



# Building & Architecture News

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## Ave Maria University – A Vision in Copper

The first Catholic university established in 40 years is being built, and roofed, with long-term sustainability in mind.



Ave Maria University, Naples, Florida

Personal commitment to an idea is a rare commodity in business, where corporate interests, market forces and the need for profit often undermine the loftiest of goals.

So when Thomas S. Monaghan purchased 270 tons of copper sheet metal to roof his dream project—creating a Catholic university in southwest Florida—he had to do some serious soul-searching when the value of the copper more than doubled within two years.

Monaghan, the founder of Domino's Pizza and former owner of the 1984 World Series champion Detroit Tigers baseball team, is without question a successful and savvy businessman. By cashing in the copper, he stood to gain a quick \$1 million or more in profit, but it would require a major revision of his campus architectural plans.

For a man of big ideas and well-defined goals, like Monaghan, the choice was easy.

"We weren't looking to make a profit," he stated in a recent interview, gesturing around him at the gleaming new campus and copper rooftops of Ave Maria University near Naples, Florida. "Our goal was sustainable buildings—

not 20 year buildings, but 50 to 100 year buildings. If anything were to happen to me, I didn't want my successor to water down the building process. The whole theme is copper roofs."

All of the campus buildings have, or will have when completed, standing seam copper hip roofs with broad copper eaves, reminiscent of the Prairie Style homes designed by master architect Frank Lloyd Wright. Monaghan's vision for the Ave Maria campus stems, in part, from his longstanding admiration of Wright, who favored copper and copper roofs for many of his projects. An avid architecture buff, Monaghan's own copper-roofed home in Ann Arbor, Michigan, to which he commutes when he's not working as Chancellor in his office at Ave Maria, also was designed to evoke Wright's iconic Prairie Style homes.

Larry Peters, the regional manager supporting architectural programs for the Copper Development Association, consulted on the

university's use of copper early in Ave Maria's planning stages. "This is the most extensive use of copper I've seen in the past 10 years, certainly in the Southeast," he says. "These people understand that they're building for the future, and that's why they chose copper. They know they've made a smart investment."

Despite the potential windfall the university could plan to gain by selling off its copper, Monaghan says they will stick to the original plan of roofing all the campus buildings with the metal.

"It's a good long-term investment from an economic standpoint," he says. "I don't consider it a luxury because copper lasts so much longer than tile or anything else. Nothing is more beautiful. Eighty to 90 percent of a structure's appearance is the roof. We didn't have to put more money into the design of the buildings because it wasn't as important." **HP**



The Seagram Building in New York City.

## Landmark Seagram Building Celebrates 50 Years

One of New York City's biggest celebrities—38 stories tall and a city block wide—is celebrating its 50th anniversary.

The Seagram Building, looking every bit as elegant as the day it opened in 1958, remains the embodiment of its architect's famous observation that "less is more." Also known for its supporting roles in major movies and television shows over the last half-century, this svelte, bronze beauty ranks at the top of Manhattan's architectural Pantheon along with the Empire State Building, Flatiron Building and Chrysler Building.

Designed by German architect Ludwig Mies van der Rohe in collaboration with Pritzker Architecture Prize Laureate Philip Johnson, the structure's sleek design and classic, understated elegance brought a European influence to the United States and forever changed the landscape of architecture.

At the time it was built, the Seagram Building was the world's most costly skyscraper due to its use of expensive materials and lavish interior decorations, which included bronze, travertine, and marble throughout. It cost \$36 million to build and used 3.2 million pounds of bronze in its construction.

"The Seagram Building was the first modern building in a major metropolitan city to have a bronze curtain-wall," Frank Farella, the building's property manager, said during an interview recently. "Many architects have tried to duplicate it, but no building can compare to it."

(For details on the Seagram curtain wall, visit the Architectural Design Handbook of the Copper Development Association at: [www.copper.org/applications/architecture/arch\\_dhb/wall\\_cladding/curtainwall.html](http://www.copper.org/applications/architecture/arch_dhb/wall_cladding/curtainwall.html).)

Recognized as one of the purest manifestations of the International Style of architecture, the office tower's façade consists of alternating bands of bronze plating and amber-tinted glass windows, which are separated by bronze-toned I-beams running vertically like mullions to the building's apex. Crowned "Building of the Millennium" by *The New York Times*, it was the first bronze-clad skyscraper—and perhaps the last of its kind.

"You look at any modern skyscraper today and you won't find bronze extruding from the façade," Farella says. "There isn't a manufacturing plant big enough to produce all that copper, and it would cost billions of dollars to build."

Formal landmark status was bestowed on the Seagram Building in 2006 when it was added to the National Register of Historic Places. The building has won numerous architectural awards, including the coveted BOMA/NY Pinnacle Award, the real estate industry's highest honor.

"After all these years, the Seagram Building remains one of the classic architectural icons of our time," says architect Wayne Seale, western regional manager for the Copper Development Association. "The bronze exterior has aged beautifully—you wouldn't know it was built a half-century ago. We should all look so good when we're 50."

Besides its architectural contributions to history, the Seagram Building has been featured on the big screen, making cameos in movies like *Breakfast at Tiffany's*, *The Best of Everything* and *Birth*.

"I get at least two or three phone calls a week from location scouts," Farella says. "This building is constantly being earmarked for movies. I'm not just the building manager – I'm also the location scout coordinator!" **HP**

## "Solderless Plumbing" Offers Green, Timesaving Advantages

Plumbing has seen significant changes in methods, codes and materials since it moved indoors in the 1920s. Despite this, copper tube continues to be the most common piping material found in both residential and commercial plumbing, and the standard against which all other types of piping are judged.

Pipe connections, in particular, continue to evolve. In today's green building environment, these innovations – some old, some new – will increasingly compete with the familiar, time-honored trade practice of heat-soldering copper tube connections (for more on copper fabrication and installation, visit [www.copper.org](http://www.copper.org)). New solderless or "cold" joining products are the latest improvement in this area.

Although soldering is easy to do, it requires a gas-fired torch, and it's not as quick – or as environmentally acceptable – as today's newest cold

joining methods. With these fittings, no heat, solder or chemical flux are required to produce dependable, watertight joints.

The two principal types of solderless fittings for copper tube are press-connect and push-connect. Depending on the type, these connections are permanent or may be disassembled for refitting or adjustment. The press-connect method is generally permanent and requires a special tool to bond the fitting to the pipe. Push-on fittings simply require an installer to manually push or twist the fitting onto the tube. Both types employ gaskets to create a watertight seal.

Solderless copper fittings have been used in Europe for years and are gaining in popularity here. The key advantages are fast assembly and less skill required than soldering. They also can be used where using heat is difficult or dangerous, joints can be made with water in the tube,

and connections can be tested immediately after fabrication.

The growing adoption of cold fittings is already having an impact. In recent years, cold-joined plastic tubing offered a cheap, easy-to-assemble alternative to soldered copper systems. Today, solderless fittings for copper tube offer the same ease of installation, and they offer joint strengths that meet or exceed those of their plastic counterparts. Meanwhile, petroleum-based plastic products are currently experiencing their own price increase.

In terms of green building, plastic piping is rarely recycled. Because it contains little or no recycled content, it is less attractive to builders seeking to use sustainable materials. Copper tube and fittings are typically recycled—over and over again—to the same purity as their original content. Most copper tube and fittings contain up to

95 percent post-consumer recycled content.

Critics also argue that there is insufficient regulation of plastic piping materials, and studies indicate that chemicals used to manufacture plastic can leach into potable water, posing a health risk. Unlike copper tube, which has a time-tested record of dependability, the long-term safety and durability of plastic pipe and fittings are still to be determined.

Material choices aside, cold joining systems have proved their value and are here to stay. As installers become accustomed to them, and prices fall as use increases and additional products become available, more labor-intensive or less environment-friendly joining methods will inevitably decline—and may disappear. With the rapid pace of change, the question is no longer whether this will happen, but when. **HP**

## For Home Fire Protection – Copper, Steel or Plastic?

New Building Codes to Require Fire Sprinkler Systems in Homes

All newly constructed one- and two-family homes will soon have to include automatic fire sprinkler systems, according to a recent ruling by the International Code Council, which develops model building codes and standards in the U.S.

The "burning" question for builders and buyers of those homes, beginning in January 2011, is whether they would rather be protected by plastic, steel or copper—the three principal piping materials used in today's sprinkler systems. All are approved for use in both commercial and residential structures.

Threaded steel pipe was for many years preferred for sprinkler systems in commercial facilities. Steel pipe is inexpensive and easy to

install in open, accessible areas, and where its bulky, rough-looking appearance is not objectionable to occupants.

But appearance matters to homeowners, and rigid steel pipe is hard to work with in confined spaces and especially difficult to accommodate in design-conscious residential interiors. Another drawback is that in "wet" (water-filled) fire sprinkler systems, rusted or discolored discharge water from steel pipe can multiply the damage caused by fire.

When copper tubing was introduced around 1930, it captured a major share of the fire sprinkler market. Unlike steel, lightweight copper tubing can be formed to match difficult structures such as archways, is easily and quickly cut

to length, and copper joints don't require labor-intensive threading. Instead, soldered or brazed joints can be made on the spot using equally lightweight copper fittings. Copper tube also offers a slimmer profile, which is easier to hide and install, and discharge water from copper systems is typically free of rust or sediment.

Copper-tube fire sprinklers are frequently specified to protect irreplaceable buildings and collections. This includes the Library of Congress, Pennsylvania's State Capitol, Independence Hall in Philadelphia and other structures where aesthetics of the exposed system and potential water damage to priceless interiors and documents are prime concerns.

While copper systems may have a higher initial materials cost, this is offset by the significant advantages copper offers, including lower maintenance and long-term performance. In addition, copper's high recycled content and limitless recyclability support green construction practices.

In recent years, two types of plastic pipe and fittings have been approved for fire sprinkler systems: rigid CPVC and flexible PEX. Their

advantages are ease of installation (CPVC joints are glued together; PEX uses compression fittings), and relatively lower materials cost. Because many home buyers face budget constraints, the ICC ruling mandating residential sprinklers would seem to favor plastic systems.

However, homeowners may be concerned about entrusting their families' safety to all-plastic fire suppression systems that are inherently vulnerable to fire. Unlike steel and copper tubing, which easily withstand extreme temperatures, plastic quickly loses strength when exposed to even moderate heat. In a fire, plastic can melt, and many plastics release toxic fumes when exposed to flame. Plastic pipe also has far lower pressure ratings, flow rates and burst strength compared to the same size copper tube.

Although it is far from certain that the regulation requiring fire sprinkler systems in homes will ever actually go into effect—opponents like the National Association of Home Builders and homeowner groups have two years to contest the ruling—proponents argue that sprinkler systems save lives and are worth any additional cost. **HP**

## Copper Industry Honors Recipients of Architecture Awards Program

Top three historic renovation and new construction projects are recognized for innovative use of copper.

The Copper Development Association (CDA), in collaboration with the Canadian Copper & Brass Development Association (CCBDA), has announced the recipients of the North American Copper in Architecture Awards program.

Projects were selected from two categories: Historic Restoration and New Construction. The awardees for Historic Restoration include:

- **The Plaza Hotel, New York, NY**  
James R. Gainfort Consulting Architects  
Nicholson & Galloway, Eagle one Roofing
- **La basilique Notre-Dame de Montreal, Montréal, Québec,**  
Canada Architects Faucher Aubertin Brodeur Gauthier  
Les couvertures St- Léonard, Inc. (contractor)
- **Library of Parliament, Ottawa, Ontario Canada**  
Ogilvie & Hogg  
Les Architectes Desnoyers Mercure & Associés

Spencer R. Higgins, Architect Incorporated  
Heather & Little Limited  
The awardees for New Construction include:

- **Stuckeman Family Building, Penn State University, The School of Architecture & Landscape Architecture, Penn State University, University Park, PA**  
WTW Architects  
Overland Partners Architects
- **Canadian War Museum, Ottawa, Ontario, Canada**  
Moriyama & Teshima Architects  
Griffith Rankin Cook Architects  
Flynn Canada, Ltd.
- **Inverted Guest House, Lake George, NY**  
Peter L. Gluck & Partners

The projects were judged by members of CDA's and CCBDA's Building Construction Architectural Team, which includes architectural and copper industry experts. Nearly 50 projects were recommended and approved.

Projects identified for consideration in the North American Copper in Architecture Awards program included universities, houses of worship, government buildings, museums and residential complexes. The program is intended to increase public awareness and promote excellence in architectural copper design for buildings constructed throughout the United States

and Canada during the past five years.

The architects, and in some cases the contractors, received replicas of their project on a copper plaque. All of the projects, including photos, are currently featured on CDA's newly designed Web site, [www.copper.org](http://www.copper.org), or directly at [www.copper.org/applications/architecture/awards](http://www.copper.org/applications/architecture/awards). **HP**



Bethel Woods Center for the Arts, Bethel, New York