

# The Monroe Building: Gateway to the Loop

## 2010 Entrance Restoration and Cast Iron Fanlight Replication

**I**n the late 19th century, Chicago changed America and the world through its architecture. It was in this period that the Chicago School was born. Riveted steel skeletons for structural integrity, driven to bed rock, were encased by curtain walls of terracotta and glass. This Chicago innovation was the predecessor to the 20th century skyscraper. It literally moved Chicago and the world up and into urbanism.

### The architects: Holabird & Root

It all started in 1864 in Liverpool England. The five story Oriel Chambers was being built by Liverpool architect Peter Ellis. It was the world's first metal frame, curtain wall structure.

John Wellborn Root was a student in Liverpool during the Oriel Chambers construction.

In 1873, back in the States, he and Daniel Burnham formed a partnership that captured that experience and imagination. While Root would die in 1891, at age forty-one from pneumonia, Burnham & Root would leave a legacy of beauty and inspiration with the Rookery, Monadnock, and the Reliance.

Of Chicago's early celebrated structures, the Monroe



*The Monroe building is one of Chicago's most recognized buildings. It was completed in 1912.  
Note the original cast iron fanlight.*

Building, on the corner of Michigan and Monroe, was a standout with its gabled roof. Along with its gabled neighbor across the street, the University Club, the two formed the Gateway to the Loop.



The original architects for the Monroe Building were Holabird & Roche. The architects for the 2010 restoration were Holabird & Root, a successor firm founded in 1927 by John Holabird, the founder's son, and his friend John W. Root, Jr., the son of John Wellborn Root of Burnham & Root.

## The contractor: Bulley & Andrews

A family owned construction company for over 120 years, Bulley and Andrews takes great pride in preserving and restoring historical treasures. They combine their years of experience with research and continuing education to tackle each historic restoration with thorough understanding and attention to detail. They pull together the resources which best partner toward their vision.

## The prime contractor: MTH Industries and Illinois Bronze Works

One such partner, with a similar approach to historical restoration, is MTH Industries and Illinois Bronze. The owner of Illinois Bronze, founded in 1923, was Tony Nutini. The prime contractor for the 2010 Monroe Building metals restoration was MTH Industries, a respected Chicago Company which, since its founding in 1886, has gained a world-wide reputation. Today, Illinois Bronze Works is a division of MTH Industries and is headed by Tony's son Lou Nutini.

As an aside, MTH constructed the British artist Anish Kapoor's famed Cloud Gate. An artistic focal point of Millennium Park in Chicago, this 110-ton stainless steel sculpture is polished to a mirror finish and is a world class piece of art and artisanship.

One of the restoration tasks of 2010 in the Monroe Building was to recreate the original cast iron entrances as well as to replicate the non extant ornate fanlights.

The Department of the Interior's Standards for the Treatment of Historic Properties, 1995, states:

*"Distinctive materials, features, finishes, and construction techniques or examples of craftsmanship that characterizes a property will be preserved."*

This directive underscores that architecture is a physical record of its time, place and use, all of which is to be respected in its preservation.



*This entry was constructed as part of a 1956 renovation by Illinois Bronze Works.*

Chicago at the turn of the 20th century was a city of master craftsmen.

## Metals subcontractor: Deggingers' Foundry with Promark Management, Topeka, Kansas

While noise, heat, sweat, and dirt are still the lubricants of hand craft, technology has become a welcomed partner. Yesterday's practice of hand-scribed architectural vellums and shop drawings

has been replaced by computer generated drawings and three dimensional models. Green sand foundry molds are replaced with fine-grained silica no-bake sand. Plans can be updated and exchanged immediately on the Internet. But in the foundry business, not much else has changed.

Partnering with Lou Nutini, Tim Degginger, third generation owner of Deggingers' Foundry, and Janet Zoble, designer and owner of Promark

Management, undertook the task of recreating the two magnificent sets of 1912 cast iron exterior and interior vestibule entrances as well as miscellaneous indoor metal trims.

The task required a carefully engineered steel inner structure which would be clad with cast iron, authentic in detail. Ultimately, over three tons of steel, clad with six tons of cast iron were successfully integrated with the original Rookwood Tile surrounds.

## The process

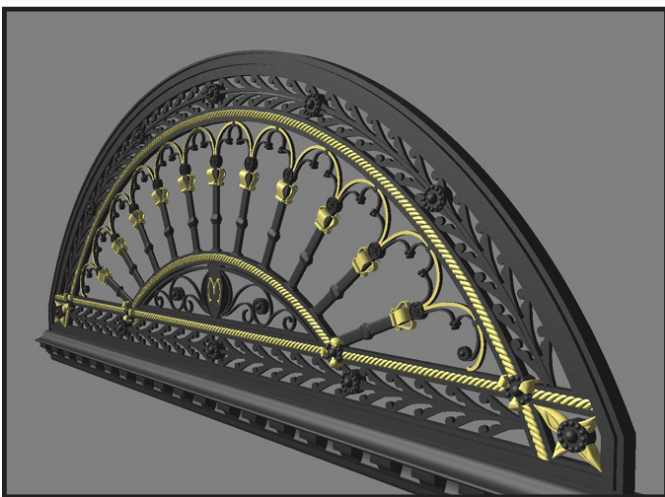
**T**he person calling the shots on the foundry floor was a woman. Janet Zoble, President of Promark Management and a graduate of the College of Design, Architecture and Art at the University of Cincinnati.

As everyone who reads this article knows, construction always takes a life of its own. Janet's primary goal in leading this project was to focus on clarity and resolution. Janet's advantage is that she creates the computer shop drawings and 3D renderings. She then sculpts the decorative elements, so she knows each part intimately.

Janet partnered with Lou Nutini, MTH's man on the ground, to insure that every design and engineering innovation both improved and added simplicity to the final construction as well as the installation process. Janet and Lou complemented other in their attention to detail.

## First step: shop drawings and 3-D modeling

Using a combination of new and archived architectural drawings, field measures and early photography of the original fanlight, a methodology was created whereby individual component parts could be cast in iron and affixed via pinning and brazing to a stainless steel frame. A 3D image was created for approval, based on the general interpretation of parts and proportions, well before pattern work commenced.



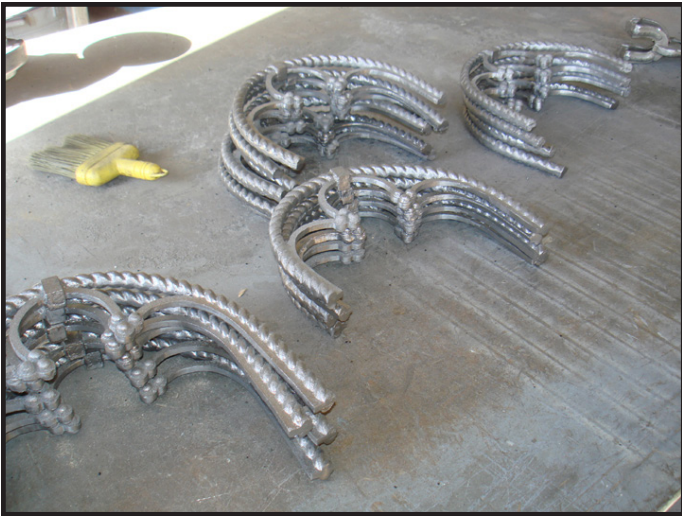
techniques for casting in Gray Iron 30. Each casting was hand finished in preparation for fitting.

## Second step: patterns and samples

Nearly forty individual patterns were created using traditional wood crafting and clay modeling







### Third step: precise cut and rolled steel

Pre-cut and rolled steel component parts were welded for the inner structure of two exterior and two interior vestibule entrances.



### Fourth step: molding and casting parts

The foundry floor was covered in molds for months. Many parts required a double pour as pictured to the right. Deggers' Foundry has a 300 pound capacity per heat and over 12,000 pounds of iron would be poured.



### Fifth step: steel assembly and fitting of cladding

After each individual fanlight casting was chased out and primed, the task of fitting together the puzzle of parts began. The steel frame provided the symmetry for attachment and a particular sequence of fitting allowed for non-exposed pinning. The final assembly would have the desired solid strength. The fanlight was aligned and pre-drilled and tapped for simple attachment to the steel during field installation.





## Sixth step: disassembly, painting and packing

Weld, fit, assemble, drill and tap, miter corners, fine tune and finesse, and then undo everything. All of the inner steel was primed inside and out. All parts were disassembled and re-primed, painted and partially re-assembled for final installation. The paint was a Tnemec polyurethane three part system.





## Installation and the final product

Though it would be installed in sections, each exterior entrance was designed so that it had the integrity of a free-standing structure. MTH pinned the steel frame to new reinforcement steel beneath the concrete floor and pinned back to structural I-beams on each side. Cast iron cladding assemblies were attached primarily with concealed but in part with exposed fasteners. Again, the sequence of installation was the key. Once everything was in place, one final coat of paint was applied by the MTH team.



## An observation

**I**n the 1960s and 1970s, American universities, with so much education to sell, advertised that every American should be a doctor, a lawyer or get an MBA and head to Wall Street. Union labor and manufacturing felt a crushing blow as more and more industry was moved off shore. Fewer and fewer fine craftsmen were being apprenticed.

Since the 1980s, the foundry industry has shrunk by nearly five thousand American foundries. Today, only a handful can craft old-world quality ornamental metals.

America needs to bring back home the manufacturing that grew a strong middle class and created the most talented and productive work force in history. Instead, given today's state of the union, with impotent politicians, confused bankers, and a growing anti-labor sentiment, we are on a quest for manufacturing's last pall bearer.

Only when people work hard and work together, can we do better, and leave something enduring and worthwhile for posterity.

Submitted by Timothy Degginger  
Deggingers' Foundry  
July 4, 2012