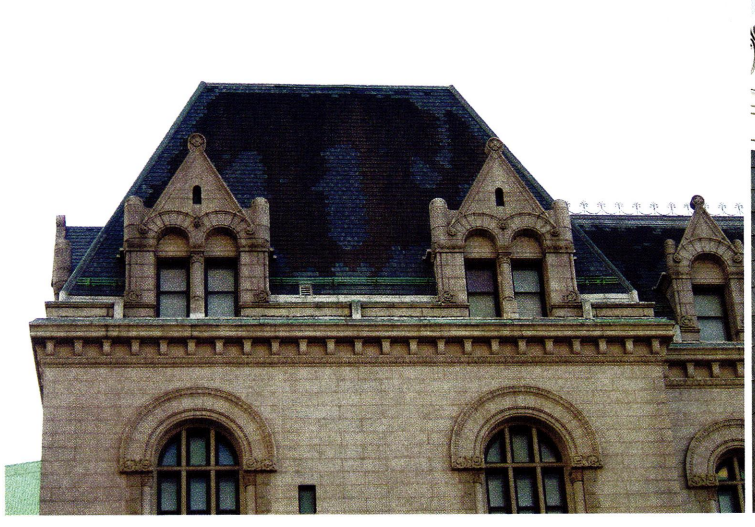
Those portions of the wall that were not replaced had to be repaired and cleaned. A great deal of craftsmanship and care went into the restoration of the terra-cotta decorative carving around the windows.

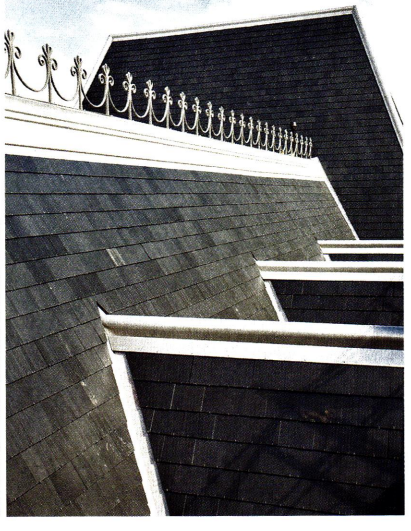
At least 16,000 terra-cotta elements on the ornate Romanesque Revival building had to be replaced. For this column, a typical replacement, the manufacturer first created a plaster and clay model (left). The final product illustrates the high level of craftsmanship in replacing and repairing these elements.

CREDITS

Historic Preservation Consultant: James W. Rhodes, FAIA, Beacon, NY
Structural Engineer: Robert Silman Associates, New York, NY
Architectural Conservator: Jablonski Building Conservation, New York, NY
Exterior Envelope Survey: Vertical Access, Ithaca, NY
General Contractor: Nicholson & Galloway, Glen Head, NY
Window Sub-contractor: Femenella & Associates, Branchburg, NJ
Fabricator: Boston Valley Terra Cotta, Buffalo, NY
Construction Manager: Lend Lease, New York, NY
Commissioning Agent: SuperStructures, New York, NY

ABOVE: A typical window restoration in the granite building involved restoration of the wood frame in place. The wood sash was restored and retrofitted with insulated glazing and the upper sash was fixed in place. All sash weights and hardware were restored and new weatherstripping was added.





RIGHT: While other materials were considered for the roof, the design team selected slate for aesthetic, constructability and durability reasons. The existing Monson slate tile roof (left) was in fair or poor condition.

the design team through the Design Excellence Program (which ensured peer review in design and construction) to the innovative contractor selection. The GSA brought the construction manager and three general contractors on early for cost estimating, funded invasive investigation and then had a competitive bid with GCs very familiar with the building and the documents. The GSA also engaged a team for exterior envelope commissioning, which was a relatively new concept a few years ago. The GSA didn't have to do it this way; it was a very creative and responsible use of our tax dollars and Goody Clancy was proud to be part of the highly collaborative team."

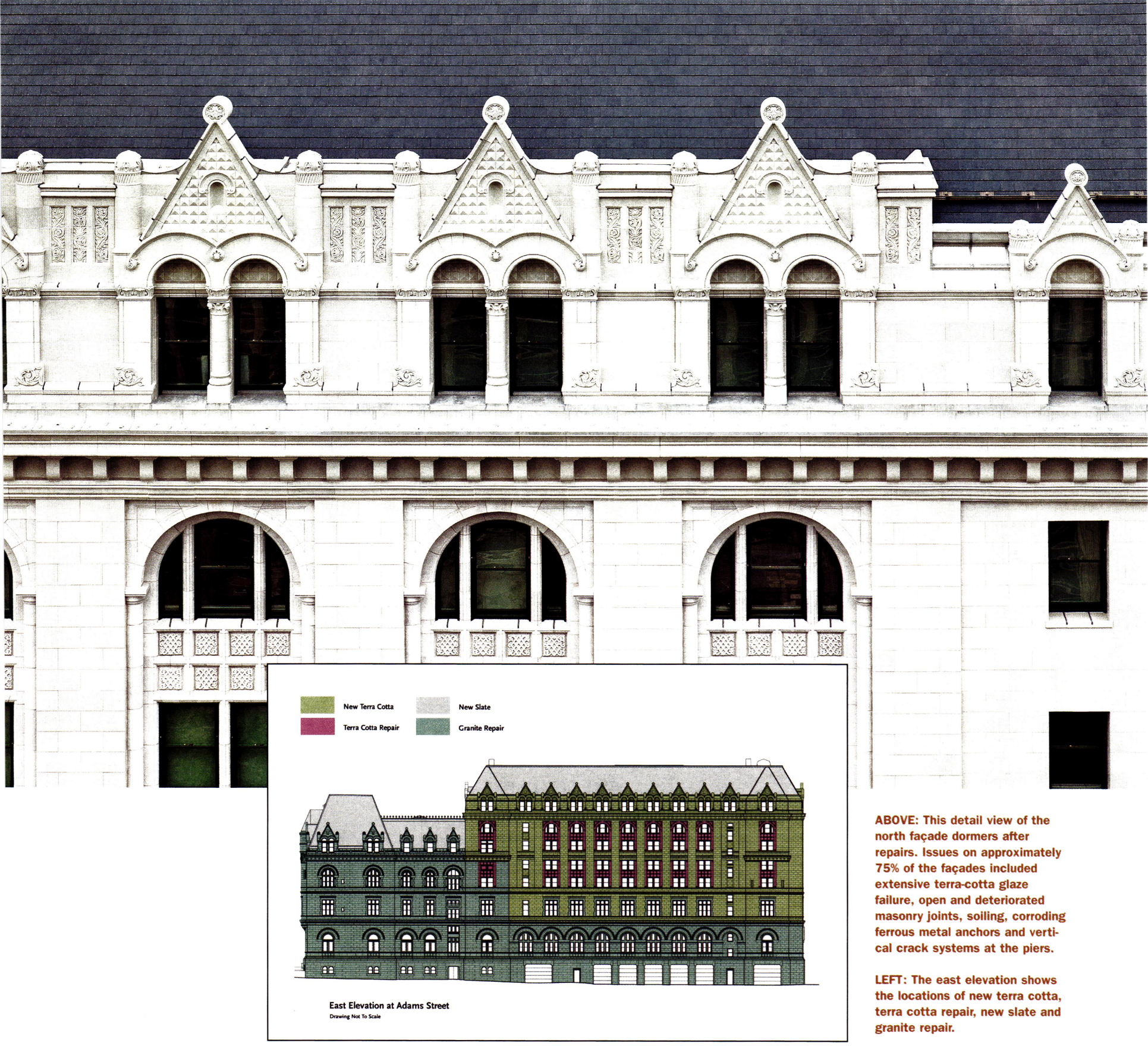
"With the exception of the curtain-wall addition in 2007, there had been no major alterations, and only piecemeal repair work to the exterior of the building," says Jill Verhosek, Goody Clancy project manager. "The Goody Clancy team was hired to restore the exterior façades, which at this point required extensive restoration. We are excited to see the potential of this building realized."

The granite cladding on the 1890s building and at the base of the 1930s building was repaired and restored. The original granite was Bodwell Blue Granite supplied by the Bodwell Granite Company in Vinalhaven, ME. When the addition was built, granite for the exposed basement and second floor window surrounds was Goss Pink Deer Isle granite from a quarry in Stonington, ME, since the Bodwell Granite company was no longer in operation by that time.

During the recent restoration, the original Bodwell Blue Granite was salvaged on-site and used for the 1890s building, while Pink Deer Isle granite from Berkshire Stone in Winsted, CT, was used for the addition.

The restoration of the terra cotta on the addition was one of the largest terra-cotta projects in the country, involving both extensive repair and replacement. All areas were considered to be in fair to poor condition. The team had found extensive glaze failure, open and deteriorated joints, soiling, corroding ferrous metal anchors, and vertical crack systems in the ashlar piers. "The failing roof and façade was becoming a life safety issue," says Verhosek, "especially above the cornice. Pieces of damaged slate tile and terra cotta were spalling and disengaging from the building. Part of our charge was to determine what could be saved and what could be replaced."

The design team evaluated various alternative



ABOVE: This detail view of the north façade dormers after repairs. Issues on approximately 75% of the façades included extensive terra-cotta glaze failure, open and deteriorated masonry joints, soiling, corroding ferrous metal anchors and vertical crack systems at the piers.

LEFT: The east elevation shows the locations of new terra cotta, terra cotta repair, new slate and granite repair.

replacement materials, including terra cotta, granite veneer, glass-fiber-reinforced polymer (GFRP), glass-fiber-reinforced concrete (GFRC), and cast stone. Ultimately terra cotta was selected as in-kind replacement. Goody Clancy worked closely with the fabricator, Boston Valley Terra Cotta, to replicate the historic profiles, tooling and speckled patterns of glazing on more than 16,000 units. The cementitious patch repair, glaze patch repair and grout injection for crack repair was supplied by Edison Coatings, Plainville, CT.

The existing roof, which was comprised of Monson slate and lead-coated copper gutters and flashing, was in fair to poor condition. Again, the design team evaluated various alternative replacement materials, including slate, rubber tile, ceramic tile and slate/clay reinforced fiberglass. They selected slate for its durability, aesthetics and constructability.

The gutters and flashing, which had been replaced previously in the 1960s, were replaced this time using lead-free alternative sheet metal, Freedom Grey, tin-zinc coated copper, supplied by Revere Copper, Rome, NY. The slate, Unfading Black, was supplied by North Country Slate, Ontario, Canada.

The building's 1,200 single-glazed wood windows were another significant part of the project. Again, various options were considered. The decision was made to restore in kind and to replace the glazing. Femenella & Associates of Branchburg, NJ, was brought in to restore and repair the windows using Spanish cedar wood (supplied by TBM Hardwoods of Hanover, PA) for replacement elements. New weather stripping was installed, and to improve the thermal performance, the upper sashes were fixed in place and all existing glazing was upgraded.

"The typical window type was double hung," says Verhosek. "Insulated glazing units (IGUs) were added and the upper sash, sidelites, and transoms were fixed. Only the lower sash remained operable. It was important to the GSA to maintain operability."

She also points out that this work was done during the economic crisis and was completely funded by the American Recovery and Reinvestment Act of 2009 (ARRA). "This project actually went forward because of the ARRA funding."

The effort has paid off in many ways. A beautiful building has been restored to serve the community for many more years, and the project just received a 2014 Lucy G. Moses preservation award from the New York Landmarks Conservancy.

– Martha McDonald

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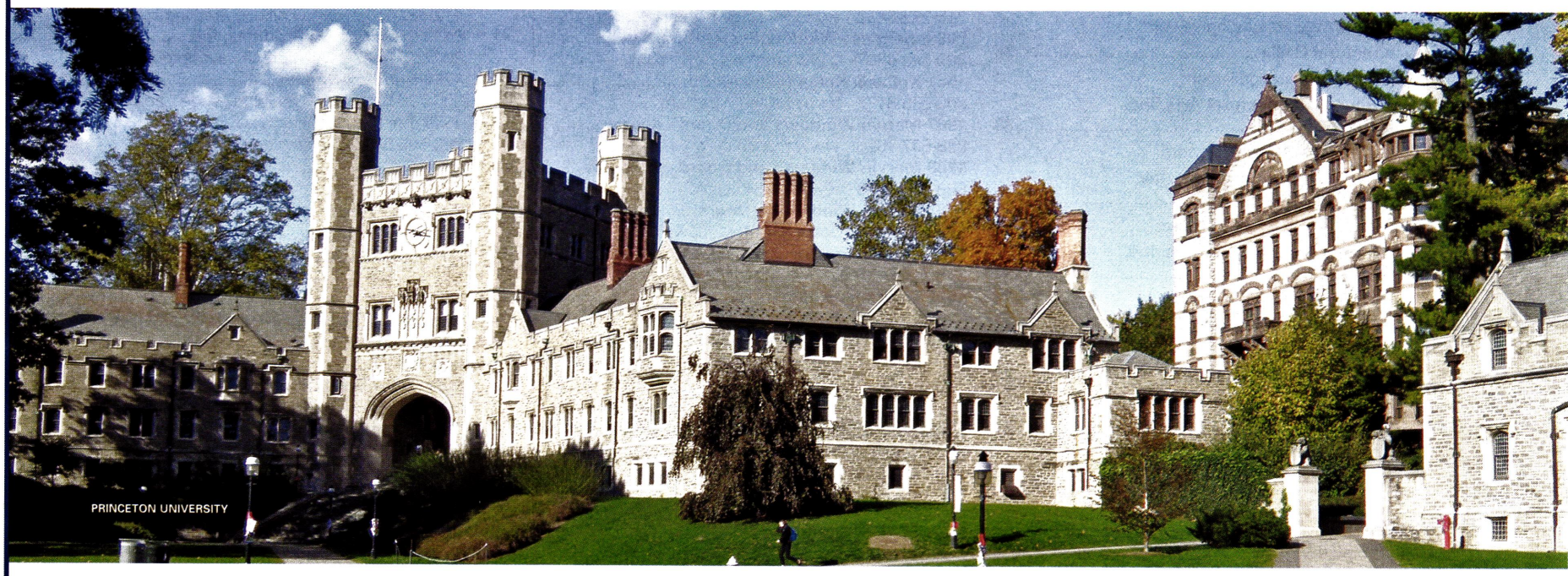
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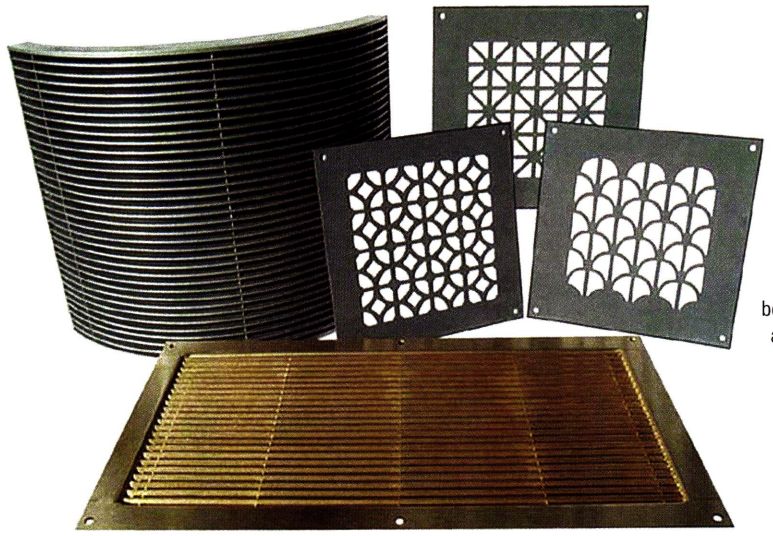

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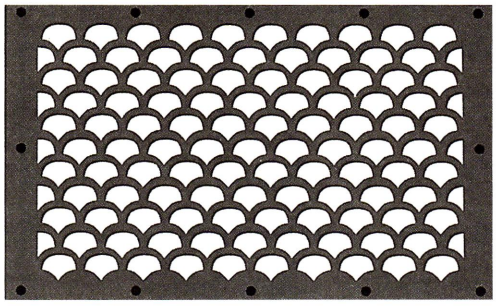

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www.evergreene.com
New York, NY 10001
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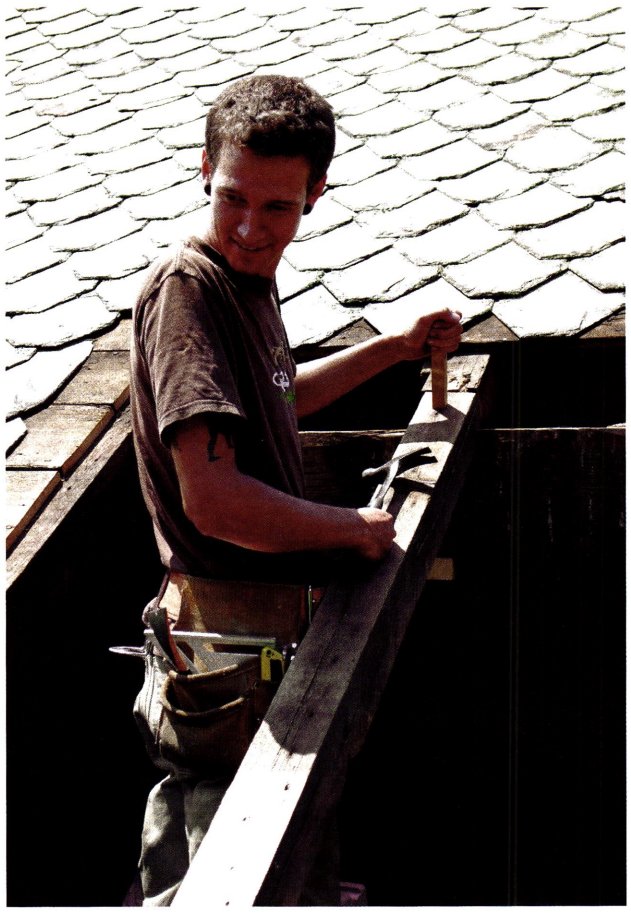

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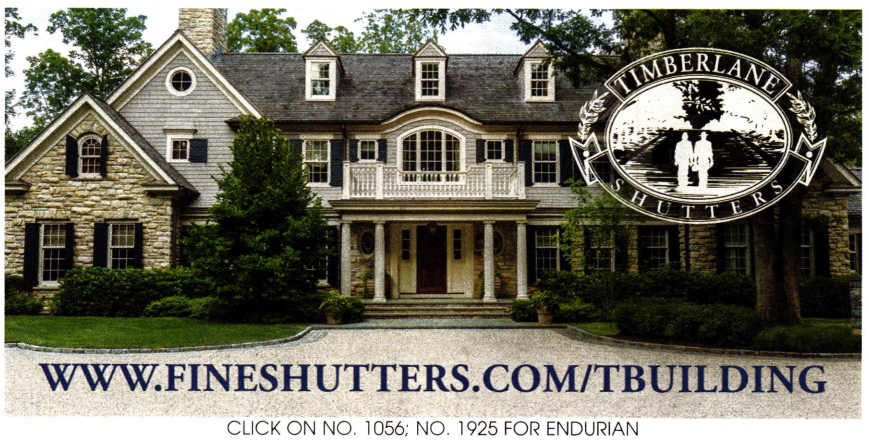

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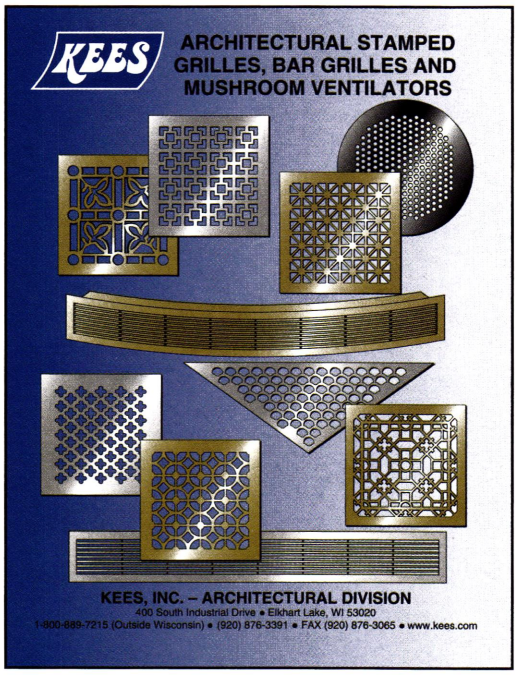

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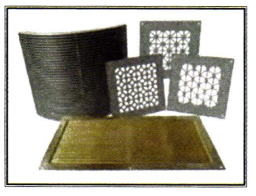

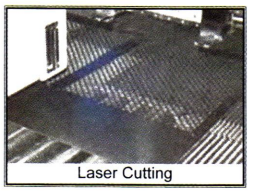
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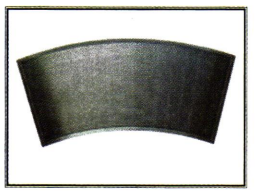

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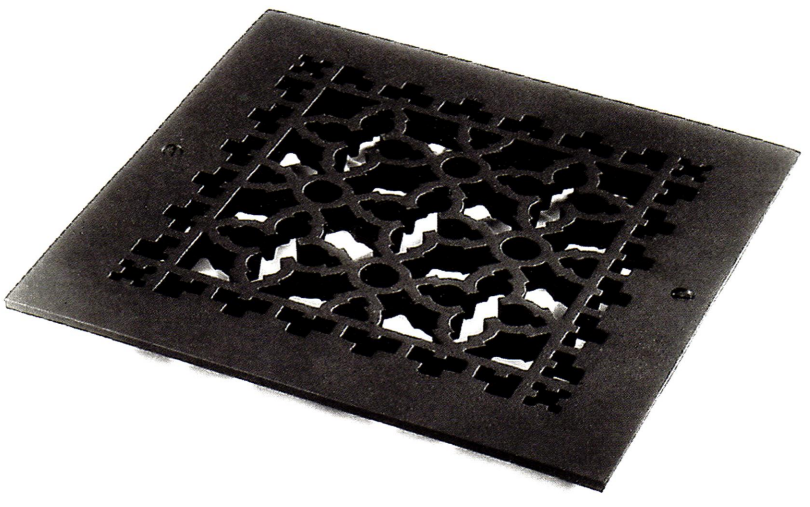

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Allen Architectural Metals fabricated the decorative columns for this building in Charleston, SC.

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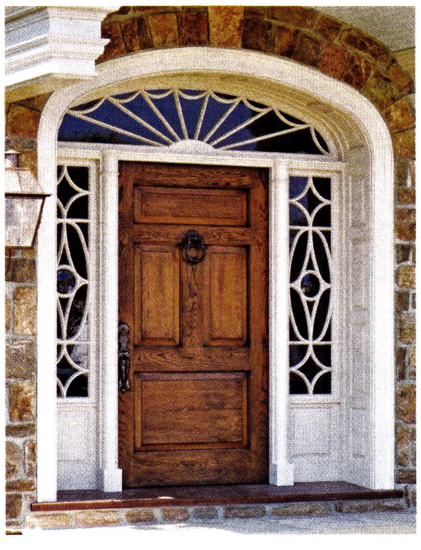

Historic Doors created this door for the Brickman Center at The Bryn Athyn College, Bryn Athyn, PA.

Historic Doors

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This knotty-alder door was handcrafted by **Kolbe & Kolbe Millwork** for its Craftsman Collection.

Crittall Windows offers traditionally styled windows and doors made with recycled and recyclable-steel content.

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011-44-1376530800;
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www.crittall-windows.co.uk/us/
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The Ultimate Outswing French Door is one of many traditionally styled doors available from **Marvin Windows and Doors.**

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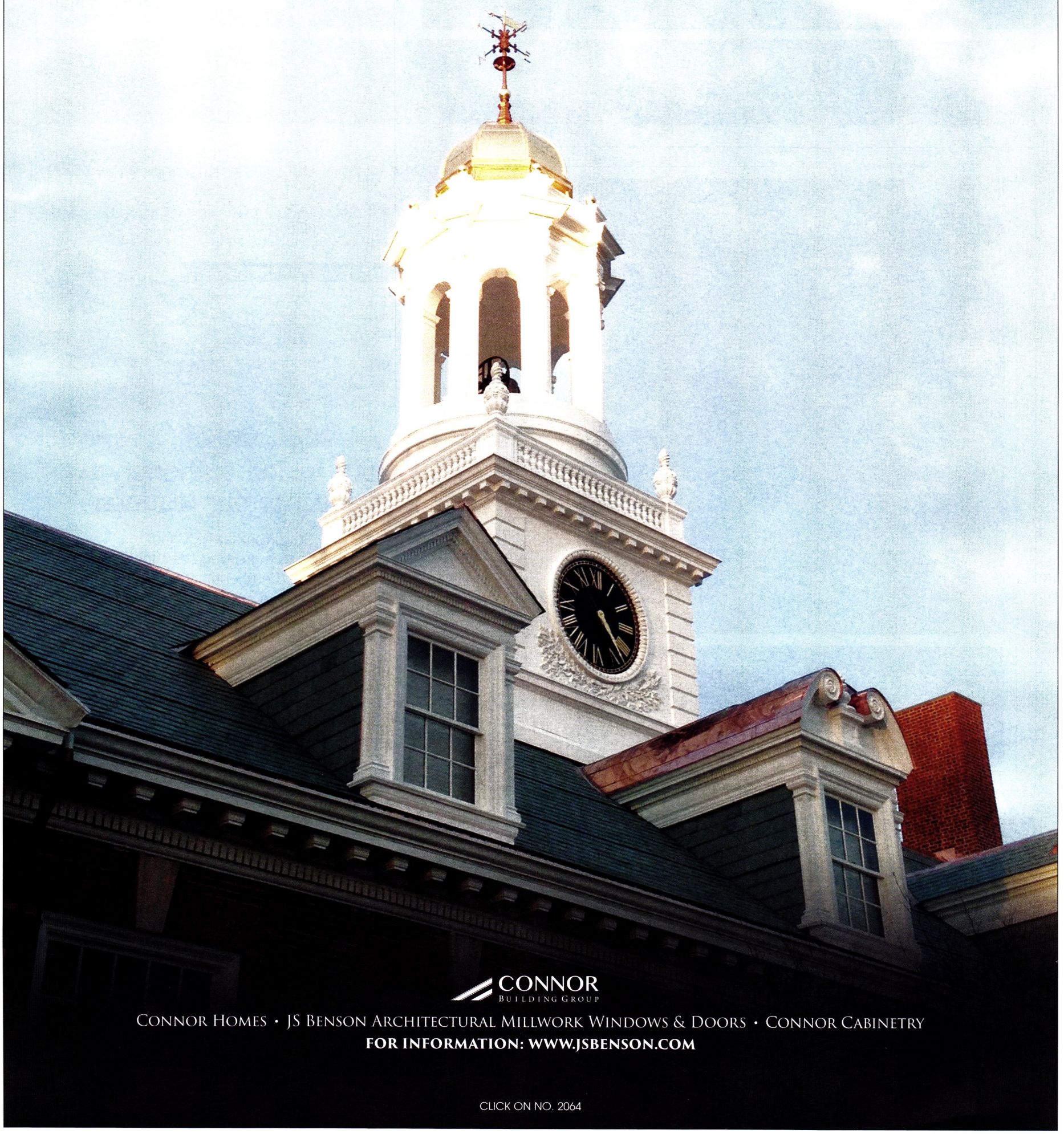

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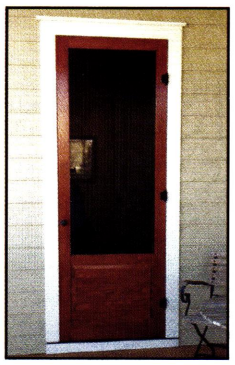

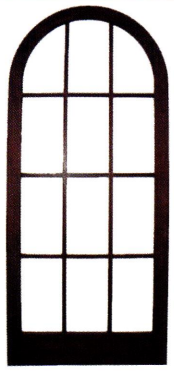

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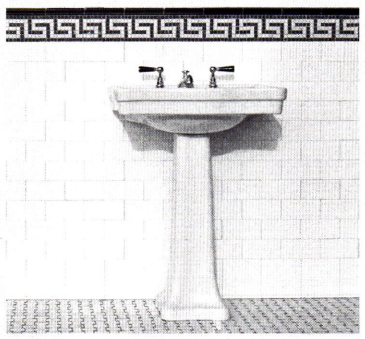

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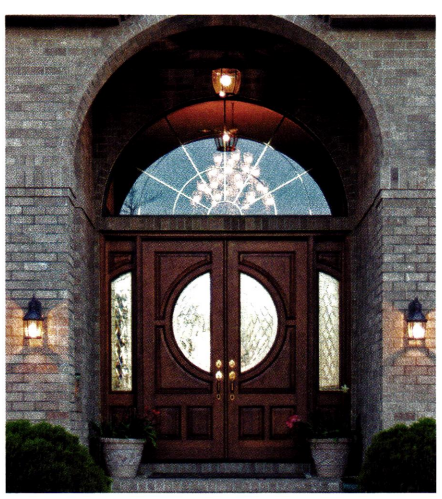


Parrett Windows & Doors
800-541-9527; Fax: 877-238-2452
www.parrettwindows.com
Dorchester, WI 54425
Manufacturer of custom, quality wood & aluminum-clad windows & doors: vast array of options, numerous wood species & complete finishing capabilities; historical replications; screen doors, casings & moldings.
Click on no. 3003

This custom door was created by **Parrett Windows & Doors.**

Wood Window Workshop
800-724-3081; Fax: 315-733-0933
www.woodwindowworkshop.com
Utica, NY 13501
Custom fabricator of wood windows, doors, storms & screens: any size, shape & species; full mortise-&-tenon construction, true-divided lite, hard-to-find hardware & restoration & insulated glass; factory finishes; millwork; reproductions; for storefronts.
Click on no. 9640

Wood Window Workshop custom manufactures wood windows and doors in any size, type and species.

Metal & Wood Windows, Shutters & Hardware

To order product information from a company in this Buying Guide, go to traditionalbuilding.com/rs and click on the appropriate reader service number.

Allegheny Restoration restored and renovated the millwork, windows and entrance of the Dering Building in the historic city of Morganstown, WV.

Allegheny Restoration

304-594-2570; Fax: 304-594-2810
www.alleghenyrestoration.com
Morgantown, WV 26507

Manufacturer of reproduction & custom wood doors & windows: window replication, restoration & repair; art glass; hardware replacement; storefronts & ecclesiastical projects; 15 years of experience; nationwide.

Click on no. 1004

Allen Architectural Metals, Inc.

800-204-3858; Fax: 256-761-1967
www.allenmetals.com
Talladega, AL 35161

Manufacturer of ornamental metal: casting & metal fabrication; street amenities, signage, lighting, columns, building components, doors, cupolas, finials, cresting, architectural elements, canopies, bollards, railings & grilles; variety of alloys & finishes.

Click on no. 1005

Allied Window supplied its Allied-One-Lite (AOL-C) windows for historic Faneuil Hall in Boston, MA.

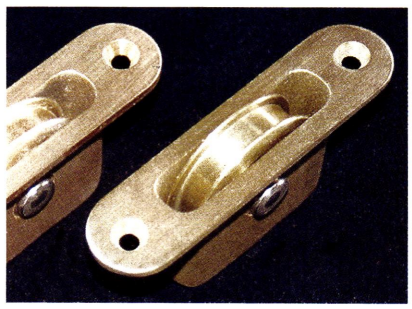
Architectural Components restored the double-hung windows for the Customs House Maritime Museum in Newburyport, MA; the windows feature laminated single-pane glass and are counterbalanced with weights and pullies.

Architectural Components, Inc.

413-367-9441; Fax: 413-367-9461
www.architecturalcomponentsinc.com
Montague, MA 01351

Manufacturer of reproduction & custom wood windows & doors: true-divided lites with insulated glass; wood-framed storm sash & screens; renovation & restoration projects & new construction; paneled walls & storefronts; catalog $5.

Call for more information.



Sash pulleys from **Architectural Resource Center** are available in cast brass or bronze in a range of sizes and finishes.

Architectural Resource Center

800-370-8808; Fax: 603-942-7465
www.aresource.com
Northwood, NH 03261

Supplier of historically styled hardware: sash pulleys, lifts & locks, sash chain & rope; weather stripping; patented sash weights.

Click on no. 1670

Allied Window, Inc.

800-445-5411; Fax: 513-559-1883
www.alliedwindow.com
Cincinnati, OH 45241

Manufacturer & installer of Invisible Storm Windows: custom colors, shapes & glazing materials; aluminum; sound-reduction protection from UV & vandalism; interior & exterior; commercial & residential applications.

Click on no. 690

The soundproofing windows in this historic office building were custom designed, manufactured and installed by **Cityproof Windows.**

Cityproof Windows

718-786-1600; Fax: 718-786-2713
www.cityproof.com
Long Island City, NY 11101

Manufacturer & installer of custom-made interior window systems: aluminum, storm/screen combo, arched & custom shapes; mechanical fastenings; acrylic, lexan, UV-resistant, standard, low-E, tempered, laminated & etched-glass glazing.

Click on no. 2390

Coppa Woodworking

310-548-4142; Fax: 310-548-6740
www.coppawoodworking.com
San Pedro, CA 90731

Manufacturer of wood screen doors & storm doors: more than 300 styles; pine, Douglas fir, oak, mahogany, cedar, knotty alder & redwood; any size; many options; arch & roundtop, double, French doors, doggie doors, window screens & more.

Click on no. 9600

E.R. Butler & Co.

212-925-3565; Fax: 212-925-3305
www.erbutler.com
New York, NY 10012

Manufacturer of historically accurate, premium-quality hardware for doors, windows & furniture: brass, bronze, nickel, silver & wrought iron; complete design selections of Early American period hardware; many finishes.

Click on no. 2260

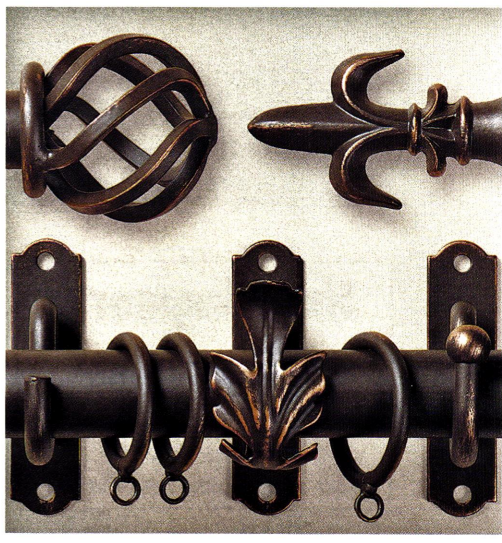
These steel windows were manufactured by **Crittall Windows.**

Crittall Windows, Ltd.

011-44-1376530800; Fax: 011-44-1376530801
www.crittall-windows.co.uk/us/
Witham, Essex, U.K. CM8 3UN

Manufacturer of steel window & door systems: single hung, casement, pivot, awning, projecting, fixed lite & round top; historical restoration & renovation; minimum maintenance; custom shapes & sizes; recycled/recyclable steel content.

Click on no. 2016



Gaby's Shoppe offers a selection of drapery hardware designs in six powder-coated finishes.

Gaby's Shoppe

800-299-4229; Fax: 214-748-7701
www.gabys.com
Dallas, TX 75207

Manufacturer of handcrafted decorative iron drapery hardware: for curved & angled bay windows & arches; 30 standard finishes; more than 100 finial options.

Click on no. 2520

WE BELIEVE THAT TRUE PERFECTION IS IN THE DETAILS

Beautifully crafted reproduction and custom windows, doors and architectural millwork.

Montague, Massachusetts, 413.367.9441
www.architecturalcomponentsinc.com

Historic Doors created this window crown with a 3 ½-in. projection.

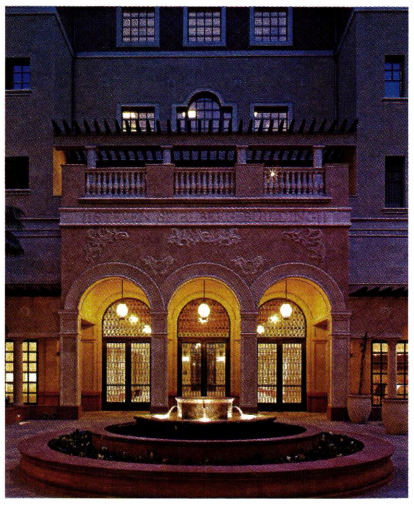
Glass interior storm windows from **Innerglass Window Systems** solved the draft problems for these windows.

Historic Doors

610-756-6187; Fax: 610-756-6171
www.historicdoors.com
Kempton, PA 19529
Custom fabricator of wood windows & doors: casing; circular & crown moldings; complete entryways; wood storefronts; restoration & period-style construction.
Click on no. 3570

Innerglass Window Systems

800-743-6207; Fax: 860-651-4789
www.stormwindows.com
Simsbury, CT 06070
Manufacturer of custom glass interior storm windows for energy conservation & soundproofing: out performs almost any replacement; automatically conforms to the opening, compensating for out-of-square conditions; no sub-frame needed; all glazing options available; easy do-it-yourself installation.
Click on no. 909



Hope's Windows fabricated the hot-rolled solid-steel windows and doors for the six-building campus at the USC School of Cinematic Arts; shown here is the entrance to the Steven Spielberg Building. Photo: John Linden

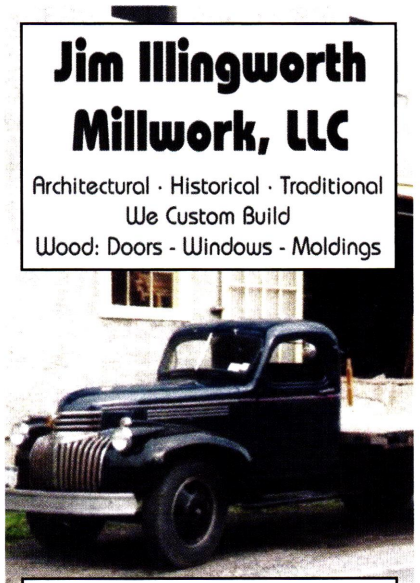
Windquest vinyl windows from **Kolbe & Kolbe Millwork Co.** are designed to provide protection from hurricanes and gale-force winds.

Kolbe & Kolbe Millwork Co.

800-955-8177; Fax: 715-845-8270
www.kolbe-kolbe.com
Wausau, WI 54401
Manufacturer of windows & doors: traditional details; extruded aluminum-clad, roll-formed aluminum-clad, wood & vinyl energy-efficient windows & doors; fiberglass doors.
Click on no. 1541

Jim Illingworth Millwork, LLC

Architectural · Historical · Traditional
We Custom Build
Wood: Doors - Windows - Moldings



Ph: 315-232-3433 · Fax: 315-232-3645
Toll Free: 877-390-2392
8-10 Wardwell St. · Adams, NY 13605
Website: *www.jimillingworthmillwork.com*
www.illingworthmillwork.com

CLICK ON NO. 1696

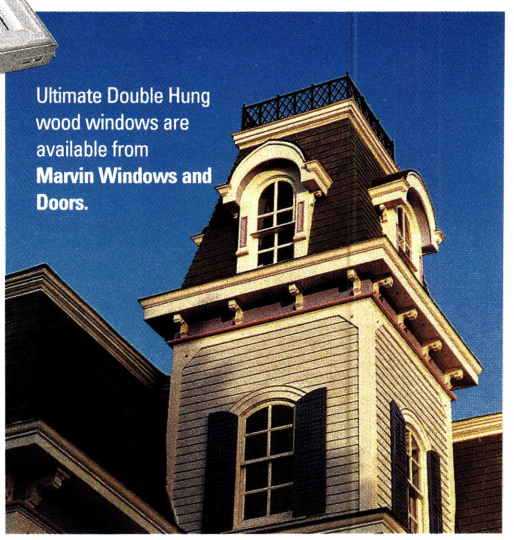
Hope's Windows, Inc.

877-800-5010; Fax: 716-665-3365
www.hopeswindows.com
Jamestown, NY 14702
Manufacturer of custom steel windows & doors: stainless-steel & security screens, storm sash & a full line of ornate replacement hardware.
Click on no. 2065

Illingworth Millwork created the arch-top double-hung window units with insulated glass for a restoration project in Auburn NY.

Illingworth Millwork, LLC

315-232-3433; Fax: 315-232-3645
www.jimillingworthmillwork.com
Adams, NY 13605
Manufacturer of custom wood windows, doors & moldings: for homes & historic buildings; matches any existing wood windows, doors, moldings; custom millwork.
Click on no. 1696



Marvin Windows and Doors

888-537-7828; Fax: 651-452-3074
www.marvin.com
Warroad, MN 56763
Manufacturer of wood windows & doors: clad & clad-wood; special shapes; custom sizes & more than 11,000 standard sizes; historical replicas; interior & exterior storm windows.
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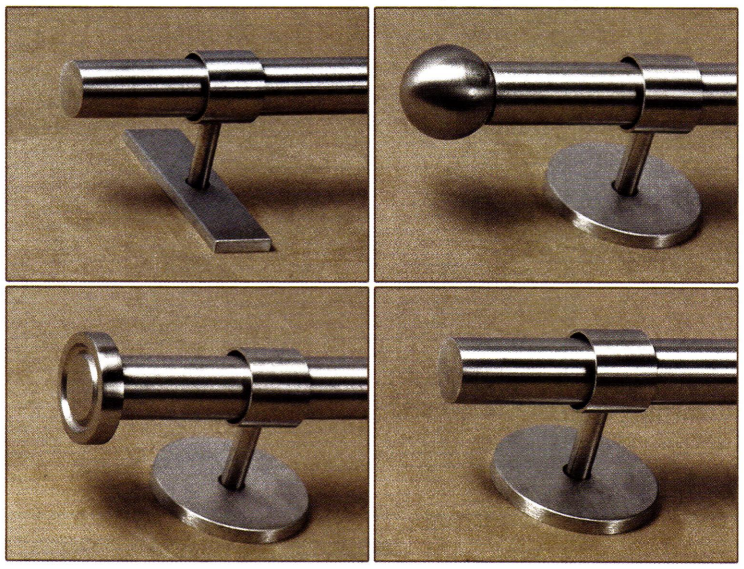
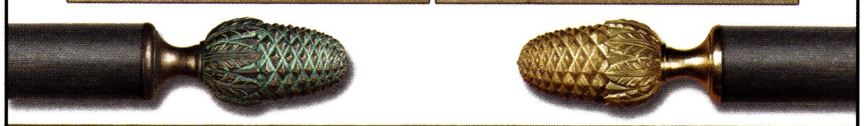
Gaby's Shoppe

Manufacturer of Fine Wrought Iron

Our extensive collection ranges from fine hand-finished wrought iron to richly grained stainless steel. Because we manufacture our products right here in the U.S., we are able to offer custom items such as curved bay windows or brackets sized specifically for your application.





View the complete Gaby's Shoppe catalog online: www.gabys.com

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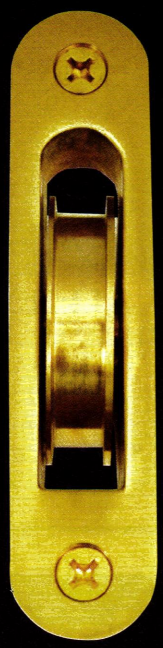

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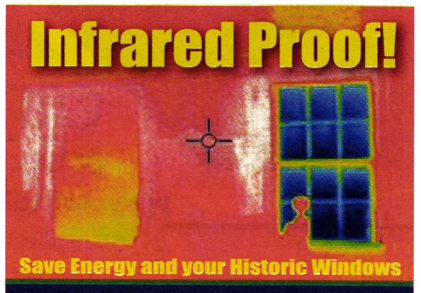

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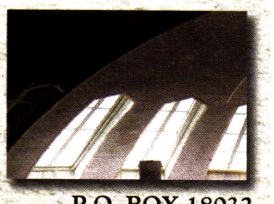

Using the Secretary of Interiors Rehabilitation Guidelines, we are able to restore or recreate historically accurate wood windows and doors in our millwork shop.

P.O. BOX 18032

MORGANTOWN, WV 26507

PHONE (304) 594-2570

FAX (304) 594-2810

WWW.ALLEGHENYRESTORATION.COM

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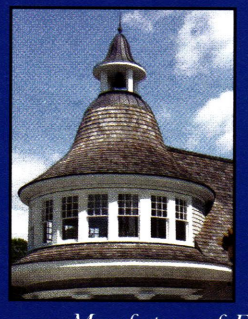

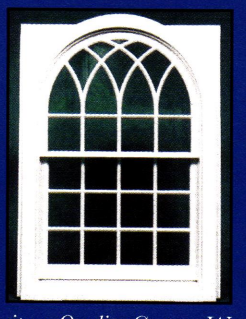

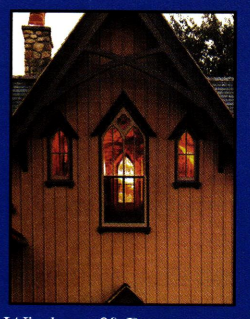

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Traditional Styles, Geometric & Bent Designs

WWW

839 Broad St., Utica, NY 13501

woodwindowworkshop.com

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Parrett Windows & Doors replicated the historical sash windows for the Dallas County Courthouse in Adel, IA.

Parrett Windows & Doors

800-541-9527; Fax: 877-238-2452
www.parrettwindows.com
Dorchester, WI 54425

Manufacturer of custom, quality wood & aluminum-clad windows & doors: vast array of options, numerous wood species & complete finishing capabilities; historical replications; screen doors, casings & moldings.

Click on no. 3003

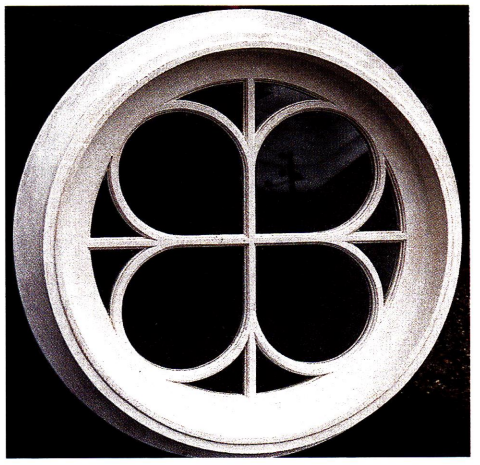
This paneled shutter with period-style hardware was crafted by **Timberlane.**

Timberlane, Inc.

215-616-0600; Fax: 215-616-0749
www.timberlane.com
Montgomeryville, PA 18936

Manufacturer of custom exterior shutters: more than 40 historically accurate, customizable styles; available in premium woods & our own maintenance-free Endurian, along with the large selection of period shutter hardware.

Click on no. 1056; 1925 for Endurian



Wood Window Workshop custom fabricated this circular window with four-leaf-clover panes.

Wood Window Workshop

800-724-3081; Fax: 315-733-0933
www.woodwindowworkshop.com
Utica, NY 13501

Custom fabricator of wood windows, doors, storms & screens: any size, shape & species; full mortise-&-tenon construction, true-divided lite, hard-to-find hardware & restoration & insulated glass; factory finishes; millwork; reproductions; for storefronts.

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Designed by architect Ken Tate, Honored with the Shutze Award from the Southeastern Division of the Institute of Classical Architecture

You don't put just any shutters on a home such as this. You choose Timberlane. While most people love their look, to you, the beauty's in the details. In the clear, kiln-dried western red cedar. The mortise and tenon joinery. The copper capping to protect joints from moisture. The knowledge that their beauty will endure. And, that they are custom made to match the most exacting of standards and the most discriminating of tastes.

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Exterior Lighting

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This decorative exterior lighting fixture was fabricated by **Allen Architectural Metals** for the Platt Street Bridge in Tampa, FL.

Allen Architectural Metals, Inc.

800-204-3858; Fax: 256-761-1967
www.allenmetals.com
Talladega, AL 35161

Manufacturer of ornamental metal: casting & metal fabrication; street amenities, signage, lighting, columns, building components, doors, cupolas, finials, cresting, architectural elements, canopies, bollards, railings & grilles; variety of alloys & finishes.

Click on no. 1005

Crenshaw restored and replicated lighting fixtures in the entry portico of the Thurgood Marshall U.S. courthouse in New York City; each solid cast-bronze fixture weighs 1,000 lbs.

Crenshaw Lighting

540-745-3900; Fax: 540-745-3911
www.crenshawlighting.com
Floyd, VA 24091

Manufacturer of decorative lighting fixtures: period & custom designs; historical restoration & reproduction; lighting for worship.

Click on no. 313

Designed by Mark Finlay Architects and fabricated by **Deep Landing Workshop,** the model L-9800 stands 29 in. tall and projects 19 in. from the wall.

Deep Landing Workshop

877-778-4042; Fax: 410-778-4070
www.deeplandingworkshop.com
Chestertown, MD 21620

Manufacturer of custom lighting fixtures: chandeliers, sconces, pendants & lanterns; new designs, historic reproductions & custom work; handcrafted in wood, tin, brass or copper; glass, mica or alabaster shades.

Click on no. 809

The artisans at **Herwig** handcrafted this traditionally styled exterior lantern.

Herwig Lighting

800-643-9523; Fax: 479-968-6422
www.herwig.com
Russellville, AR 72811

Designer & manufacturer of hand-crafted cast metalwork: period-design lanterns, street lighting, posts, custom outdoor lighting, street clocks, benches, bollards, custom plaques, signs & more; aluminum & bronze; since 1908.

Click on no. 9130

This lampost is one of many styles available from **Authentic Designs.**

Authentic Designs

800-844-9416; Fax: 802-394-2422
www.authenticdesigns.com
West Rupert, VT 05776

Manufacturer of historical lighting fixtures & specialty metal products: chandeliers, lanterns, sconces & table lamps crafted in brass, copper, terne metal & Vermont maple; Early American & Colonial; CUL/UL listed for wet & damp locations; library binder $30.

Click on no. 60

Custom Home & Commercial Accessories manufactures traditional exterior lighting with cast- and extruded-aluminum posts and fixtures with beveled glass or acrylic lenses.

Custom Home & Commercial Accessories

800-265-0041; Fax: 916-635-0228
www.customhomex.com
Rancho Cordova, CA 95742

Manufacturer of metalwork accessories: decorative, locking & commercial mailboxes in aluminum, brass, copper & stainless steel; signs made of brass, bronze & stone; copper weathervanes & cupolas.

Click on no. 527

Grand Light has been restoring, replicating and manufacturing custom lighting fixtures since 1929.

Grand Light

800-922-1469; Fax: 203-785-1184
www.lightrestoration.com
Seymour, CT 06483

Restorer of historic lighting fixtures & manufacturer of custom lighting fixtures: metal fabrication, glass fabrication, metal finishing, polishing, painting, welding, abrasive blasting; replication.

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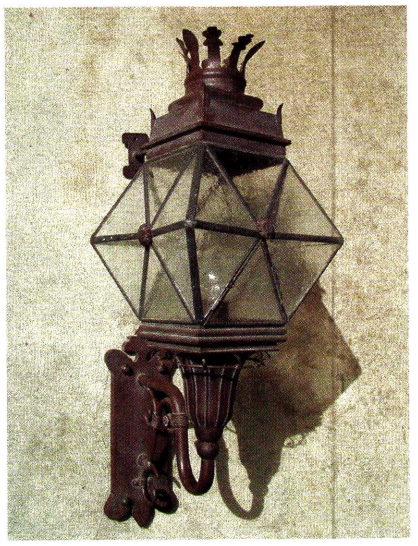

Lantern Masters fabricated this Spanish Revival-style wall-mounted fixture.

Lantern Masters, Inc.

818-706-1990; Fax: 818-706-1988
www.lanternmasters.com
Westlake Village, CA 91362

Custom designer & manufacturer of lighting: interior chandeliers, pendants, ceiling flushes & sconces & exterior lanterns including wall, flush wall, pendant, post & pilaster; many architectural periods; historical reproductions.

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Restored Art Deco Bracket Sconce – butterfly detail
Exterior rated, 19" w x 67" h x 24" e, cast bronze, aged patina, frosted clear pebbled glass, metal halide

Herbert C. Hoover Building, Washington, DC
Project architect: RTKL Associates

WWW.CRENSHAWLIGHTING.COM

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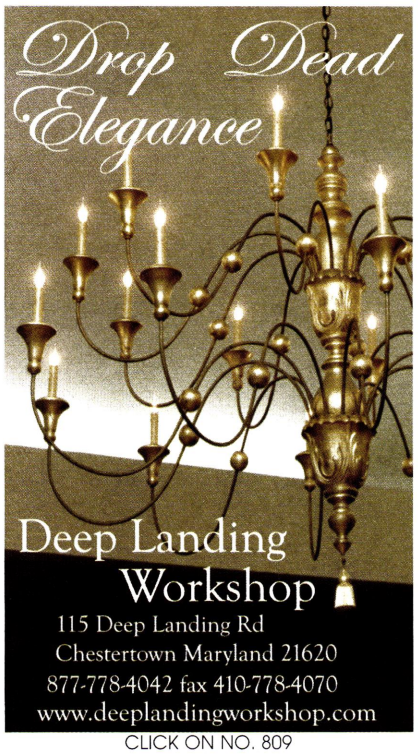

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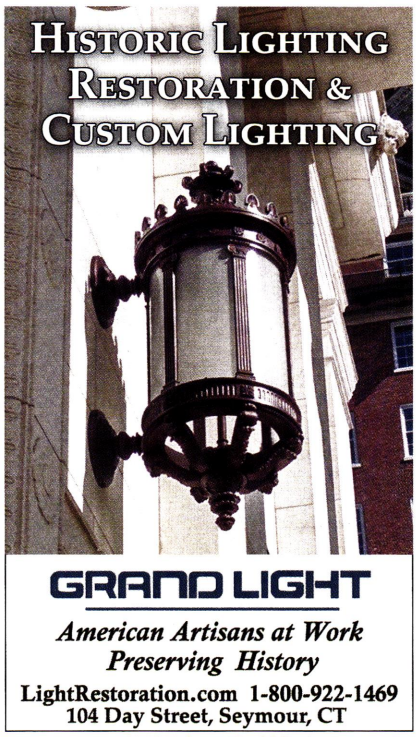

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These ca. 1920-1930 bronze sconces were refurbished by **Schiff Architectural Detail;** they are 60-in. tall x 24-in. deep.

Schiff Architectural Detail, LLC

617-887-0202; Fax: 617-887-0127
www.schiffarchitecturaldetail.com
Chelsea, MA 02150

Custom fabricator of metalwork: exterior lamps, lampposts, plaques, fences, fountains, sculpture, gazebos, planters, interior & exterior railings & grilles, domes, finials; non-ferrous forged work; machine-shop service; rubber molding & pattern work; capitals; windows, doors & door hardware; mantels, fans, fireplace tools; historical restoration.

Click on no. 7730

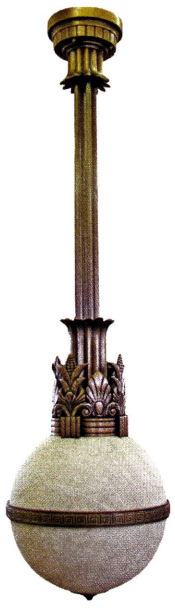
This lantern with mounted bracket was custom designed by **Scofield Historic Lighting.**

Scofield Historic Lighting

860-767-7032; Fax: 610-518-7264
www.scofieldlighting.com
Downingtown, PA 19335

Fabricator of handmade reproduction lighting: antique & custom chandeliers, sconces & lanterns; heavy-gauge copper, steel, tin & wood; inspired by American & European designs from 17th through 19th centuries; various finishes & patinas.

Click on no. 4170



Made by **St. Louis Antique Lighting,** this custom new fixture was used at the "Word Food Prize" project in Des Moines, IA; it incorporates a clear glass envelope around a cluster of LEDs.

St. Louis Antique Lighting Co.

314-863-1414; Fax: 314-863-6702
www.slalco.com
Saint Louis, MO 63130

Manufacturer & supplier of architectural lighting: all styles; historical reproductions & custom lighting; restoration services; commercial & ecclesiastical projects.

Click on no. 6190

Exterior Molded Ornament

To order product information from a company in this Buying Guide, go to traditionalbuilding.com/rs and click on the appropriate reader service number.

Allen Architectural Metals fabricated the decorative metalwork for the Battery Maritime building in New York City.

Arch Fiberglass Corp. supplied the fiberglass cornices for the Bridgehampton National Bank in Southampton, NY.

Allen Architectural Metals, Inc.

800-204-3858; Fax: 256-761-1967
www.allenmetals.com
Talladega, AL 35161

Manufacturer of ornamental metal: casting & metal fabrication; street amenities, signage, lighting, columns, building components, doors, cupolas, finials, cresting, architectural elements, canopies, bollards, railings & grilles; variety of alloys & finishes.

Click on no. 1005

Arch Fiberglass Corp.

631-842-4772; Fax: 631-598-1190
www.afcornice.com
Copiague, NY 11726

Fabricator of molded fiberglass ornament: cornices, façades, cupolas, columns, capitals & balustrades; lightweight FRP; molded-in colors & textures; UBC code-compliant class-1 fire-retardant material; weather resistant; easy to install.

Click on no. 6400

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e-mail: sales@AFCornice.com web: www.AFCornice.com

CLICK ON NO. 6400

This custom cast-stone pedimented entrance to a shopping mall was fabricated by **Haddonstone.**

Schiff Architectural Detail, LLC

617-887-0202; Fax: 617-887-0127
www.schiffarchitecturaldetail.com
Chelsea, MA 02150

Custom fabricator of metalwork: exterior lamps, lampposts, plaques, fences, fountains, sculpture, gazebos, planters, interior & exterior railings & grilles, domes, finials; non-ferrous forged work; machine-shop service; rubber molding & pattern work; capitals; windows, doors & door hardware; mantels, fans, fireplace tools; historical restoration.

Click on no. 7730

Gotham Metalworks

718-786-1774; Fax: 718-786-7214
www.gothammetals.com
Long Island City, NY 11101

Fabricator of sheet-metal products: cornices, cupolas, skylights, railings, capitals, gutters, domes, dormers & custom ornamental stamping; for replications, renovations & new construction projects.

Click on no. 2042

Haddonstone (USA), Ltd.

719-948-4554; Fax: 719-948-4285
www.haddonstone.com
Pueblo, CO 81001

Manufacturer of classical & contemporary cast limestone: columns, balustrades, benches, planters, pavers, fountains, gazebos, interior ornament, mantels, statuary & more; 500+ designs; custom designs.

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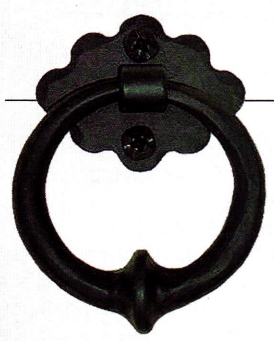
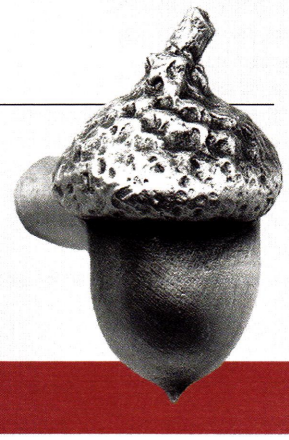




For more information, please contact:

Robin Habberley
REX Sales Director
(703) 831-6588
rhabberley@rexbilt.com

Julia Hite
REX Sales Executive
(978) 729-4321
jhite@rexbilt.com

Peter H. Miller
Publisher, Home Group
Active Interest Media
pmiller@aimmedia.com

rexbilt.com

Landscapes, Streetscapes & Specialties

To order product information from a company in this Buying Guide, go to traditionalbuilding.com/rs and click on the appropriate reader service number.

This traditionally styled gate was designed and fabricated by **Allen Architectural Metals** for the Department of Justice in Washington, DC.

Allen Architectural Metals, Inc.

800-204-3858; Fax: 256-761-1967
www.allenmetals.com
Talladega, AL 35161
Manufacturer of ornamental metal: casting & metal fabrication; street amenities, signage, lighting, columns, building components, doors, cupolas, finials, cresting, architectural elements, canopies, bollards, railings & grilles; variety of alloys & finishes.
Click on no. 1005

Wrought-iron traditionally styled fences are available from **Compass Ironworks.**

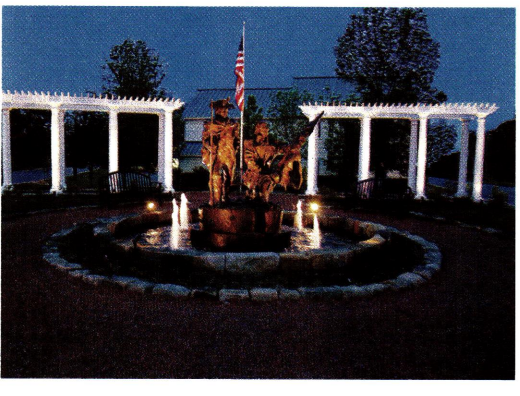
Compass Ironworks

717-442-4544; Fax: 717-442-1948
www.ironworkclassics.com
Gap, PA 17527
Fabricator of wrought-iron metalwork: gates, fences, railings, décor; family owned; hand crafted; historical styles; recycled content.
Click on no. 2048

Custom bronze and cast aluminum signs are available from **Custom Home & Commercial Accessories.**

Custom Home & Commercial Accessories

800-265-0041; Fax: 916-635-0228
www.customhomex.com
Rancho Cordova, CA 95742
Manufacturer of metalwork accessories: decorative, locking & commercial mailboxes in aluminum, brass, copper & stainless steel; signs made of brass, bronze & stone; copper weathervanes & cupolas.
Click on no. 527



Chadsworth specializes in exterior garden structures, as seen with these custom pergolas in Peterson Park in Poland, OH.

Chadsworth Columns

910-763-7600; Fax: 910-763-3191
www.columns.com
Wilmington, NC 28401
Manufacturer of authentically correct architectural columns: complete line of columns, piers, pilasters & posts for interior & exterior use; variety of sizes, styles & materials, including wood; more than 20 years.
Click on no. 1580 for PolyStone; 180 for wood

Reclaimed Metropolitan street pavers from **Gavin Historical Bricks** were used to create this circular drive in Birmingham, AL.

Gavin Historical Bricks, Inc.

319-354-5251; Fax: 319-688-3086
www.historicalbricks.com
Iowa City, IA 52245
Supplier of antique paving & building materials: specialists in new construction with an Old World look as well as historic restoration projects; pavers, cobblestones, clinker brick & more.
Click on no. 8079

Gerald Siciliano fabricated this reflecting pool with a stone border for a building in NYC.

Gerald Siciliano Studio Design Associates

718-636-4561; Fax: 702-442-7847
www.geraldsicilianostudio.com
Brooklyn, NY 11215
Custom fabricator of fine art: liturgical sculpture, architectural details, capitals, fountains, fireplaces & mantels; bronze, granite, marble & stone; interior & exterior; repair & restoration; studio & fieldwork; 30 years of experience.

Gotham Metalworks

718-786-1774; Fax: 718-786-7214
www.gothammetals.com
Long Island City, NY 11101
Fabricator of sheet-metal products: cornices, cupolas, skylights, railings, capitals, gutters, domes, dormers & custom ornamental stamping; for replications, renovations & new construction projects.
Click on no. 2042

The four-tiered Lotus Bud fountain is one of many outdoor decorative elements fabricated by **Haddonstone.**

Haddonstone (USA), Ltd.

719-948-4554; Fax: 719-948-4285
www.haddonstone.com
Pueblo, CO 81001
Manufacturer of classical & contemporary cast limestone: columns, balustrades, benches, planters, pavers, fountains, gazebos, interior ornament, mantels, statuary & more; 500+ designs; custom designs.
Click on no. 4020

Herwig Lighting fabricated this custom sign and clock.

Herwig Lighting

800-643-9523; Fax: 479-968-6422
www.herwig.com
Russellville, AR 72811
Designer & manufacturer of handcrafted cast metalwork: period-design lanterns, street lighting, posts, custom outdoor lighting, street clocks, benches, bollards, custom plaques, signs & more; aluminum & bronze; since 1908.
Click on no. 9130

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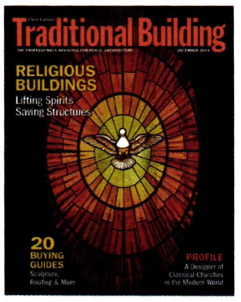

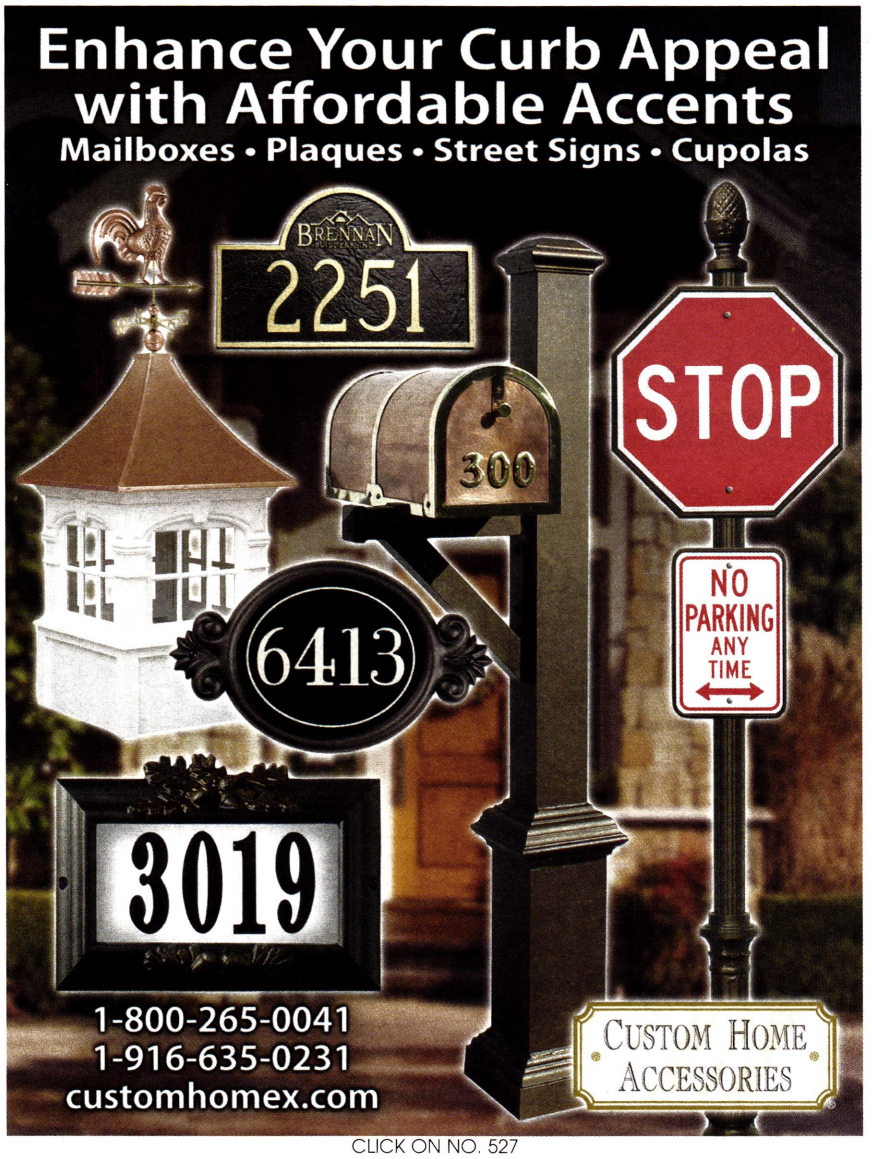

CLICK ON NO. 527

Schiff Architectural Detail fabricates fences and gates in traditional styles.

This monumental statue of Jesus is the work of **Stonesculpt.**

Schiff Architectural Detail, LLC

617-887-0202; Fax: 617-887-0127
www.schiffarchitecturaldetail.com
Chelsea, MA 02150

Custom fabricator of metalwork: exterior lamps, lampposts, plaques, fences, fountains, sculpture, gazebos, planters, interior & exterior railings & grilles, domes, finials; non-ferrous forged work; machine-shop service; rubber molding & pattern work; capitals; windows, doors & door hardware; mantels, fans, fireplace tools; historical restoration.

Click on no. 7730

Stonesculpt

650-575-9683; Fax: 650-322-5002
www.customstonecarving.com
East Palo Alto, CA 94303

Custom fabricator of hand carvings in natural stone: stone carving, masonry restoration, custom stone work & sculpture.

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Slate, Tile & Metal Roofing/Roof Specialties

To order product information from a company in this Buying Guide, go to traditionalbuilding.com/rs and click on the appropriate reader service number.

Allen Architectural Metals fabricated this metal roof for the Stanford Mansion in California.

Allen Architectural Metals, Inc.
800-204-3858; Fax: 256-761-1967
www.allenmetals.com
Talladega, AL 35161
Manufacturer of ornamental metal: casting & metal fabrication; street amenities, signage, lighting, columns, building components, doors, cupolas, finials, cresting, architectural elements, canopies, bollards, railings & grilles; variety of alloys & finishes.
Click on no. 1005

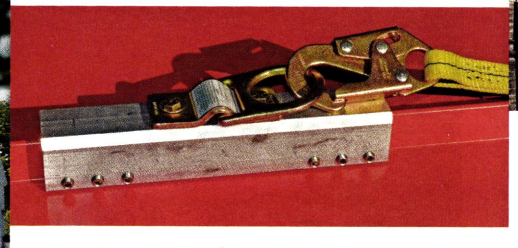
Arch Fiberglass Corp.
631-842-4772; Fax: 631-598-1190
www.afcornice.com
Copiague, NY 11726
Fabricator of molded fiberglass ornament: cornices, façades, cupolas, columns, capitals & balustrades; lightweight FRP; molded-in colors & textures; UBC code-compliant class-1 fire-retardant material; weather resistant; easy to install.
Click on no. 6400

This home package kit, including the roofing, was custom designed and built by **Connor Homes.**

Connor Homes
802-382-9082; Fax: 802-382-9084
www.connorbuilding.com
Middlebury, VT 05753
Home builder: homes & more; follies, garden houses, pool houses, storage sheds; mantels, kitchen cabinets, barns, millwork, paneling, stairs & stair parts.
Click on no. 2064

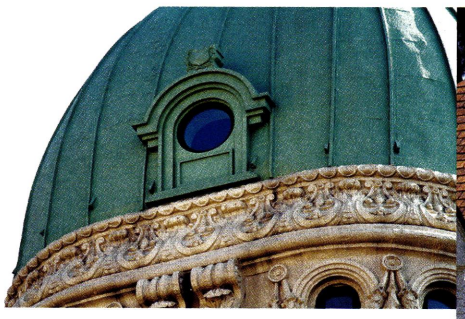
Custom Home & Commercial Accessories offers cupolas in a variety of designs and styles with copper roofs, windows or louvers and shiplap or smooth bases in white pine or vinyl.

Custom Home & Commercial Accessories
800-265-0041; Fax: 916-635-0228
www.customhomex.com
Rancho Cordova, CA 95742
Manufacturer of metalwork accessories: decorative, locking & commercial mailboxes in aluminum, brass, copper & stainless steel; signs made of brass, bronze & stone; copper weathervanes & cupolas.
Click on no. 527



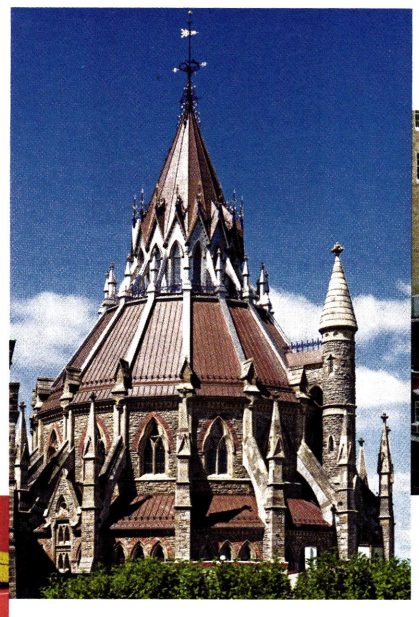
The SSRA1 from **Fall Protection Distributors** consists of a solid aluminum body with 12 stainless steel set screws and a swivel d-ring; it is designed for use on standing-seam metal roofing.

Fall Protection Distributors, LLC
863-703-4522; No fax
www.fallpd.com
Trinity, FL 34655
Manufacturer of fall-protection devices for roofing: various devices can be attached to standing-seam metal roofs to protect workers from falls.



Gotham Metalworks fabricated this precision plasma-cut replication domed roof for a N.Y.C. landmarked building.

Gotham Metalworks
718-786-1774; Fax: 718-786-7214
www.gothammetals.com
Long Island City, NY 11101
Fabricator of sheet-metal products: cornices, cupolas, skylights, railings, capitals, gutters, domes, dormers & custom ornamental stamping; for replications, renovations & new construction projects.
Click on no. 2042



Heather & Little restored the metal roofing for the National Library of Parliament in Ottawa, Canada.

Heather & Little Limited
800-450-0659; Fax: 905-475-9764
www.heatherandlittle.com
Markham, ON, Canada L3R 0H1
Fabricator & supplier of historical sheet-metal specialties & architectural sheet-metal components: finials, cornices, leader heads, cresting, metal shingles, pressed-metal wall cladding, cupolas, steeples, domes, reproductions; capitals & balustrades; Kalemein & lot-line metal windows & doors, statuary restoration.
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Ludowici's black-mist Colonial Tile and bonnet hip plates were used on this roof.

Ludowici Roof Tile, Inc.
800-945-8453; Fax: 740-342-0025
www.ludowici.com
New Lexington, OH 43764
Manufacturer of clay tile roofing: many patterns, finishes & colors; Imperial ceramic slate tile; good freeze/thaw properties; low moisture absorption; 75-year limited warranty; reclaimed tiles; restoration & new construction; flooring.
Click on no. 2760

NIKO fabricated the copper dormers and mansard roof and also installed the copper penthouse for this building in New York City.

NIKO Contracting Co., Inc.
412-687-1517; Fax: 412-687-7969
www.nikocontracting.com
Pittsburgh, PA 15213
Custom fabricator & contractor of sheet metal & roofing: slate, tile & other roofing; storefronts, cornices, cupolas, domes, steeples, snow guards & leader heads; copper, lead-coated copper, zinc & stainless steel; metal ceilings.
Click on no. 861 for ceilings; 8300 for roofing

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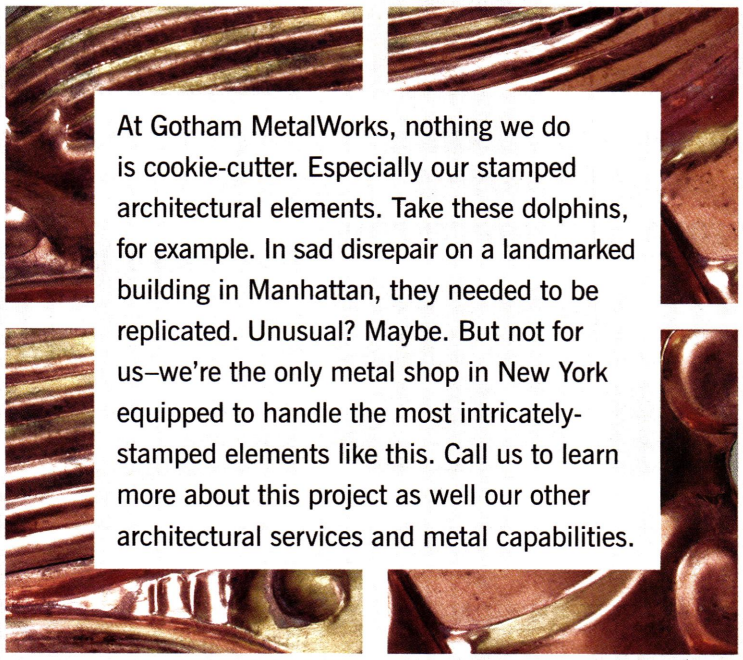

At Gotham MetalWorks, nothing we do is cookie-cutter. Especially our stamped architectural elements. Take these dolphins, for example. In sad disrepair on a landmarked building in Manhattan, they needed to be replicated. Unusual? Maybe. But not for us–we're the only metal shop in New York equipped to handle the most intricately-stamped elements like this. Call us to learn more about this project as well our other architectural services and metal capabilities.

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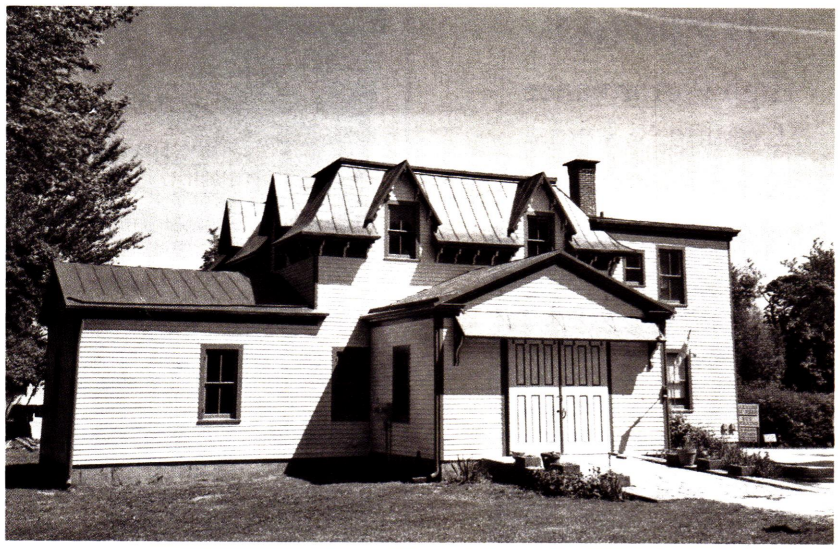

Preservation Products supplied the Acrymax elastomeric acrylic technology used to weatherproof the metal roof of the Mid-Atlantic Center for the Arts in Cape May, NJ.

Preservation Products, Inc.

800-553-0523; Fax: 610-891-0834
www.preservationproducts.com
Media, PA 19063

Manufacturer & distributor of Acrymax restoration & preservation systems for historic metal roofs: durable weather-proof membrane can be used as complete roof system or for repair; Acrymax is an energy star partner.

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Schiff Architectural Detail, LLC

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www.schiffarchitecturaldetail.com
Chelsea, MA 02150

Custom fabricator of metalwork: exterior lamps, lampposts, plaques, fences, fountains, sculpture, gazebos, planters, interior & exterior railings & grilles, domes, finials; non-ferrous forged work; machine-shop service; rubber molding & pattern work; capitals; windows, doors & door hardware; mantels, fans, fireplace tools; historical restoration.

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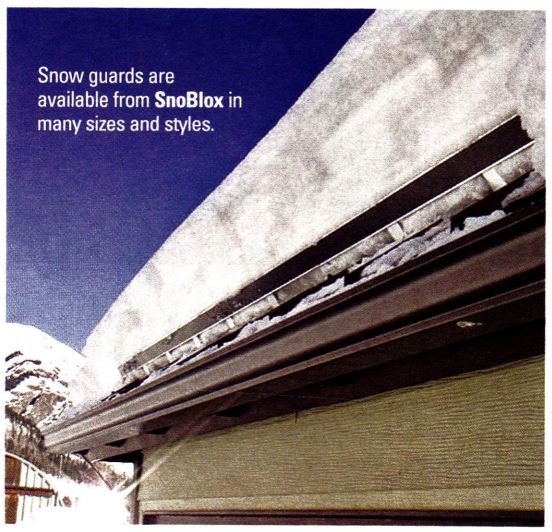

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800-766-5291; Fax: 717-697-2452
www.snoblox-snojax.com
Mechanicsburg, PA 17055

Supplier of 6 models of polycarbonate snow guards: all feature large, forward-mounted faces to help prevent the movement of snow & ice on metal roofs; vent protection.

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www.tileroofs.com

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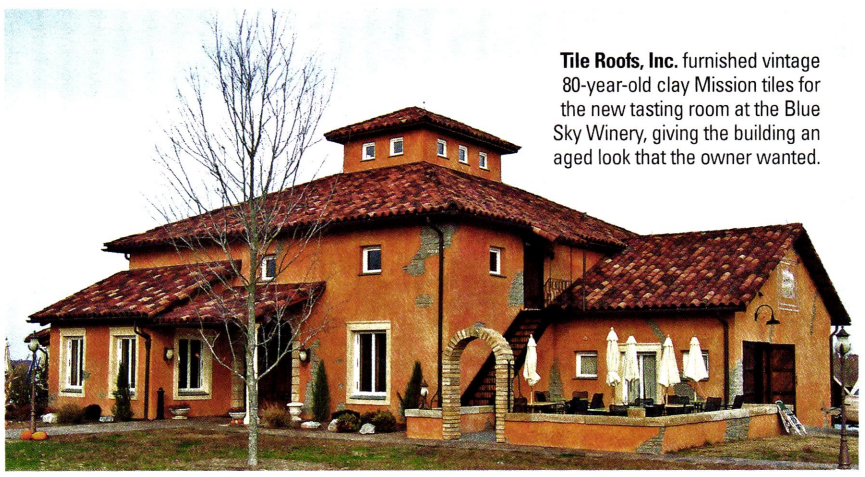

Tile Roofs, Inc. furnished vintage 80-year-old clay Mission tiles for the new tasting room at the Blue Sky Winery, giving the building an aged look that the owner wanted.

Tile Roofs, Inc.

888-708-8453; Fax: 708-479-7865
www.tileroofs.com
Frankfort, IL 60423

Importer & distributor of hand-finished European clay roof tile & fittings: custom manufacturing of clay roof tile & fittings to match existing; new & salvaged clay roof tile, concrete roof tiles & fittings; natural slate roofing for new roofs, repairs & additions.

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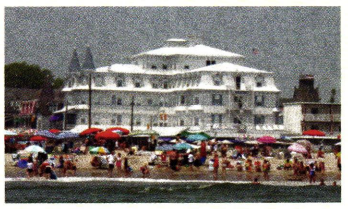

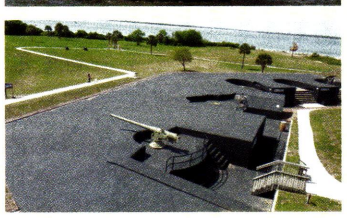

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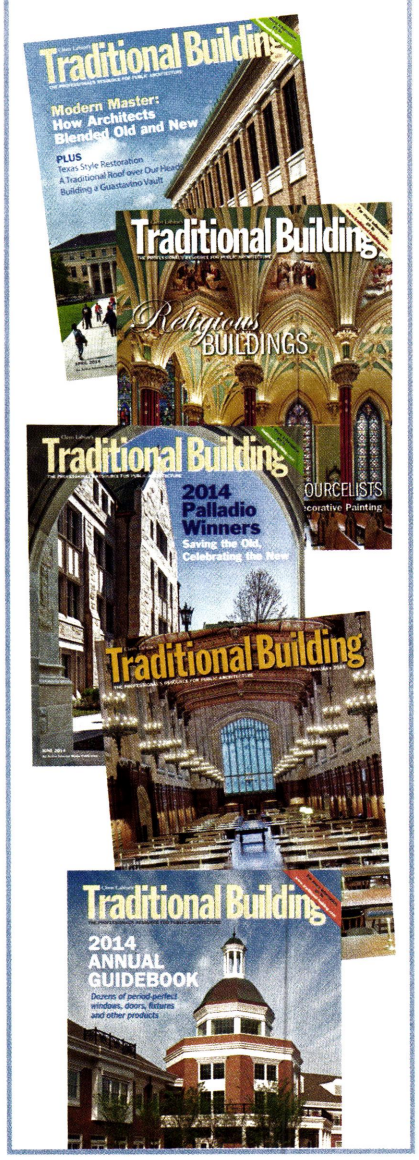

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www.snoblox.com www.snojax.com

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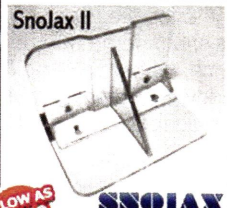

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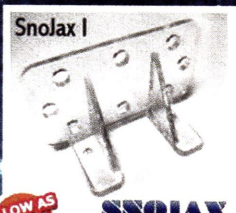
5.22" W x 3.25" H
The **first** polycarbonate, adhesive mounted snow guard, invented in 1985. Features an interchangeable mounting base.
Adhesive tested: 700 lbs.
Screw tested: 3750 lbs.

SnoJax I



AS LOW AS $2.50

5.22" W x 3.25" H
The **first** patented polycarbonate snow guard introduced in 1976 for mechanically fastened applications only.
Screw tested: 1800 lbs.

11 Stock Deuce Colors

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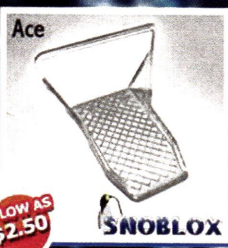

AS LOW AS $2.50

Face: 5" W x 3" H
Base: 3" W x 5" L
Waffled base increases bonding power. "V" shape fits most panels and does not trap water.
Adhesive tested: 1449 lbs.
Screw tested: 4849 lbs.

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AS LOW AS $1.75

Face: 3" W x 2.5" H
Base: 1.5" W x 4" L
Fits most common 36" panels with 9" flats. Sits in flat area between minor ribs. No rib straddling.
Adhesive tested: 1379 lbs.
Screw tested: 3456 lbs.

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IceJax II

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Based on the proven SnoJax II design. Features an interchangeable mounting base. Embossed logo enhances bonding power.
Adhesive tested: 1561 lbs.
Screw tested: 6388 lbs.

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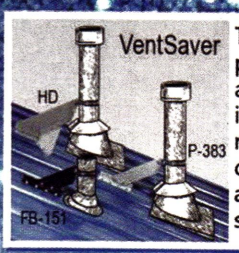

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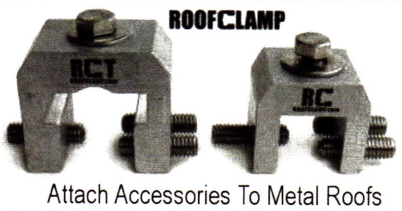

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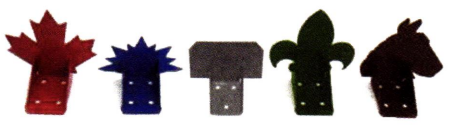

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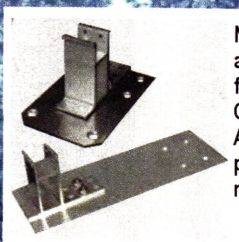

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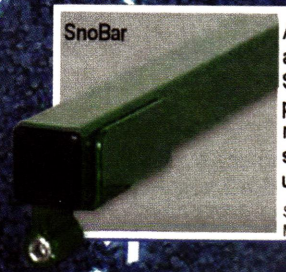

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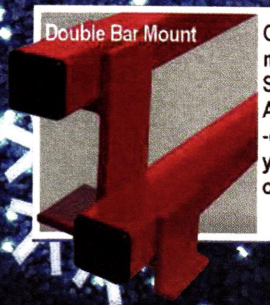

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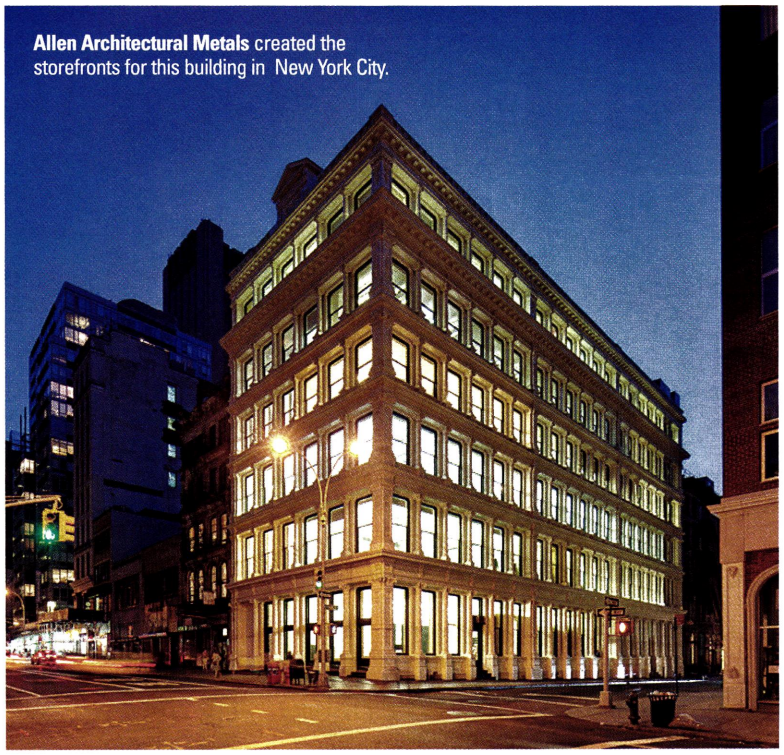

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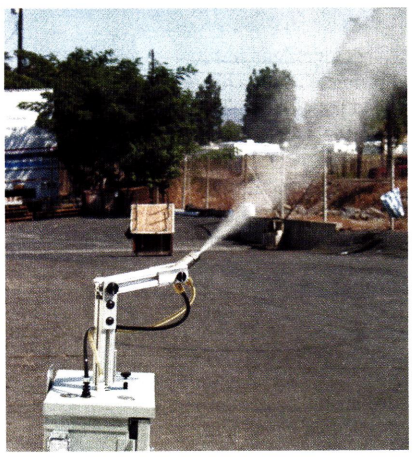

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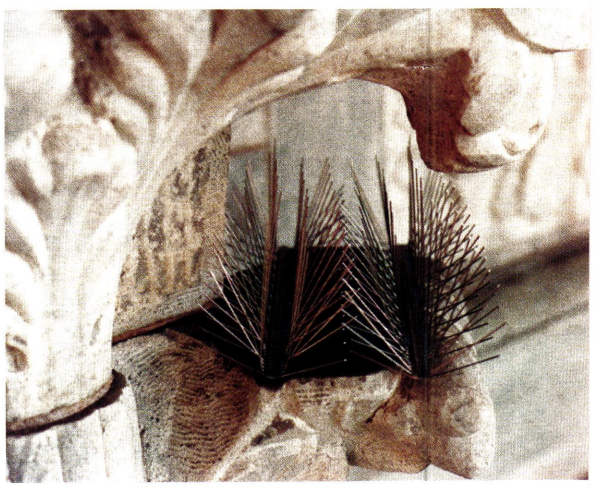

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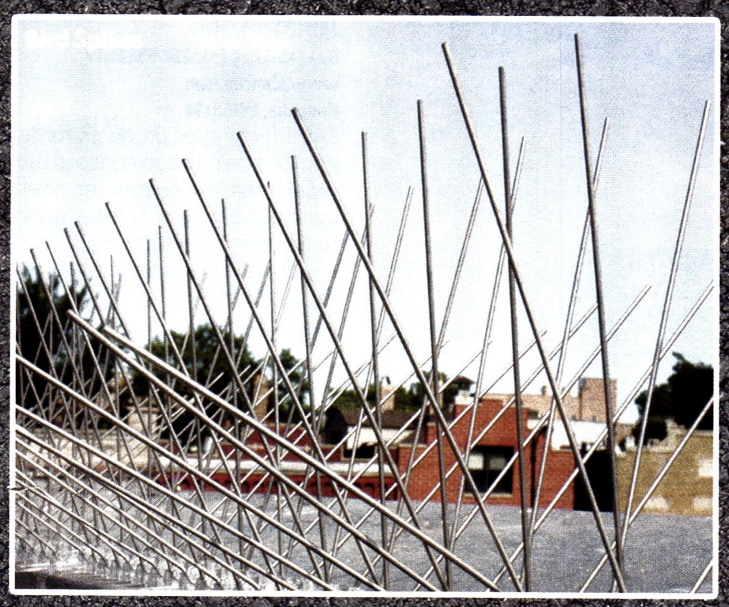

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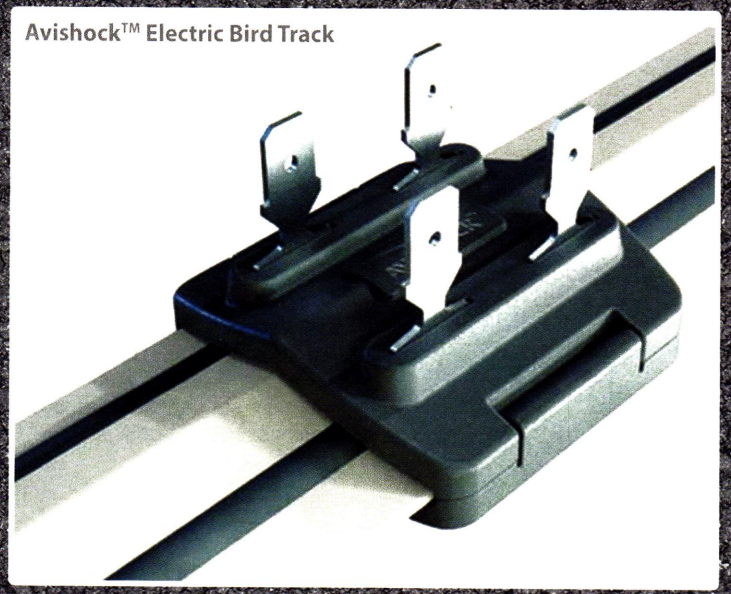

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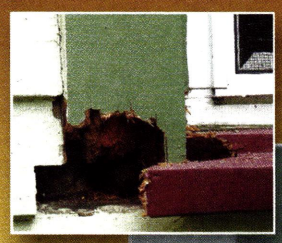
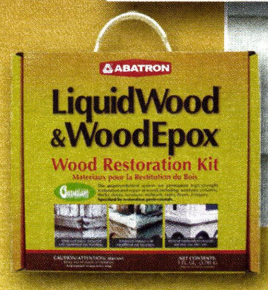
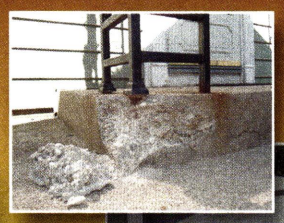


After

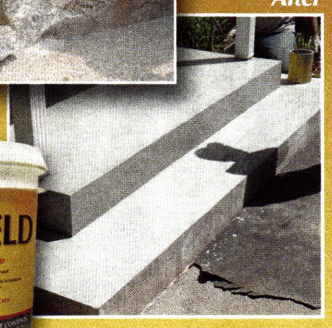


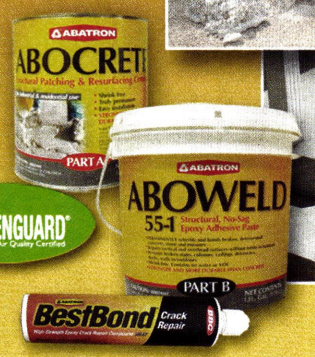
Concrete Repair

Before



After





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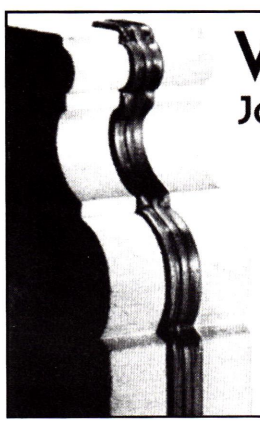

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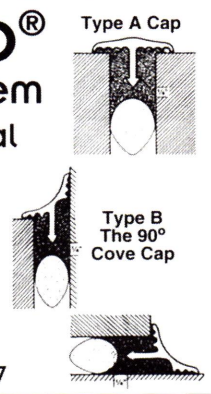

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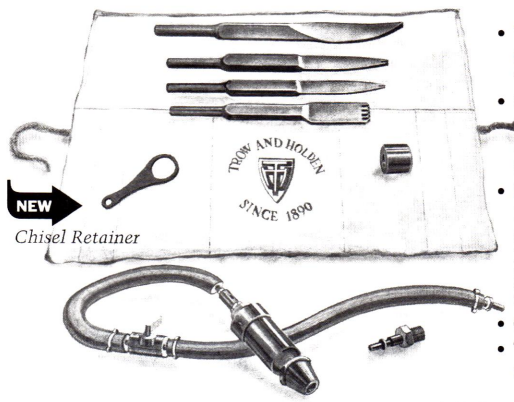

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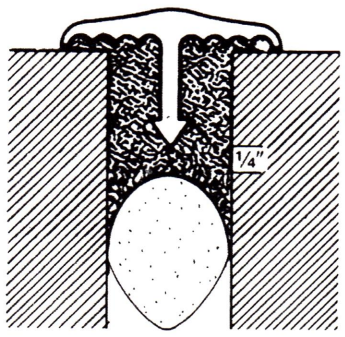

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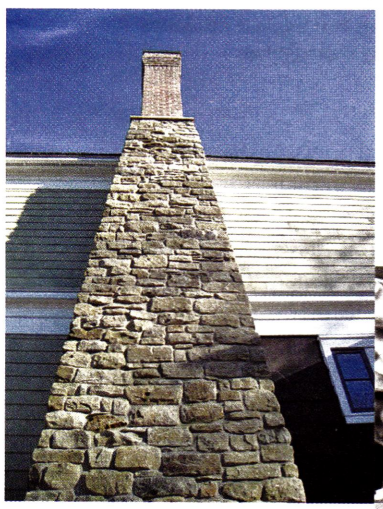

Reclaimed stone from a historic reservoir was paired with antique Purington Street pavers from **Gavin** for this chimney in Iowa City, IA.

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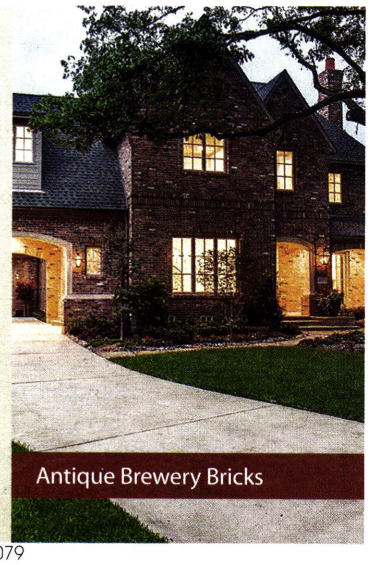

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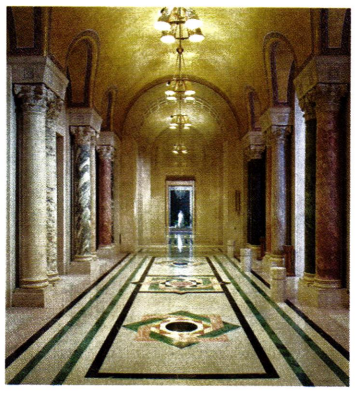

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Reviewed by Clem Labine

The Placemaking Handbook

Street Design: The Secret to Great Cities and Towns

By Victor Dover and John Massengale; Foreword by HRH The Prince of Wales; Afterword by James Howard Kunstler

John Wiley & Sons, Hoboken, NJ • 448 pp; hardcover; more than 500 b&w and full-color images; $90 • ISBN: 978-1-118-06670-6

About the only criticism I have of this extremely useful volume from John Massengale and Victor Dover is the main title. To me, "Street Design" sounds more like a volume intended for traffic engineers – whose primary goal is rapid flow of automobiles. But rather than being a how-to manual for guiding cars swiftly through neighborhoods, the book instead laments the way our city streets have been turned into "traffic sewers," shoving pedestrians to the sidelines.

This work is really a handbook for placemaking – a mission embraced by the subtitle: "The Secret to Great Cities and Towns." It takes as its province all outdoor space between buildings, of which roadways are only one part. Rather than according the automobile top priority, the authors assert that people should be the first consideration in urban street planning, declaring: "The future of our cities depends on putting the top priority on the happiness of citizens and the success of businesses and institutions, not just on Happy Motoring."

What Dover and Massengale deliver is not a book of theory but rather a pragmatic design handbook – derived from learning by observing – for fashioning people-friendly environments. The authors present 150 mini case histories of street schemes from North America, Europe and South America to demonstrate principles that foster a lively public realm. They show us places that achieve a virtuous balance between competing claims of pedestrians, cyclists and vehicles – and also provide vivid negative examples of streetscapes that are distinctly inhospitable to human beings.

Massengale and Dover divide the 150 street environments they analyze into four major sub-sets: Historic Streets; Street Systems & Networks; Retrofitted Streets; and New Streets. For example, in the chapter on Historic Streets, the authors devote three pages – including five illustrations – to examining Brooklyn's Eastern Parkway. Despite its unusual width (174 ft. across) and large amount of traffic (42,000 vehicles daily), clever design allows the boulevard to retain a people-friendly residential character. The six through-traffic lanes are separated from two parallel low-speed service roads by broad median strips bordered by rows of closely spaced trees. Each service road allows for two lanes of parallel parking, further insulating residential buildings from through-traffic noise.

Similar well-illustrated analyses are given for the 149 other public thoroughfares that make up the core of the volume – including some examples showing how well-intentioned designers can nonetheless create sterile, inhumane public spaces.

Prior to 1995, 10th Street in Port Royal, SC, was wide and treeless, and the lots were mainly empty. The town swapped some of the right-of-way for an alley in the back, creating a walkable, tree-lined street that made it attractive to build houses with porches facing the people-friendly thoroughfare.

Incomplete "Complete Streets"

Throughout, the authors emphasize the psychology of a street and the emotional impact it has on passersby. This would seem to put them in the same camp as advocates of the "Complete Streets" campaign – a nationwide movement that seeks to recognize the needs of both people and vehicles in transportation network design.

Despite their apparent agreement on goals, the authors assert that execution of many "Complete Street" projects rely too heavily on devices from the traffic engineer's toolbox, such as prolific signage, complex street striping, bump-outs, roundabouts, turning lanes, bus lanes, bike lanes and plastic divider poles. A profusion of technical gimmickry sends the subliminal message to people that they are trespassing on the realm of the vehicle. Or, as the authors put it, these technical solutions have as their primary purpose ". . . to move vehicles (now including bicycles) through the city, and little or no thought is given to being in the city. It is good engineering, in other words, but weak urban design and poor placemaking."

Much of what the authors criticize comes down to attitudes towards speed. For example, even though New York City has a nominal speed limit of 25 mph, on many avenues cars routinely zoom up to 50 mph – and traffic engineers implicitly plan for that. However, zones that are safe for high-speed traffic are inherently unsafe and uninviting for people.

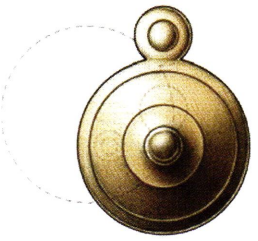
Speeds can be easily reduced by simple passive devices – such as narrowing traffic lanes, speed bumps, etc. – that force cars to go slower in pedestrian zones. Massengale and Dover also assert that a fundamental principle in design of shared space is to take away all the signs and markings that make the speeding driver feel comfortable, and which also make the pedestrian feel like an intruder in alien space.

Not only is the book well-written and artfully put together, but the photos and drawings are handled in an extremely reader-friendly manner. Rather than the usual "Fig. 2" followed by a bland label, most of the illustrations have captions that are micro-essays encapsulating the primary lessons imparted by the image. A reader can absorb the major concepts in the book in relatively short order by just reading the captions on the more than 500 illustrations.

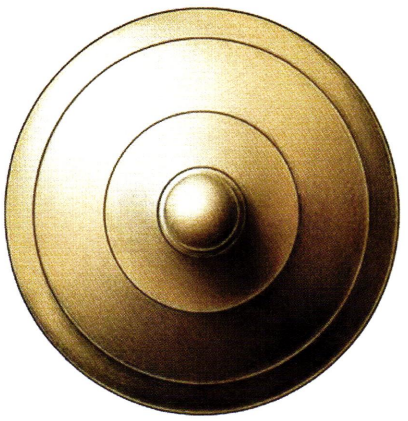
The authors give us humane New Urbanism at the granular level of widths of sidewalks and streets, heights of street walls, street furnishings, parking arrangements, street trees, et al. This book should be mandatory reading for anyone entrusted with the design of outdoor public space.

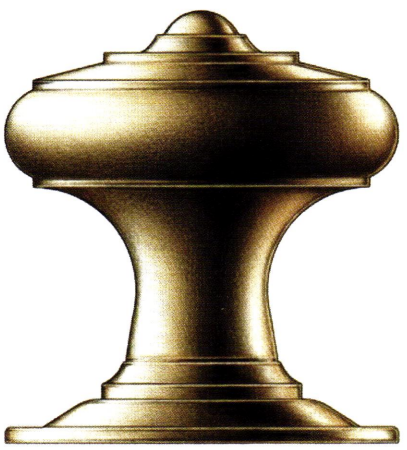
Thumb Turn & Rose

Cylinder Ring with Swinging Cover

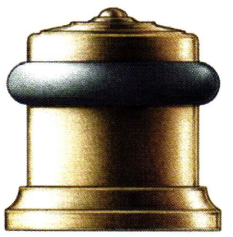


Emergency Trim Ring with Swinging Cover





Shutter Knob



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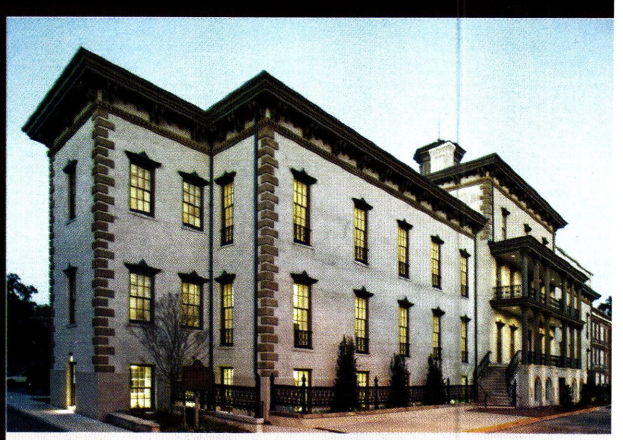
Candler Hospital circa 1872

Old Candler Hospital before restoration



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