

### **2023 KEYSTONE AWARDS**

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PRESIDENT & CEO Kerry Smith

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# AWARDS



General Contractor / Construction Manager /Prime Contractor



Specialty Contractor / Subcontractor



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AGCMO 2023 Specialty Contractor of the Year (SCOTY) Awards



Show Me Excellence in Craftsmanship Inaugural Award

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AGC KEYSTONE AWARDS: Skill, Responsibility and Integrity By Leonard Toenjes



PERSPECTIVE BY KERRY SMITH

### **Excellence From the Ground Up**

have the best job in the world.

Daily I have the opportunity to learn from architects, engineers, contractors and others in the built environment about what they're creating - from interstate bridge decks to mass timber sporting arenas, aquariums, boutique hotels, soccer stadiums, pharmaceutical labs, massive data centers, marijuana grow facilities, electric vehicle battery manufacturing plants and more.

Those whom I interview - generally the project managers - tell me about just-in-time logistics apps that deliver materials to a busy urban jobsite within seconds of their scheduled arrival time because there's literally no materials laydown space. They calmly recall the value reengineering their team performed a few years back when the customary material they needed carried a one-year wait time. They relay the challenges of expediting a massive warehouse-distribution

center build that included armies of concrete trucks and temps cold enough to demand windbreaks, enclosures and/ or supplementary heat. The construction experts from whom I have the privilege of learning talk through the measures they take every day on the jobsite to work up and beyond required industry safety requirements. They speak of integrating robotic machinery to perform the monotonous, repetitive tasks to save their lean human workforce's energy and expertise to bring the job to completion.

Those I learn from on projects include those honored in the pages that follow. Their teams exemplify what it means to be part of building a legacy – one that's seen or unseen that will remain an essential thread in the fabric of cities and developments for decades to come.

Welcome to Construction News and Review Magazine's very first all-Keystones and Specialty Contractor of the

Year (SCOTY) awards edition. We're proud and delighted to partner with the Associated General Contractors (AGC) of Missouri in recognizing those whose ingenuity and consistently smart, strong work ethic brought these projects to fruition. Congratulations to the Keystone Awards winners and finalists, and truly to all those who submitted nominations that told of innovative work to design, build and construct amazing projects. Congratulations as well to the firms who are recognized for their specialty work - and SCOTY win - on myriad projects throughout 2023.

From those who stand on the outside looking in and those on the listening end of the narratives you share, we're impressed more than you may ever know at what you build and how you exemplify the best definition of teamwork there is. Happy Reading!

Kerry Smith President & CEO

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AGC KEYSTONES BY LEONARD TOENJES

#### LEONARD TOENJES President

AGC of Missouri

### Skill, Responsibility and Integrity

In 1998, the Construction Keystone Awards were initiated in St. Louis by the Associated General Contractors chapter. The Construction Keystone Awards have been awarded every year since that time to recognize outstanding achievements in the construction industry.

As with many things, there have been lots of changes since 1998. The founding association that was formerly the AGC of St. Louis is now the AGC of Missouri. The size and scope of the Construction Keystone Awards has changed every year to respond to developments in the construction marketplace and the variety of sizes and types of projects completed by our member firms. The Heritage Award was introduced in 2007 to recognize significant construction projects completed prior to 1998 that have added to the quality of life in our area. The Specialty Contractor of the Year Awards were added in 2011 - for a number of various categories - to recognize these members based on the unique types of specialty work they perform.

Most recently in 2023, the Show Me Excellence in Craftsmanship Award was added to honor the men and women who perform important field work at the project sites.

In our AGC of Missouri office in St. Louis, a Construction Keystone Awards winners' wall memorializes all the winning projects and their contractors. It is truly a list of the "who's who" in our industry.

The most significant constant in these awards since 1998 is the manner in which winners are identified. An impartial panel of judges reviews submissions with attention to project and construction quality, the ability of the project to meet owner requirements, overall project safety and the success of the construction

project team. The panel is comprised of representatives from the American Institute of Architects, the American Council of Engineering Companies, the American Subcontractors Association, the US Green Building Council and a faculty member from an area institute of higher education. The Specialty Contractor of the Year awards - the SCOTYs for short - are voted on by the association's general contractor members, with the firm receiving the largest number of votes designated as the overall Specialty Contractor of the Year winner.

While categories and construction methods and types of work have changed through the years, the consistent recognition of adherence to the AGC motto of skill, responsibility and integrity has been at the core of the success of the Construction Keystone Awards. The Construction Keystone Awards recognize a contractor's success in achieving solutions for the construction challenges faced on a project. The awards are a glowing recognition of construction professionals whose skill, teamwork and spirit of innovation make a lasting contribution to a community by building the facilities that support and enhance the quality of life.

AGC of Missouri members gather each November for the awards gala. This event provides an opportunity for all winners and finalists and others in the industry to celebrate excellence, recognize team members and thank project owners.

In this first-ever, exclusive "Salute to the Keystones" edition of CNR Magazine, the current list of winners and their projects are described and recognized.

I'm forever amazed by the combination of creativity, planning, team-based efforts and just plain hard work that continues to improve the quality of our lives and the built environment. Some of these facilities are easily recognized by the general public, while some of them are projects that the general public will never see. Some are high profile while others are taken for granted. This year's Construction Keystone Awards are so diverse as to include an art museum, a soccer stadium, a proton therapy vault and a transit rail line extension. All are important, all require unique construction skills and all are part of our AGC of Missouri contractors' daily work. All are part of the AGC of Missouri Construction Keystone Awards.

AGC of Missouri members gather each November for the awards gala. This event provides an opportunity for all winners and finalists and others in the industry to celebrate excellence, recognize team members and thank project owners.

### General Contractor / Construction Manager / Prime Contractor

**Building Construction Project Under \$20 Million** 



The \$14 million, 35,000-square-foot Saint Louis University Jesuit Center is situated prominently in the middle of campus and provides living space for up to 30 priests and brothers while also serving as a new apostolic center for the university. In addition to the resident rooms, the new Jesuit Center features spaces including a fullservice kitchen, dining hall, library, exterior courtyard, covered balcony, conference rooms, several seating areas and dramatic chapel space. The chapel is supported by a 24-foot-high, four-way masonry arch topped by a 40-foot-tall steeple,

Construction by general contractor BSI Constructors, Inc. began in April of 2021 after HKW Architects completed the design. BSI took the lead in developing the design for and installing a complicated falsework system to support the arches during construction. In spite of a challenging design and pandemic-related hurdles, the building opened on time in August of 2023. This is BSI's second major project delivered in the past few years for SLU.

From a constructability standpoint, the project's greatest task was the coordination and construction of the intersecting masonry arches. The Romanesque masonry arch structure conjures the Gothic churches from the Middle Ages found in towns and villages throughout Europe. The simplicity of the structure contributes to the space's overall grandeur. From start to finish, BSI worked proactively with the owner, design team, subcontractors and third-party vendors to complete a first-class installation befitting this iconic space.

The team considered multiple approaches to building the arch, including casting the entire concrete arch is advance of brick installation. Ultimately, BSI and project partners chose a hybrid approach to utilize the finish brick as an integral form – installing it in lifts and placing concrete directly into the brick. Working closely with John Smith Masonry, BSI's project team oversaw the design and procurement of reinforcing steel, concrete ties and the associated support systems.

Arguably the biggest project challenge was how to support the arch during construction. Working with a blend of timetested means and modern technology, the team built the specially designed falsework system to precise dimensions. While constructing a straightline falsework system in the field - one that supported the masonry arch at its base and peak - BSI's carpenters and survey manager laid out and built four custom arch pieces to install brick at the exact radius required onsite. To maintain proper controls, the custom pieces were built offsite at BSI's warehouse

and trucked to the jobsite. They were then hoisted into place and secured to the falsework to serve as the supports for the masonry arches during construction.

BSI then installed the brick via lifts, followed by reinforcing steel and concrete placement at each lift. BSI's field team and surveyors monitored the masonry arch continually throughout construction to ensure proper installation and alignment of the masonry. At the peak of the SLU Jesuit Center arch, custom-fabricated steel was installed as a support for the steeple. Here again, the BSI project team carefully laid out the steeple's embedded support structure to guarantee that it was installed in the precise location required.

SLU Vice President of Facilities Michael Lucido said BSI's efforts and results were top of class in every regard. He added that BSI provided great value from start to finish, beginning with the conceptual budgeting of five distinct solutions for SLU's proposed project. Possible design solutions ranged from smaller renovation options to larger construction options, each with its own positives and negatives as related to cost, schedule and impact to ongoing operations. Lucido said that when it came to performing work in the field, BSI's team brought the needed combination of leadership, engineering knowledge, craftsmanship and attention to detail to satisfy the expectations of both SLU and the Jesuits. This highly complex project in the heart of the campus, he added, successfully coordinated student, faculty and staff traffic to mitigate congestion.

SLU achieved its goal of LEED Silver status while also meeting the goals of the St. Louis Development Corporation.



The project had to be fast-tracked through the winter due to the requirement of an available playing field for the new 2023 softball CM season. At the start of the project, poor, unsupportive soil was found to underlie the project. Structural and civil design changes after the project kickoff presented additional challenges the team had to resolve quickly to have the project completed in time.

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Structure lead times were one of the many challenges on this project. S. M. Wilson used nontraditional tilt-up measures to allow for walls to be braced to the exterior and the ice rink work to progress in spite of this challenge. This approach utilized a casting slab for the walls which was later removed, processed and used for permanent siltation control on the project site.

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### General Contractor / Construction Manager / Prime Contractor

Building Construction Project \$20 - \$50 Million



The University of Iowa Museum of Art has been a space for learning, community and the appreciation of fine art since it was established in 1969. Its impressive collection is home to more than 800 African art objects and works by notable European and American artists, including Pablo Picasso, Grant Wood and Jackson Pollock.

In June 2008, a devastating flood swept through Iowa, severely damaging several buildings on the University of Iowa campus. The Museum of Art was among them. Swift action on the part of museum staff and volunteers resulted in the preservation of every piece in the collection. However, the building itself was deemed uninsurable by Lloyd's of London.

Without a permanent building, the collection had to be divided up among several locations. During this time, the museum staff found new opportunities to share art with the community until a new permanent home could be built.

Russell was selected by the University of Iowa to build the new 86,200-square-foot, three-story, \$37 million Stanley Museum of Art in July 2019. Construction began the next month.

Fourteen years after the flood on August 29, 2022, the newly named the University of Iowa Stanley Museum of Art opened to students, faculty and visitors.

Prior to the start of construction, Russell's virtual design and construction manager federated and coordinated all subcontractor and design team models, including mechanical, electrical and



METAL DECK

plumbing systems, security and data. The project team performed clash detection to ensure that the design was free from major conflicts. Russell identified areas in the structural design that needed further detail work to maintain the structural integrity of the building façade.

Unique features of the building include a striking brick curtain wall façade that has been designed with an alternating pattern of brick texture and finish that transforms the building's exterior as the degree of sunlight and the seasons change.

Another vivid feature is the three-story lightwell in the middle of the museum that provides a sense of connection between the floors. Natural light is drawn into the space, and it connects visitors to the outdoors through low-iron glass that is clearer than typical glass. Clearer glass means that the works of art and interior spaces are not visually affected by a tint from the windows.

An enormous freight elevator with a customized interior cab measuring 21 feet wide by 10 feet tall – large enough to transport Jackson Pollock's enormous work, "Mural" – is another unique aspect of the project. The elevator weighs 19,807 pounds and can carry up to 10,000 pounds, approximately five times more capacity than an average elevator.

Russell built the museum with 47,838 square feet of usable space, including underground parking, a visual classroom and storage, art lounge, two outdoor terraces and 16,500 square feet of gallery. Interior finishes include wood slat ceilings, wood flooring, custom access doors, custom built-in display cases and custom easel walls. BNIM Architects served as the project architect.

The most challenging aspect of the job was the zero tolerance regarding alignment of the curtain wall mullions, brick mold and brick joints. The exterior of the building incorporates an alternating composition of 750,000 bricks, none of which were designed to be cut. An extensive shop drawing review and significant coordination between the Russell team and trade partners was required to ensure that all the details were aligned with precision.

Installation of the complex brick façade took longer than expected due to the weight of the protruding bricks. Only six rows of brick were set at a time to let the mortar dry. The design required that the building be enclosed immediately to allow the lightwell to keep water out of the interior space. The brickwork delay required the project team to temporarily enclose the façade and polish the floors regularly to avoid staining the concrete.

All trades cumulatively worked a total of 231,109 hours with zero lost-time injuries and no OSHA citations. Russell executed an eight-phase traffic control plan to guard the safety of pedestrians and workers.

Stanley Museum of Art Manager of Communications and Marketing Elizabeth Menninger Wallace said the university's interactions with Russell were overwhelmingly positive and productive.



#### 2023 Awards

"Project of the Year" by Design Build Institute of America - Mid America Region (DBIA-MAR)

The Excellence Award in Civil Infrastructure & Innovation (DBIA-MAR)



Keystone Finalist Award by Associated General Contractors of America Missouri Chapter



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The 87,000-square-foot Bill Simon Field House at Principia underwent two years of preconstruction and two years of construction services. The acclaimed project was built during the pandemic and despite manpower, material and supply chain issues, was completed on time, under budget and coined in the media as being "the most impressive new facility in the state."



Construction of the Marlowe began in December of 2020 and was completed in Spring 2022. A major challenge Keeley Construction faced during construction was COVID-19. Keeley was able to construct through a pandemic with strategic scheduling, social distancing and masks. This global pandemic caused an increase in lumber prices which caused a re-direct with the original budget. Keeley achieved zero recordables throughout the project's duration.



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### General Contractor / Construction Manager / Prime Contractor

**Building Construction Project Over \$50 Million** 





The iconic, open-air CITYPARK Stadium in downtown west St. Louis stands as a symbol of St. Louis' commitment to soccer and community revitalization. Since MLS announced its expansion into St. Louis four years ago, downtown west has attracted approximately \$820 million in development and 300 occupancy permits have been issued.

As the home of St. Louis City SC, the project was delivered by the Mortenson | Alberici | Keeley Joint Venture. The \$544.6 million build at 2019 Market Street was substantially completed in mid-November of 2022 and welcomed its inaugural season of players and fans in its first home game on March 4, 2023.

HOK served as the project architect and KWAME as the owner's representative.

CITYPARK is the linchpin of a resurgent corridor that will ultimately connect the Gateway Arch and Forest Park, two of the region's most-treasured jewels. St. Louis City SC is the only MLS club to have its stadium, team headquarters, training and performance center – and practice fields – in one centralized downtown location. The site also includes a fan pavilion and the team store. These new facilities advance CITY's goal of building the best academy and development system in North America.

In addition to creating a world-class home for the club and a hub for St. Louis' thriving soccer community, the development is already serving as a year-round catalyst for downtown activity.

Construction work at CITYPARK Stadium began back in February 2020. As the stadium site was a parcel of undeveloped land, it involved significant site preparation. Materials were sourced and delivered before construction began, particularly in the case of early purchases of structural steel. Because the joint venture self-performed steel fabrication for this project, Alberici placed an early mill order before the designs were completed and advised the designers on which shapes were available to help guide their designs. Early procurement and ongoing communications about material availability protected the project – which began when Covid did – against pricing fluctuations and shortages. The team's early procurement of steel saved the project more than \$750,000.

The ability of the joint venture partners to self-perform a substantial amount of work on the stadium project provided the facility's owner a level of control over labor, schedule and budget during the pandemic when global circumstances were leading to uncertainty and delays throughout the industry. Self-performed work included site services, structural concrete, structural steel fabrication and erection, carpentry, earthwork and site utilities, and low-voltage systems.

CITYPARK's canopy offers the most extensive coverage of any MLS stadium. To access the canopy's metal panel soffit, the joint venture project team engineered a "quick-deck" solution – hanging scaffolding on the underside of the canopy – to provide construction workers with a safe, productive work platform that allowed work to progress simultaneously below. The low-profile support structure on one of the largest MLS canopies in existence proved a steep challenge.

Technology was vital for tracking project progress. Monthly drone flights recorded images to overlay the 3D model to track progress against the schedule. The team also used OpenSpace to record 360-degree views of the progress, providing the owner and other stakeholders with complete, real-time views of the build as it took shape.

Diversity and inclusion played a predominant role in this project. The MAK joint venture awarded contracts totaling more than \$150 million to WMBE firms, including 33 first-tier WMBE companies.





Congratulating All Category Winners at the 2023 AGCMO Keystone Awards

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Faced with critical challenges such as 4,000 drawing reviews, 1,300 requests for information delays, shutdowns and flash flooding, the Expo at Forest Park team proactively determined innovative solutions to solving problems and addressing potential issues before they occurred. Despite these hurdles, the project team remained unwavering in their efforts and upheld a positive, can-do attitude regardless of the situation.



By consolidating the services of both of the current Vermilion County locations into a modern, comprehensive facility, Carle offers a variety of services from audiology to gastroenterology; neurology to pediatric cardiology. PARIC's preconstruction and problem-solving abilities became key to the timely and on-budget completion. The \$70 million project is the largest program for Vermilion County in the past 50 years.



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### General Contractor / Construction Manager / Prime Contractor

**Highway & Transportation Construction Projects** 



In late March of 2023 and within a project timetable of only 90 days, Alberici completed \$9.9 million of alterations to the Melvin Price Locks and Dam Main Lock Overlook for the U.S. Army Corps of Engineers.

Located in Alton, Ill., Melvin Price Locks and Dam is one of the largest structures on the Mississippi River and is critical to managing the flow of goods and commodities from the Upper Midwest to New Orleans for export. During a scheduled threemonth winter closure of the main lock, Alberici served as general contractor for major alterations of two reinforced concrete overlook buildings that house its primary control operations and include an office, break room and visitor area.

Each overlook serves multiple functions, all of which have been retained or upgraded. The overlook structures allow operators to observe river traffic while controlling lock functions. The new overlook structures retain sightlines into and around the lock chamber without the structures themselves interfering with the removal of the vertical lift gate. The project scope included upgrades of interior low-voltage electrical systems and heating, ventilation and air conditioning systems.

Challenging site access restrictions required crews to work primarily from barge-based floating plants. An Alberici-designed temporary shoring system provided structural support during demolition.

Alberici, the design team and USACE carefully formulated a sequence to demolish and rebuild the existing overlook structures in-place. Alberici constructed a temporary substructure beneath each concrete overlook building. Above this, the team erected an enclosure around each building using scaffolding wrapped in a heat-retaining layer of weatherproof plastic. Inside of this enclosure, a second set of scaffolding allowed workers to demolish and rebuild the overlook structures in a heated environment where unfrozen water was required for saws to cut concrete – and

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where newly poured concrete required a minimum ambient temperature of 40 degrees Fahrenheit.

To maintain the tight construction schedule, the team collectively worked more than 40,000 hours over three months with zero recordable injuries or lost-time incidents.

Alberici enlisted help from Ruby + Associates to create a temporary shoring system, effectively a substructure beneath the twin overlook structures. It supported the structures as they were dismantled and rebuilt and was also designed deliberately to facilitate and support a rapidly constructed warming enclosure around the primary scaffolding. Because the project took place during winter, the warming enclosure enhanced safety for workers inside it. Alberici used a Brokk machine to break up reinforced structures, transferring the impact of stress from chipping concrete to a machine instead of personnel.

Between December and March every year, thousands of bald eagles, trumpeter swans, ducks, geese and the occasional snowy owl take up residence near Melvin Price Locks and Dam, making the site a popular one for birdwatchers. The project





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team retained birdwatching access to the bridge that runs across the top of the lock channel. Routine, weekly coordination between Alberici and USACE protected public safety for weekly birdwatching tours while preserving site integrity for project operations. When the locks and dam reopened on March 31, 2023, a throng of 15 vessels awaited passage with payloads of coal, grain, iron and steel.

The significantly condensed threemonth construction period was possible through extensive planning. Sequencing discussions began back in September 2021. Procurement of long-lead materials - such as electrical equipment and the smallest components of the motor control center - also began immediately. For more than a year, the project team carefully plotted out tasks to accomplish during the immovable 90-day outage period, identified equipment and workforce requirements and designed shoring structures. Because of the early planning, there were no major oversights and the project was completed according to plan and ahead of schedule, despite a challenging, water-based worksite.

3D Lift Planning was utilized to model the main lock chamber and simulate lifting actions of the vertical lift gate. The process informed decisions about the placement of the new overlook buildings to ensure non-interference with other lock infrastructure and barge traffic and to correct the existing interference with the vertical lift gate itself. The project team modeled concrete demo blocks to identify the centers of gravity and pick points. The final lift plan prioritized critical picks and established barge-mounted crane positions for each pick.

Sustainability played a role in this project. Alberici repurposed a sizable amount of demolished concrete and used it as fill for ground improvements on another port facility project in the St. Louis area, diverting it from landfills.

Alberici met USACE's goals for inclusion and diversity by awarding nine percent of the total contract value to small business subcontractors and suppliers.





This project replaces century-old infrastructure allowing today's larger loads to best utilize St. Louis' regional transportation systems. Prior to this, rail traffic was diverted hundreds of miles to more modern crossings. Costs to the railroads due to track outages required a solution to limit project impacts. Conventional construction would mean months of outages, the Goodwin team found solutions equating to days.



The Herzog I-35 overlay project was one of Missouri's first pilot projects laid with a Balanced Mix Design. Additional BMD performance testing requirements, an increased density specification and a winter start due to delivery schedule constraints required a unique concerted effort. The complex design and testing requirements were exceeded, gaining maximum incentive bonuses and a MAPA 2022 award.





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#### Specialty Contractor / Subcontractor Building Construction Projects Under \$3 Million



Acme Erectors played a crucial role as a member of the construction team overseeing the \$1.96 million erection of a sevenstory structural steel frame within the historic Masonic Temple building on Lindell.

Local developer Brian Hayden of Brandonview LLC acquired the former temple near the intersection of Spring Avenue and Lindell Boulevard (in Midtown) during 2017 for \$6 million.

The complex project required adding floors between existing levels to create a drive-up apartment community with garage access at each unit. Renovation of the structural supports demanded extensive updates and careful coordination with all stakeholders, which was instrumental in the project's success.

Thoughtful renovation of this historic building has had a profound impact on the community. It has created job opportunities, stimulating local employment and economic growth. The revitalization has enhanced the neighborhood's appeal, attracting more visitors. Preserving the cultural heritage instilled a sense of pride and historical appreciation. This project's positive impact extends beyond construction, leaving a lasting legacy. The building's historical significance, having housed iconic figures like President Harry S. Truman and Charles A. Lindbergh, adds further value and contributes to a lasting, positive community impact.

Exceptional teamwork combined with the meticulous execution of installing an upgraded, modern steel frame within an existing structure, innovative solutions for handling and positioning exceptionally heavy steel components in challenging and inaccessible areas are examples of the unique project tasks that the team faced. The work was completed without any injuries and project deadlines were met. Preserving the historical integrity of the building while integrating new structural framing for drive-up housing posed significant challenges as well. With the architectural significance of the structure in mind, careful planning and execution were required to achieve a seamless integration that adhered to preservation guidelines. Adding to the complexity, limited access to materials and equipment – where crews were confined to an eightfoot door at ground level through which they hoisted materials and via existing windows – presented logistical hurdles that required innovative solutions and precise execution, all while maintaining the historical integrity of the building.

Technology and innovation played a crucial role in Acme's success with efficiently managing the schedule. The team strategically employed innovative solutions to seamlessly maneuver materials through existing floors by utilizing specialized mechanical methods. This approach minimized disruptions and resulted in significant time savings compared to traditional, manual handling techniques.

By embracing cutting-edge lifting equipment and advanced techniques, Acme Erectors optimized the movement of heavy beams, ensuring precise execution while adhering to the project timeline. The integration of these innovative practices enabled Acme to effectively overcome logistical challenges, leading to the project's successful completion.

Sharing the majority of tools across multiple trades contributed to project cost savings.



During CNC Foundations' initial installation process, large obstructions were discovered beneath the surface. In order to keep the project on time and within budget, the scope of work had to be promptly adjusted. Our team engineered an alternate solution utilizing Grouted Aggregate Piers and Rigid Inclusions, which included precise coordination of multiple crews and pieces of competitive bid equipment.



The project team worked alongside electricians at 46 feet above the ground inside the glass atrium to rough out the electrical before anchoring the oversized, motorized Mecho shades in place using a giant floating floor that swayed slightly. The team succeeded in achieving the high man/low man balancing act of hanging the shades from specialty scissor lifts and ensuring that they would operate smoothly along the cables.

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#### Specialty Contractor / Subcontractor Building Construction Projects From \$3 Million - \$9 Million



St. Louis-based Tarlton Corp., in partnership with concrete and masonry contractor Otto Baum Company, Inc., completed construction of a nearly \$6 million below-grade proton therapy vault for POINTCORE Construction on the campus of the OSF HealthCare Saint Francis Medical Center in Peoria, Ill.

The center is one of a limited number of proton treatment centers in Illinois. And according to The National Association for Proton Therapy, it is one of only 43 such centers in the U.S.

This targeted radiation therapy can reduce treatment times and decrease complications by sparing healthy tissue, allowing for less disruption for patients and caregivers. Prior to this new treatment facility, cancer patients and their families had to drive at least three hours to Chicago or St. Louis to receive proton therapy.

Tarlton managed construction of the below-grade concrete vault for POINTCARE and OSF Hospital to contain the radiation emitted from proton therapy cancer treatment. The vault consists of a three-foot-thick mat slab and mass concrete walls that are typically greater than seven feet thick. One section measured 24 feet thick.

The team developed a unique concrete mix – with fly ash replacing 48 percent of Portland cement – to limit the heat gain but still achieve 4,000 pounds-per-square inch strength. Placement and curing of the concrete played a critical role in the success of the project. A total of 4,520 cubic yards of concrete were utilized to complete the job. Supplier Doka used Tarlton's building information model to overlay Doka's custom formwork systems and to model, design and engineer all the formwork. The BIM model helped project partners determine how many panels and how much material would be required, and when gang form systems (forms that attach with clamps so they're kept together) could be reused to increase productivity and labor.

POINTCORE partnered with Tarlton in large part because of Tarlton's previous experience with high-density, shielding concrete. This complex project consisted of thick walls with rebar and mechanical, electrical and plumbing systems installed prior to pouring. Pouring was governed by an extremely rigid thermal control plan because the concrete had to be placed and cured perfectly. The team achieved this through great attention to detail and precise placement of embeds, rectangular pieces of steel with welding studs that make a connection between a structural steel beam and the concrete. The embedded steel layout was another critical quality component of the vault. The system needed to support the size, weight and complexity of the proton therapy equipment inside the structure, in addition to supporting construction cranes while the vault was being built.

Concrete curing and placement posed the greatest challenge on this job. To contain the radiation emitted in proton therapy treatment without using lead lining in the walls, the surrounding concrete had to be properly cured and couldn't have any voids, fractures or seams. The average pour size was 245 cubic yards, and the largest was 700 cubic yards. The unique curing procedure took from seven days to several weeks. There were 20 pours in total.

One issue that could potentially have extended the project schedule by two to three months was the required wait time between adjacent concrete pours. The American Concrete Institute requires that adjacent concrete cannot be placed until previous concrete has fallen within 30 degrees of the placement temperature of the concrete. Tarlton overcame this challenge by designing a plan to separate the pours with bulkheads located three to four feet from the adjacent pour. This section was later placed with the next lift of walls.

This project also dictated strict concrete wall plane tolerances that could not exceed one-eighth of an inch. The equipment housed inside the vault is very large, occupying 95 percent of the open area. Precision was required to ensure that the equipment could be installed without hitting any of the walls.

To mitigate vehicle congestion at the site, concrete was poured before 6 a.m. or on Saturdays. Forming systems were engineered with a higher-than-typical safety factor to accommodate the wet concrete to ensure that no one was in harm's way when placing concrete walls or slabs.



The Missouri Botanical Garden's new Jack C. Taylor Visitor Center was a complex project that required careful planning and execution. The team from TD4 and Guarantee Electrical overcame many challenges, including upgrading the electrical infrastructure without disrupting plant growth and troubleshooting 483 malfunctioning light fixtures all while navigating a global pandemic. The project was delivered safely, on-time and within budget.



IWR North America overcame complex challenges during construction of the Missouri Botanical Garden's Jack C. Taylor Visitor Center. Meticulously integrating technology, personalized experiences and intricate façade transitions demanded precision. Amidst pandemic-era supply chain challenges, adept schedule management ensured timely completion. IWR's commitment to safety, diverse workforce and financial acumen exemplified excellence in construction.



#### Specialty Contractor / Subcontractor Building Construction Projects Over \$9 Million



IWR North America served as a specialty subcontractor for the exterior curtainwalls, exterior and interior glass doors, glass-clad hanger doors, exterior and interior storefronts and all-glass interior channel walls for CITYPARK Stadium, operated by St. Louis City SC.

As the local installer of curtainwalls, doors, storefronts and all-glass walls, IWR North America executed this critical scope of work with precision. Its contract amount was \$9.64 million.

IWR's team alone totaled 35 onsite workers and 32,000 work hours. Crew sequencing and workflows were intricate due to the project's spread across interior, exterior, South of Market (Street), North of Market (Street) and more than 31 acres. IWR operated 12 to 15 crews simultaneously. Challenges included adherence to the project's 5S safety program – sort, straighten, shine, standardize and sustain – to coordinate between trades to keep the large, multibuilding site safe and uncluttered. The project scope spanned three buildings with more than 70,000 square feet of atypical materials, including various curtainwall types, storefronts, doors and hardware sets.

With regard to exterior curtainwalls, IWR installed a wide range of them of



the following types: cassette, stick, SSG (structural silicone glazing), two-sided SSG and four-sided SSG. For the stadium, IWR installed 42,000 square feet of glass and 1,521 IGUs (insulating glass units), five curtainwall systems and two storefront systems. For the training center, IWR installed 7,700 square feet of glass, 480 IGUs, one curtainwall system and one storefront system. In the pavilion, IWR installed 4,200 square feet of glass, 167 IGUs and one curtainwall. The project included a total of 116 aluminum doors with 48 hardware sets.

IWR sought the right partners to build a strong, diverse team and exceed the jobsite diversity requirements with a 31 percent contribution toward a 35 percent target. Collaborating with entities such as St. Louis Glass, Knowles and T.A.B. Company showcased IWR's capacity to prioritize diversity alongside effective relationship management.

To ensure seamless operations, IWR meticulously prepared installation work plans for each curtainwall and storefront assembly. The firm collaborated with design teams, contractors and subcontractors, prioritizing consistent communication, early procurement and extensive planning.



IWR North America excelled in tackling significant challenges throughout the Forsyth Pointe project. Managing the complexity of 23 diverse façade systems, overcoming logistical constraints and navigating multiple project areas demanded meticulous planning and exceptional coordination. IWR's innovative use of technology, custom rigging solutions and advanced equipment optimized efficiency and safety, culminating in a successful and transformative project outcome.



Logistics were the project team's biggest hurdle, with a massive task list crammed into a tight timeline. Complications were compounded due to a shortened schedule, yet icon Mechanical's team relied on swift effective communication between its project leads, ownership group VIR and general contractor Tarlton. Critical build components include record-breaking 11,000-plus hours of stainless steel ductwork alone, with similar stats for piping crews.



#### **National Class**

Projects located in lower 48 states, excluding Mid-America Class



A four-way joint venture delivered a \$1 billion project that added nearly five miles of new light rail transit to one of the oldest subway lines in the U.S.

Green Line Extension Constructors – a joint venture comprised of Missouri-based Herzog Contracting Corp., Texas-based Fluor (parent company of GLX), Massachusetts-based Middlesex Corp. and U.K.-based Balfour Beatty – delivered the design-build project to the Massachusetts Bay Transportation Authority in late 2022.

Construction of the two-phase light rail project began in 2018. The complexity of the massive project was accentuated by its uniquely challenging location. It is the oldest MTBA subway line, with tunnel sections dating from 1897, and the oldest subway in North America. The Green Line Extension design-build project adds 4.7 miles of new light rail transit service through Cambridge, Medford and Somerville, supporting more than 50,000 new daily transit trips to and from Boston for these previously underserved communities.

The project right-of-way was extremely narrow – only 90 feet wide on average. The entire project alignment was constructed through a highly urbanized environment with a density greater than San Francisco, and within an active railroad corridor where crews worked within five feet of 56 daily trains. Beyond the constrained work envelope, challenges included mass excavation, mainline track reconfigurations and retaining wall work within feet of both active MBTA tracks and residential homes.

In January 2015, a Full Funding Grant Agreement between the MBTA and the U.S. Dept. of Transportation Federal Transit Administration was signed that established the scope of federal participation in the GLX project. GLXC (GLXC) and lead designer STV were awarded the design-build contract in November 2017. Phase one, the Union Square Branch, opened in March 2022 and phase two, the Medford Branch, opened in December 2022. Major stakeholders included the cities of Cambridge, Medford and Somerville, Middlesex County and the Massachusetts Dept. of Transportation. The GLX featured significant coordination with Tufts University and Somerville High School, both stakeholders with educational campuses immediately adjacent to the alignment.

Work included demolition of 31,337 feet of old freight track, 362,400 cubic yards of excavation within an active rail corridor, approximately 17 miles of track constructed, six new at-grade stations and one aerial station, a 55,000-square-foot, four-bay vehicle maintenance facility and a 1,509-square-foot transportation building used as the GLX control center. Several modified/reconstructed bridge structures were required, along with 263,174 square feet of sound and retaining walls, three traction power substations, an overhead catenary system and a 1.8-mile community pathway. A significant piece of the project work was a half mile of elevated viaduct fitting around existing city streets, buildings and tracks, wrapping around the new elevated Lechmere station and complicated by difficult geometry and clearances.

With earned value analysis using SAP software, the cost control team used a systematic process to compare the project's actual costs and spend to-date to the budgeted value and planned work to generate forward guidance on the project's progress. Overall project scheduling was self-performed using Primavera P6 to monitor the schedule's 20,000 activities. Because the entire project was located in a brownfield site that had been in use for hundreds of years, more than 600,000 tons of regulated soils and materials were hauled from the project site and disposed of at landfills in compliance with local, state and federal guidelines.

GLXC navigated numerous high-level complexities to deliver the design-build project. A uniquely complex element was digging out the right-of-way and the multiple phases required to build the new guideway in a live track environment. Additional complexities included work inside a 90-foot wide, 100-plus-year-old MBTA rail corridor, soil contamination, an active railroad environment in urban Boston, coordination of adjacent construction projects and the pandemic. The GLX Medford Branch was constructed within the existing double-track MBTA commuter rail right-of-way. A new four-track configuration was required so that Green Line LRT and commuter trains could run side-by-side within the corridor. This required major excavation within the right-of-way and shifting the MBTA Lowell Line's commuter rail Track 1 and Track 2 to create the needed track bed space for the two new GLX tracks.

With the GLX Medford Branch running in a depressed trench and located in an area with high groundwater and prone to flooding, an extensive track bed drainage system was installed within the guideway. This extensive drainage system consisted of 48,810 feet of track under drain and 15,223 feet of reinforced concrete pipe and fiberglass-reinforced polymer drains ranging in size from 15-to 60-inch in diameter. The most challenging part of the drainage scope involved installing 2,227 feet of 60-inch FRP pipe in a trench ranging between 16 and 20 feet deep. For approximately 1,000 feet of the trench, bedrock was encountered 10 feet below grade requiring excavation through solid bedrock. The entire operation was conducted under live track conditions with commuter trains passing within five to 10 feet of major excavation work.

To maximize production and work within the access restraints, Herzog's rail-running multi-purpose machine provided the team with a compact work platform that accessed the work site from the commuter rail tracks to deliver materials, excavate using its zero-turn radius track hoe and haul excavation spoils out of the guideway.

The project team excavated some 20 feet per day including the installation of a micro-pile shoring system. Twelve-inch micro-piles were installed every eight feet and crews would excavate in four-foot lifts ensuring not to undermine the active railroad tracks. Approximately 4,000 linear feet of this micropile shoring was installed within the guideway to safely complete the trench work.

The joint venture exceeded both the design and construction goals with a 7.7 percent Disadvantaged Business Enterprise achievement in design and 14.7 percent DBE construction participation.



The project consisted of a new two-mile siding extension on BNSF's Phoenix Subdivision. Located west of the Williams Junction, this line provides a vital link supplying goods from the East and West Coasts down to the Southwestern US and Northern Mexico. Major components of the work included excavation, embankment, drainage and subballast installation, along with a new five-span bridge over Ash Fork, Wash. All work was completed under budget, ahead of schedule and injury-free.



The V-22 Osprey helicopter places large thermal loads on aircraft parking and operating surfaces. The project removed failed concrete panels and replaced them with high-temperature concrete that can withstand the thermal stresses of the V-22 Osprey engines. The team identified and replaced approximately 2,750 panels in 11 stages throughout the Camp Lejeune Air Station. In addition, an existing CMP was removed and upgraded with a 1,200-foot, 8x8 box culvert. New pavement markings were replaced throughout the air station.

# AGCMO 2023 Specialty Contractor of the Year (SCOTY) Awards

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# Overview of the AGC of Missouri

The Associated General Contractors of Missouri is affiliated with several national organizations including the Associated General Contractors of America and the American Road and Transportation Builders Association. The AGC of Missouri represents approximately 550 construction and construction-related firms in the state of Missouri that perform building, highway and infrastructure construction. The AGC of Missouri provides a wide range of valuable local and national services, helping members build their business.





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#### Show Me Excellence in Craftsmanship Inaugural Award Alvaro Gomez, Elastizell of St. Louis



The inaugural "Show Me Excellence in Craftsmanship" Award was presented to **Alvaro Gomez**, a member of Cement Masons Local 513 and 22-year employee of Elastizell of St. Louis. Recognized as an expert in leveling and finishing lightweight concrete floor toppings with skill and precision, Gomez has traveled across the country and internationally to ply his trade.

AGCMO President Leonard Toenjes said, "Gomez represents just one of the tens of thousands of hardworking craftspersons in Missouri who contribute their skill and expertise to our built environment. Gomez's enthusiasm and optimism inspires those around him, and the high standards he sets for himself are contagious to all who are privileged to work with him," Toenjes added.



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