



Piatt Place, Pittsburgh, PA

Cold-formed steel structural framing used to add three stories to an existing 4-story building, creating mixed-use office space and condominiums

A model in green evolution—with sustainable cold-formed steel used for efficient infill construction

Project was feasible only because of the light weight and strength of CFS framing



There may be no better venue for demonstrating the capabilities of Cold-Formed Steel, or CFS, than at the heart of America's Steel City. Piatt Place is a seven-story mixed-use structure in downtown Pittsburgh that combines 50,000 square feet of retail space, 180,000 square feet of office space and 65 condominiums.

Described as an urban oasis, Piatt Place is also an example of the varied capabilities of cold-formed steel particularly in load-bearing applications that involve renovations and expansions on existing structures.

Owned by Millcraft Industries, Inc., this project has been a major force in Pittsburgh's revitalization, and has helped put downtown Pittsburgh on the map as an ideal location for urban living. Originally Piatt Place was the site of a former four-story department store with three stories of underground parking. The general contractor wanted to build up from the roof by adding three new stories on top of the existing building where upscale living spaces would offer spectacular views of the city. Taking a traditional approach was not an option given the renovation and expansion plans of this project. In light of the increased focus on sustainability, the expansion was done using cold-formed steel in primary load-bearing applications.

It is well known that CFS dominates the market for curtain walls and partitions in commercial construction due to its light weight, high strength, non-combustible nature and ease of installation. In the past few years, the building community also has realized that these and other benefits make CFS an excellent and cost-competitive choice for structural applications on buildings as high as seven to nine stories.

CFS Use At Piatt Place

One of the key challenges of this ambitious renovation and expansion project was to add three additional stories for residential use to the existing



structure. The project had to be completed at minimal cost with little disruption to the existing structure. Because the site is surrounded by existing workings of a major downtown landscape, construction had to be done within a tight footprint without enlarging the footings, which would have increased costs, lengthened the schedule, and disrupted the operations of the existing building to the point of making the project unfeasible. Alternative framing methods using structural steel and/or concrete would have proven too heavy.



With attributes of high strength-to-weight ratio, CFS was the natural choice. Long-term durability and flexibility in design afforded the owners the opportunity to produce these high-end condominiums at prices acceptable to the market, and to offer a first-class addition to urban life in Pittsburgh.



According to Chad Wheatley, Director of Construction for Millcraft Industries, “The duration to install the three-story structure atop the new steel platform was 4.5 months. Cycle time savings was realized in the exterior envelope also being substantially completed during this same time-frame as the CFS framing system was panelized off-site. This off-site panelization by Wyatt Incorporated of Pittsburgh included the attachment of exterior board and water barrier and allowed the building to be substantially ‘dried in’ upon completion of the \$2.7 million cold-formed steel frame installation.”

To accomplish the expansion work on the roof, Millcraft tapped the expertise of Turner Construction Company as the general contractor of the development. The Structural Engineer of Record was Atlantic Engineering Services in Pittsburgh, with specialty engineering for the cold-formed steel portion completed by Shaffer, Wilson, Sarver & Gray, P.C, of Reston, Va.

Piatt Place is located on Fifth Avenue in Downtown Pittsburgh

The additional CFS stories were constructed over a structural steel frame fabricated by Engineered Products, Inc. with a composite metal deck to create a platform over the existing roof. This platform supports three stories of residential condominiums built around a central courtyard.

The use of cold-formed steel to serve as the primary axial load-bearing and lateral load-resisting systems was key to the success of the project. According to Ted Welti, P.E., division manager of cold-formed steel for SWSG, PC, “The use of cold-formed steel, a lightweight material, allowed us to minimize the additional weight on the foundation and footing so the existing structural framing could be used and upgraded to meet building code requirements for the extra loads with minimal additional costs, making the project economically feasible.”

Architectural requirements to make this an outstanding project required open floor layouts with continuous glass exterior walls to open the condo units to the exterior views of the city. As a result, no significant lengths of





solid walls were available in the exterior walls for conventional diaphragm or x-braced shear walls. To overcome this framing challenge, the cold-formed steel joists and decks of the floors and roof were designed to act as a diaphragm to transfer the lateral loads from the corners and exterior walls of the building to an inner core of beefed-up and overlapped patented x-braced shear walls supplied by The Steel Network out of Raleigh, NC. The floor and roof members were 14-inch deep, 30-foot-long Joist Rite open-web joists provided by Marino\Ware Steel Framing Products and Accessories.

The wide expanses of exterior glass walls, made possible and economical by the innovative use of cold-formed steel framing, greatly enhanced the building's aesthetic appeal. The final renovated and redesigned structure is an outstanding example of urban living space contained in a building that boasts many attractive amenities amid a revitalized downtown.

Further information and project participants

For further information on Cold Formed Steel use in buildings, visit the **Steel Framing Alliance** web site at www.steelframing.org or call the Steel Framing Hotline at (800) 79-Steel.

Further Information And Project Participants

- Project Owner, Millcraft Industries, Inc, 95 West Beau Street, Suite 600, Washington, PA 15301. Ph: (724) 229-8800
- Project Architect, Strada LLC, The Ewart Building, 925 Liberty Avenue, Pittsburgh, PA 15222, Ph: (412) 263-3800
- Project Engineer of Record, Atlantic Engineering Services (Pennsylvania Office), 650 Smithfield Street, Suite 1200, Pittsburgh, PA 15222, Ph: (412) 338-9000
- Specialty engineering for the cold-formed steel portion Shaffer, Wilson, Sarver & Gray, P.C. 1821 Michael Faraday Drive, Suite 302, Reston, VA 20190, Ph: (703) 471-6803
- General Contractor, Turner Construction company, Two PNC Plaza, 620 Liberty Avenue, 27th floor, Pittsburgh, PA 15222, Phone: (412) 255-5400
- Steel framing manufacturer/installer, Wyatt Incorporated of Pittsburgh, 4545 Campbells Run Road, Pittsburgh, PA 15205, Ph: (412) 787-5800

