



CASE STUDY

SIU-EDWARDSVILLE HEALTH SCIENCES COMPLEX

Edwardsville, IL

Bridging New and Existing Buildings Into One High-Performance System

icon Mechanical partnered with SIUE to deliver design-assist HVAC and mechanical solutions for an academic and laboratory complex spanning four interconnected buildings. The project's greatest challenge was integrating systems between new and existing structures while navigating tight spatial constraints, expansion joints, and complex utility coordination.

Through advanced BIM modeling, prefabrication, and cross-trade coordination, the team ensured seamless system alignment and efficient installation. The result was a high-performance, future-ready campus environment built for education, research, and simulation learning.

MARKET

Education/Institutional

CAPACITY

172,495 SF

DELIVERY

Design Assist

GENERAL CONTRACTOR

Clayco / Poettker



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SIUE HEALTH SCIENCES
BUILDING

EXECUTIVE SUMMARY

icon Mechanical (icon) and sister company, iENG Design, were hired by Southern Illinois University – Edwardsville (SIUE) as the mechanical engineering subcontractor for design-assist and HVAC services for two new Health Sciences buildings and two renovated buildings totaling 172,495 square feet. The complex includes teaching spaces, faculty offices, laboratories, and simulation labs supporting SIUE's School of Pharmacy and Nursing Training School.

iENG supported the project with design-assist engineering and detailed system layout, while icon managed the HVAC and process piping installation. By connecting engineering, virtual design coordination, fabrication, quality control, and field execution into one cohesive workflow, the team ensured efficient delivery and high-performance results.

INTRODUCTION

Modern educational facilities require highly coordinated mechanical systems that support advanced learning environments, sustainability goals, and long-term operational efficiency. The increasing complexity of these projects has accelerated the use of innovative technologies such as BIM and advanced 3D modeling to improve coordination and system integration. As the industry evolves, icon is playing a larger role in delivering smarter, more efficient building solutions.

From the outset of the project, icon established clear objectives focused on quality, performance, and proactive problem-solving to deliver the project scope. A key challenge emerged in connecting mechanical systems between two existing buildings and two new structures, requiring precise coordination to ensure infrastructure alignment, constructability, and long-term system performance.



icon Objectives

- Mechanical Systems Integration
- Equipment Alignment
- Energy Efficiency
- Safety Compliance



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METHODOLOGY & DESIGN APPROACH

Safety “Reigns Supreme”

Safety protocols were integrated throughout the project and remained a key focus during design and installation. VDC coordination incorporated quality and safety measures for materials, hangers, supports, and bracing, while engineering reviews ensured compliance with applicable codes and standards. This safety-first approach aligned with icon’s Health and Safety best practices, including pre-job briefings, Job Safety Analyses, and weekly Toolbox Talks.

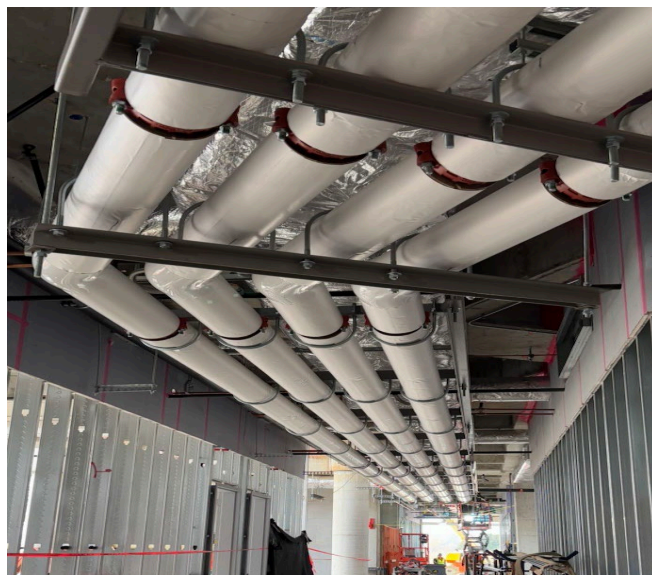
Cutting-Edge Design Tools

Using Revit-based modeling and virtual clash detection, icon’s sister company, iENG, coordinated mechanical systems with all project trades to streamline installation and reduce onsite conflicts. icon enhanced this process by laser scanning the existing facilities and integrating the data into the BIM environment, allowing the team to accurately align new systems with existing infrastructure. This technology-driven approach enabled extensive prefabrication of piping racks, improving field productivity and helping the team complete work ahead of schedule. With larger and more complex systems being integrated into older buildings, icon relied heavily on its VDC team to optimize routing and maximize available space.

Analysis of Initial Design

icon plans the path to success before the project starts with strategic planning and team alignment, identifying strategies that help maintain budget and mitigate risk for on time delivery. icon’s team-based approach links Engineering, Virtual Design Construction (VDC) prefabrication, QAQC and field installation.

For the SIUE’s School of Pharmacy and Nursing Training School, icon’s HVAC scope mandated high-efficiency HVAC systems. This included roof-mounted central air handling units with variable volume air terminal units and hot/chilled water coils for conditioning the buildings.



CHALLENGE

Connecting Systems Between the Two Existing Buildings and Two New Buildings

icon faced the complex challenge of integrating mechanical systems between two existing buildings and two new structures while maintaining alignment across varying building elevations. Matching the new building heights to the existing facilities created limited space for routing ductwork and piping. In addition, the multiple building connections introduced numerous expansion joints that had to be strategically accommodated to ensure long-term system performance and structural flexibility.

icon SOLUTIONS

Existing Building Assessment & System Coordination

iENG Engineers played a key role in evaluating and coordinating systems between the existing and new buildings. Working with the Engineer of Record, the team conducted detailed assessments of mechanical, electrical, and plumbing systems, including capacity, compatibility, routing, and code compliance. icon's VDC team supported the effort through 3D modeling and clash detection to improve coordination and ensure proper system alignment throughout installation.

Cross-Trade Collaboration & Space Coordination

icon maintained a team-based approach throughout the project to ensure quality coordination across all trades. Tight mechanical room and hallway spaces required close coordination with plumbers and electricians to properly route piping, ductwork, and utilities while maintaining accessibility and clean system layouts.

Prefabrication & Installation Coordination

icon worked closely with the General Contractor, iron workers, carpenters, and drywall teams to coordinate pump skid installation and prefabricated rack systems. Careful scheduling and sequencing helped improve installation efficiency and keep the project on track.

Expansion Joint & Building Movement Solutions

Accommodating building movement between connected structures was a major project consideration. icon and iENG incorporated pipe expansion joints, loops, prefabricated fittings, and flexible Victaulic couplings to address structural movement and maintain long-term system performance.



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CASE STUDY SIUE HEALTH SCIENCES BUILDING

COMMUNITY IMPACT

State-of-the Art Facilities / Student Enrollment Driver

The SIUE Health Sciences Complex expanded pharmaceutical laboratory capacity and introduced state-of-the-art nursing simulation environments, including mock operating rooms and patient care spaces. The advanced facility provides students with access to modern technology and collaborative training environments that better prepare them for real-world healthcare applications. Faculty benefit from enhanced teaching tools and innovative instructional spaces that support experiential learning and interdisciplinary collaboration.

The investment has also strengthened SIUE's ability to attract and retain students, contributing to significant enrollment growth within both the School of Pharmacy and School of Nursing.

icon Deliverables

- ✓ Air Handling Units
- ✓ Compressed Air
- ✓ Air-Cooled Chillers
- ✓ RODI (Fused Process Piping)
- ✓ Natural Gas Boilers
- ✓ Supply and Exhaust Ductwork



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May 1, 2026

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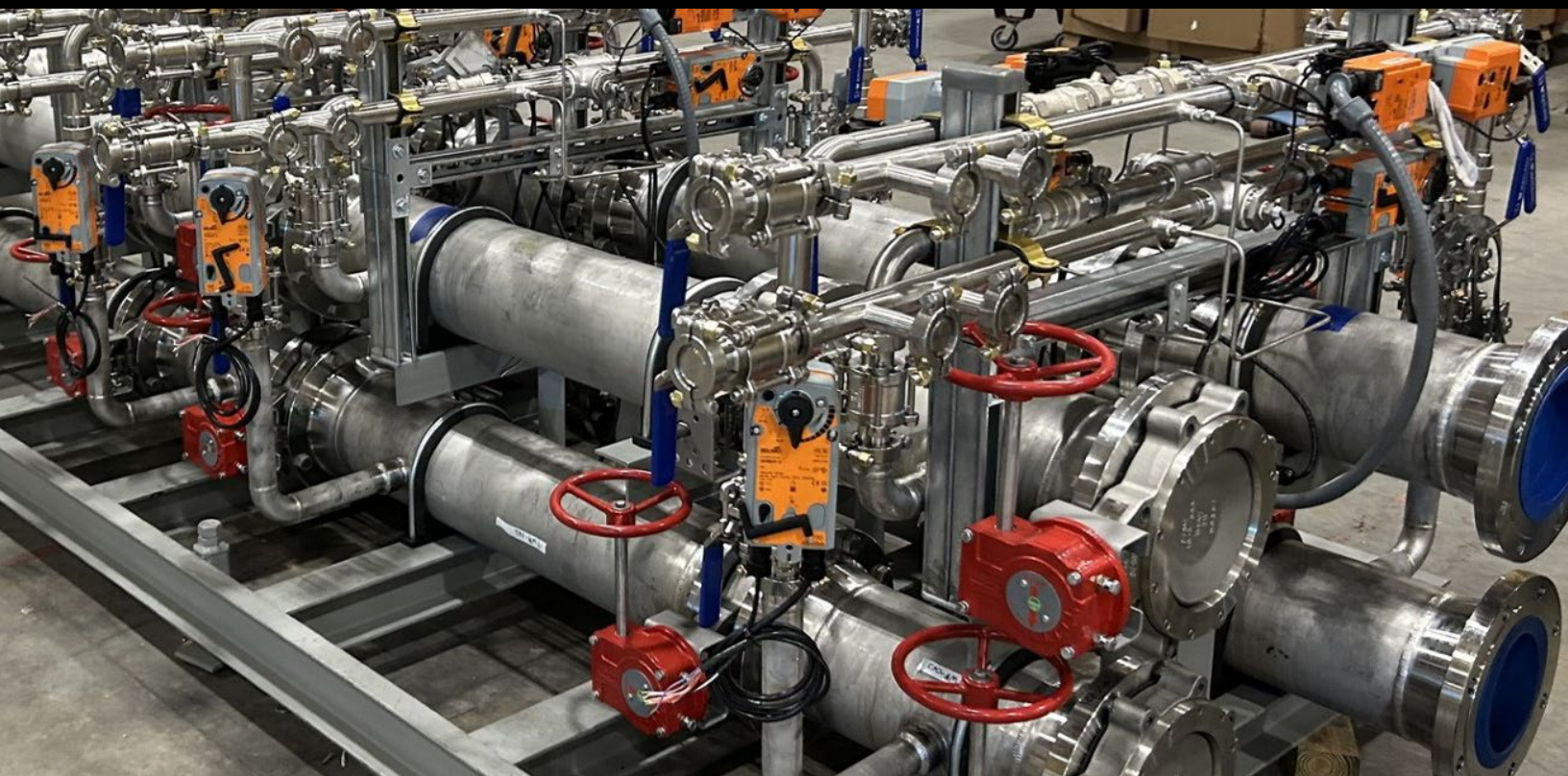
The newest and largest building on a local university's campus, a \$117 million project, led to higher enrollment for two of the university's schools, officials said.

Southern Illinois University Edwardsville opened its new Health Sciences Complex for the fall 2025 semester, even as construction on the building continued. The university celebrated the completion of construction Tuesday with a ribbon-cutting ceremony.



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