

# A HAT TRICK AT LITTLE CAESARS ARENA

*SELLINGER ASSOCIATES DESIGNS  
PLUMBING AND FIRE PROTECTION  
SYSTEMS AND PROVIDES  
MECHANICAL DESIGN SERVICES  
FOR SHOWCASE DETROIT  
DEVELOPMENT*

PHOTOS COURTESY OF SELLINGER  
ASSOCIATES, INC. AND OLYMPIA  
DEVELOPMENT OF MICHIGAN



▲ A view from the southwest of the emerging Little Caesars Arena being built by Barton Malow-Hunt-White. Photo Courtesy of Olympia Development of Michigan.





▲ **The Event Level has 12-inch chilled water supply and return, six-inch heating hot water supply and return and food service heat recovery supply and return. Photo courtesy of Sellinger Associates**

The Red Wings' flag flies proudly from the jib of a mighty Manitowoc crane in a recent progress video of the construction of Little Caesars Arena in Detroit. With the aid of this red goliath of a crane, the steel roof trusses are being set in place for this world-class, 20,000-seat arena. By opening day in fall 2017, steel will meet glass in the form of a soaring glass-covered concourse filled with restaurants, shops and food vendors. Welcome to Detroit re-imagined and revitalized.

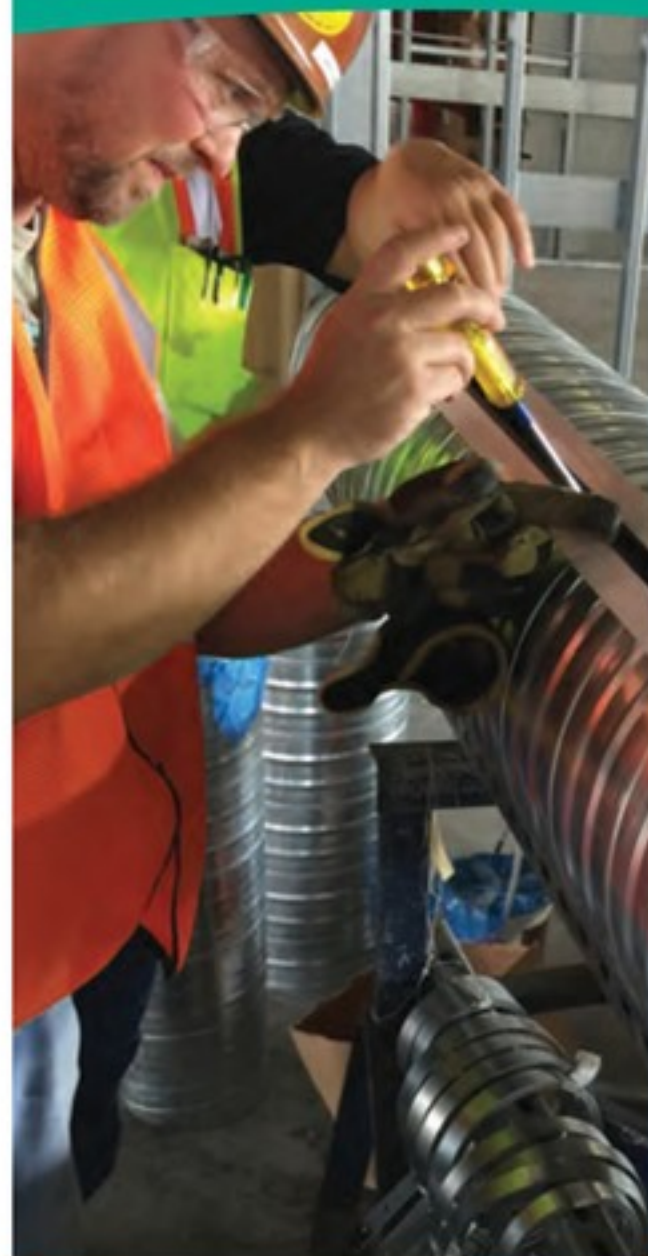
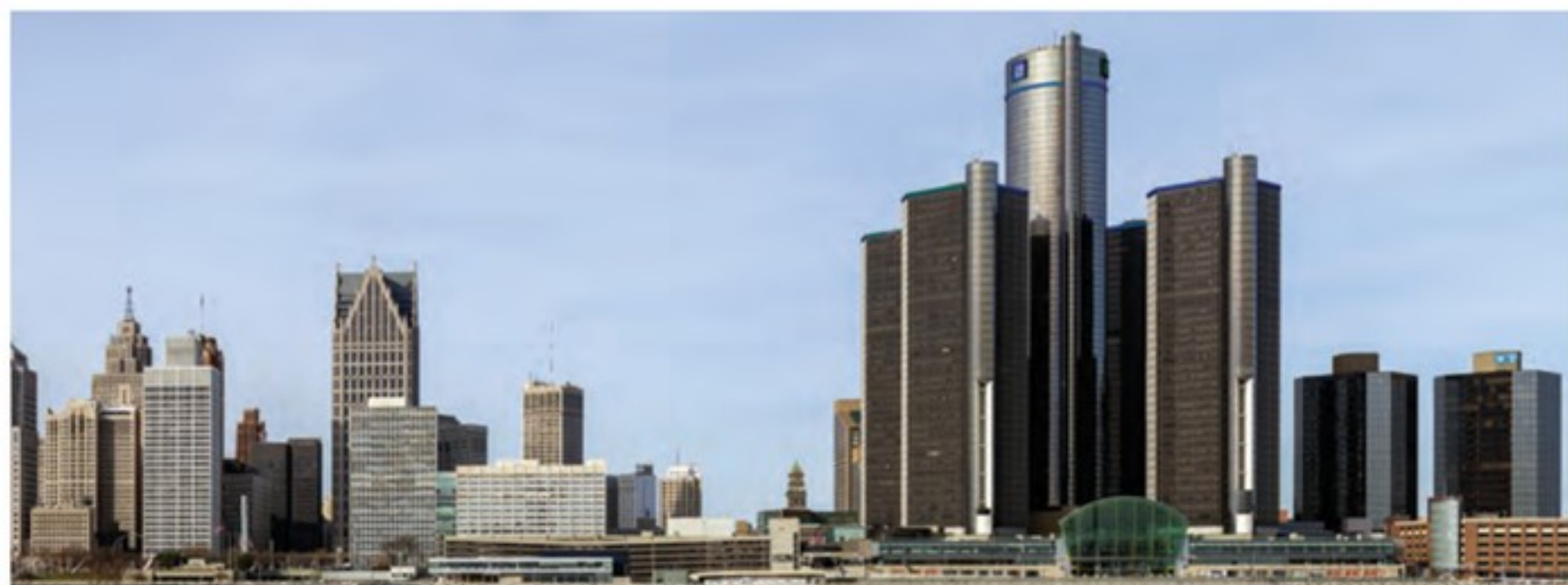
The arena's concrete bowl and steel trusses are highly visible signs of this amazing transformative redevelopment along Woodward Avenue just north of the historic Fox Theatre. Less visible is the often unsung and ultimately unseen mechanical, plumbing and fire protection systems that will service the new arena's operation. For what is a hockey arena without ice? As only part of its contract, Sellinger Associates, Inc. (SAI), a Michigan-based mechanical engineering consulting firm, coordinated with an ice-making consultant to provide heated and softened water for ice-making and for the arena's Zamboni ice resurfacing machines. Condenser water was also provided for the ice-making chillers.

This project required SAI to be creative in

countless ways, as the design developed and was refined. Innovative mechanical systems were engineered to facilitate ice sheet removal when required for the arena's indoor concerts and special events. "Boiler hot water is routed to heat exchangers then retracted and used to melt the large ice slabs," said Sellinger President Michael O. Sellinger, PE.

Sub-soil drainage systems were another unique design component necessary to

address two distinct items: the "sunken bowl" of the actual ice sheet that will be 37-feet below grade, and the relatively high water table in this area of Detroit. "Drain tiles were located throughout and below the slab," said SAI Lead Engineer Naum Popovski. "Any water is collected in four duplex, sub-soil sump pumps that continuously pump the water away from the area."



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**THE WINNING TEAM**

Smith Seckman Reid (SSR), the Nashville-based lead consulting engineer, enlisted the services of SAI to provide mechanical design services for the new home of the Detroit Red Wings. SAI is the Engineer of Record for the plumbing and fire protection

design for the new arena, working with HOK, the Kansas City, Missouri-based Architect of Record for the entire project, and other design disciplines, as well as coordinating with the utility agencies, as needed.

SAI also assisted SSR in the HVAC piping

design. "We are responsible for all of the piping design located within the space," said Sellinger. "Essentially, we are the consulting engineer responsible for designing every foot of pipe in the arena, from a 3/4-inch condensate line to the 22-inch chilled water piping."

The arena's mechanical systems - and its previously mentioned ice-making capabilities - were designed in 3D Revit MEP to better coordinate SAI's drawings with other disciplines, including structural, electrical, civil and architectural. "It was essential that strict coordination was exercised in the ceiling spaces above the suites, including routing of piping through beams," said Sellinger.

The use of 3D Revit MEP aided the project immeasurably. "The main advantage was being able to visualize the complex architecture in 3D," said Sellinger. "We could overlay the steel structure, the large sheet metal ductwork, the electrical raceways and determine the best path for our piping. It also allows our engineers to pass on these drawings to the mechanical contractor for his shop drawing production."

MSL Mechanical and Limbach Company have formed a joint venture to complete the mechanical and plumbing systems for the project using a Design Assist delivery format. Limbach Engineering and Design Services (LEDS) and the MSL-Limbach BIM staff have been working extensively with Olympia Development of Michigan, Sellinger and SSR since last fall to finalize the mechanical design and provide coordinated multi-trade fabrication and installation drawings.

Limbach has tremendous applicable experience, having performed the Design Assist mechanical installation for NHL arenas in Boston, Columbus and Pittsburgh, in addition to several design-build municipal and private hockey arenas in metro Detroit during the past two decades. Likewise, MSL and Limbach have a long-standing partnership and are engaged in their fifth joint venture together. Owned by Tony Lopez, an experienced pipefitter, MSL Mechanical is a certified

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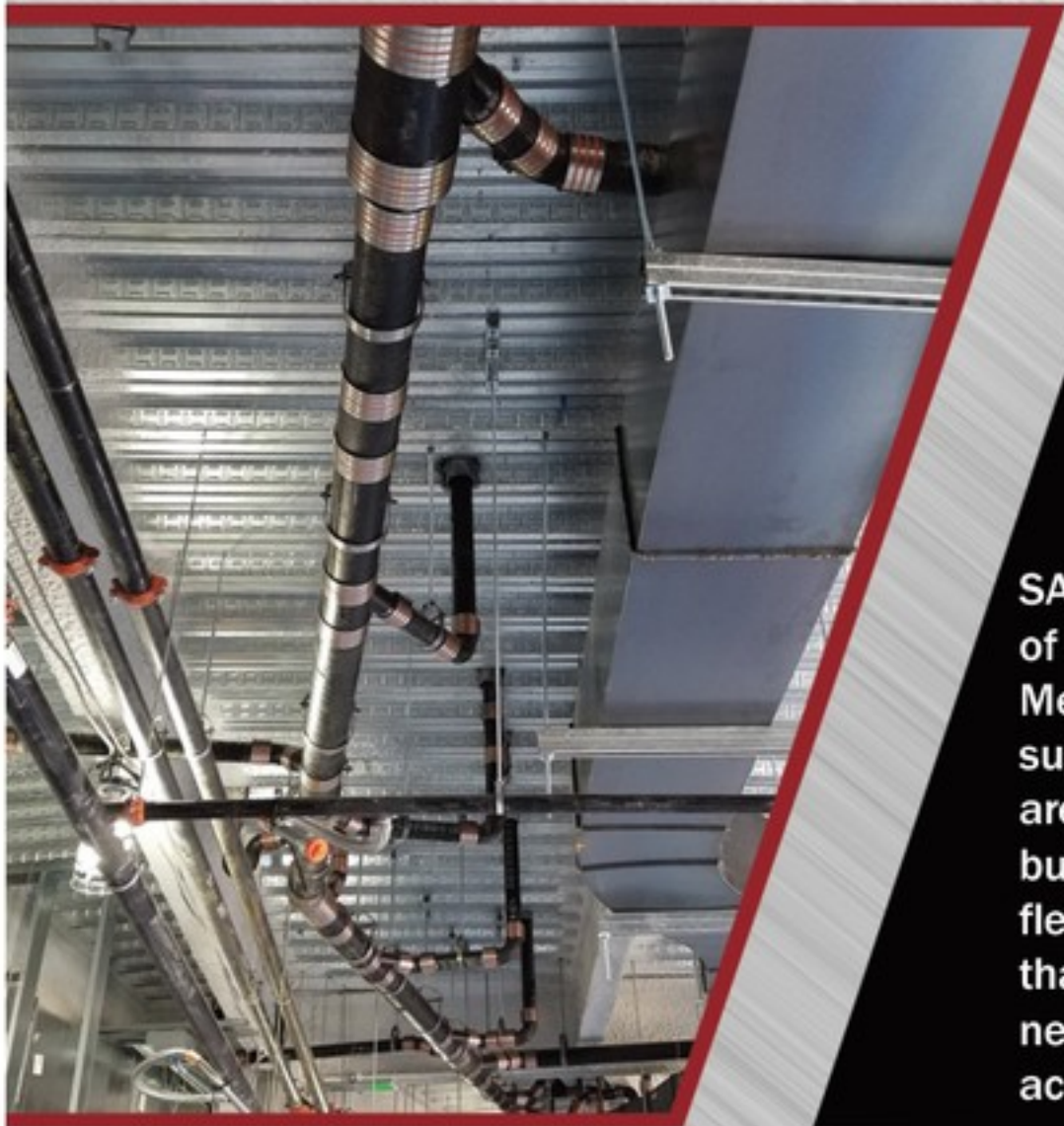




## Sellinger Associates, Inc.

Consulting Engineers

Sellinger scores a Major Assist on the New Little Caesars Arena in Detroit.



We are proud to be part of the team on this prestigious project, acting as Engineer of Record for the plumbing and fire protection design on the arena and for the mechanical and plumbing design on the adjacent multi-use buildings.

SAI provides our clients the expertise of 50+ combined years designing Mechanical systems, bringing superior design solutions that are sensitive to budget issues and building aesthetics. We offer the flexibility of working with a team that understands your unique needs, while working diligently to achieve them.

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▲ **A view looking north of this important development catalyst for Detroit. Photo Courtesy of Olympia Development of Michigan**

Detroit Based Business and headquartered in the city.

In addition to managing the high quality and energy-efficient mechanical systems installation, MSL-Limbach's role in the project is a key component to meeting Olympia Development of Michigan's and Olympia Entertainment's important schedule for completion and dropping the puck for the start of the 2017-2018 NHL season. Lean techniques are being employed by the MSL-Limbach team as part of managing the construction schedule, off-site prefabrication, sub assembly, and the installation of multi-trade hanger points downloaded from the BIM model to a Trimble field link will improve accuracy, maximize efficiency and provide a safer work environment.

The Little Caesars Arena development also involves other major building components. MSL-Limbach has brought together under their management several local mechanical trade partners who are performing different components of the Little Caesars Arena mechanical installation. This approach provides talent and resources from Detroit-based business participants and other local experts that will make significant contributions in meeting the schedule goals for Olympia Development of Michigan. The lead contractor for the entire project is Barton Malow-Hunt-White. Shambaugh & Son, LP, Detroit, is the fire protection contractor.

#### **A SUSTAINABLE ARENA**

The arena is designed to be a contemporary, sustainable development. Providing condenser water/heat rejection to food services equipment and installing heat pumps throughout the space, as well as low-flow plumbing fixtures, are part of the drive toward sustainability. Sellinger adds: "Other sustainable features include high-efficiency water heaters and heat trace of hot water recirculation systems to minimize waste of cold water. Having water-cooled food service compressors via condenser water/heat rejection eliminates the cooling load on the arena's air-conditioning system and reuses the heat to preheat boiler make-up water and provide heat in loading dock areas."

The sanitary drainage system includes four outdoor grease interceptors, designed to preclude any future indoor maintenance. "This equipment will be hidden from view by the surrounding landscaping," said Sellinger. "The engineering design also included plumbing to concessions and bar areas within the arena."

#### **WELCOME TO THE DISTRICT DETROIT**

SAI teamed with ETS Engineering, Royal Oak-based electrical engineers, to provide full engineering design for two office buildings adjacent to the arena located on Woodward Avenue and Henry Streets. These buildings are connected to the new

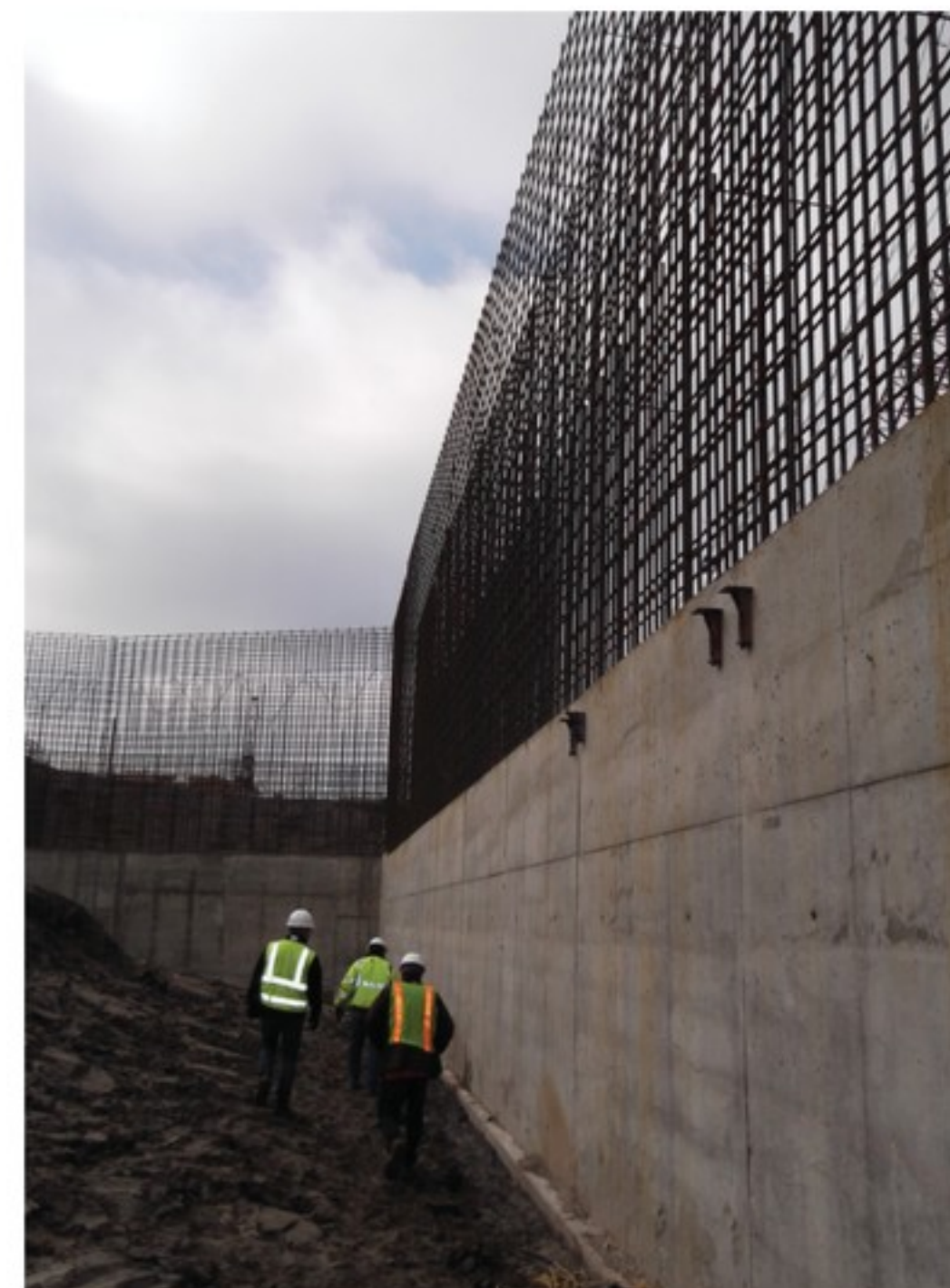
arena by a clear, light-weight ETFE roofing system that will allow for a four-season, accessible pedestrian walkway between the arena and first-floor retail offerings.

The two office buildings are also designed to be sustainable and include variable refrigerant heat pumps (VRF) and energy recovery make-up air units. Both buildings are designed to accommodate large restaurants on the first level.

As part of its services, SAI worked closely with the City of Detroit Plan Review Division to provide pragmatic design and ensure a seamless review process. "We are providing onsite construction administration services for the arena and office buildings, working until the arena opening in September 2017," said Sellinger.

A unique aspect of this complex is the outdoor piazza, which will be used for concerts and as a promenade. This area will be provided with utilities for an outdoor plaza. Little Caesar's Arena will be the heart and soul of Woodward Square, one of five new neighborhoods in a truly visionary 50-block sports and entertainment district,

▼ **The Sellinger team investigates the six-inch subsoil drainage. Photo courtesy of Sellinger Associates**





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including Cass Park Village, Columbia Street, Columbia Park and Wildcat Corner – home to Ford Field and Comerica Park.

“Being a part of this major development in the City of Detroit has been an honor and a challenge,” said Sellinger. “It has been very gratifying. We have worked with incredible people throughout the entire design process and now in the construction administration phase. It’s very exciting to see the positive impact this project is having and will have in the city and to be a contributor to it.”

Throughout this entire process Sellinger Associates has worked closely with George Johnson from SSR, Paul Leskovac from HOK, Colin John from Limbach, and Scott Leo from ETS. ☘

**ABOUT THE COMPANY**

Sellinger Associates, Inc. was established in 1996 by Michael O. Sellinger, PE. Prior to establishing Sellinger Associates, Sellinger worked as a project manager and project engineer at various consulting firms in the Metro

Detroit area. Sellinger Associates obtained certification as a member of the Michigan Minority Business Development Council in January of 1999, and is currently certified by the MMBDC. Sellinger has also been certified with the Michigan Minority Supplier Development Council for close to 20 years. The company strives to promote minority involvement in the consulting engineering profession.

The staff at Sellinger Associates, Inc. is dedicated to providing clients with the finest engineering services available. “We offer superior design solutions that are sensitive to budget issues and building aesthetics,” said Sellinger.

Sellinger Associates is experienced and well versed in LEED design criteria, having designed the first public library (Harper Woods Public Library) and the first bank (The First National Bank, Hamburg branch) in Michigan to receive LEED Silver certification. The firm also designed one of the few manufacturing facilities in the country to receive LEED Gold certification, the facility being a 65,000-square-foot building for Rayconnect in Auburn Hills. Rayconnect produces quick connect fittings for automotive vehicle engines at this sustainable manufacturing plant.

“We’ve commissioned a number of other LEED projects, to date,” said Sellinger. “We strive to continually enhance our technical knowledge and expertise in order to provide innovative, state-of-the-art, cost-effective designs. As a firm, we design to a budget, doing our own cost estimating and utilizing an excellent cost estimating data base.”

Sellinger Associate’s staff of professional engineers, designers and CAD personnel brings a wealth of experience to every project. Drawings are produced with the latest computer equipment, utilizing current software, including 3D Revit MEP and AutoCAD 2015. “Our engineers and CAD designers have the experience, knowledge and talent required to ensure a successful project,” added Sellinger.

Sellinger Associates, Inc. has designed a number of award-winning projects, including The Dime Building in Detroit, the Barton Malow Headquarters in Southfield, the Tabernacle Missionary Baptist Church in Detroit, and the Fort Pickett Regional Training Institute in Blackstone, Virginia.

*-Information courtesy of Sellinger Associates, Inc. and MSL-Limbach with editing input from CAM Magazine.*



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