

# SHINING THE LIGHT ON HEALTHCARE FACILITY INFRASTRUCTURE by Bill Wagner, VP



Bill Wagner, Vice  
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Some of the most challenging aspects of constructing healthcare facilities are hidden from public view.

Housed above ceilings, behind walls and within central utility plants is a complex array of utilities and other infrastructure systems that are vital to the efficient operation of a facility. Patients, physicians and medical staff rely on these core systems every day, yet they probably don't give them a second thought—if they're even aware of them at all.

But our construction teams think about them constantly. That's because a hospital's infrastructure is fundamental to the delivery of care and the continuous operation of a facility. This infrastructure ranges from extensive ductwork and piping systems to a robust electrical system that provides redundancy to support emergency power requirements. It operates everything from nurse call systems, to low-voltage fire alarms that interlock with the security system, to sprinkler systems.

And today's patient rooms, ORs and imaging rooms rely on considerable power, gases and data to support advanced equipment and technology, including robotics and other innovations.

Building information modeling (BIM) plays a key role in constructing healthcare infrastructure. As construction manager, we have the opportunity to work alongside specialty contractors to ensure that all the details within the model are well coordinated before construction even begins. We also make sure that all equipment is accessible so the facilities staff can conduct ongoing maintenance after the space is occupied.

For hospital expansion projects, we have the additional challenge of maintaining the existing facility's continuous operation with minimal disruption. Pre-planning is essential to ensure the schedule is precisely coordinated to sustain the continuum of care for patients and maintain optimal safety throughout the project. Pre-planning can include flow, maintaining all essential life/safety systems, shut-down and system tie-ins.

Sometimes, prefabrication of components is an efficient solution, particularly within constrained spaces and sites. When parts are fabricated in a controlled machine-shop environment, they can be installed more quickly, safely and cost effectively than traditional construction.

Our S. M. Wilson team has extensive experience in constructing and relocating healthcare infrastructure. We've completed \$1.5 billion in healthcare projects on more than 30 campuses throughout the U.S.

A few recent assignments include:

The new 11-story **BJC Institute of Health at Washington University School of Medicine** in St. Louis involved extensive MEP relocations and connections to campus services on the

state's largest and most active medical campus. The project required precise scheduling of utility outages and cutovers, including electrical and emergency power, medical gases, steam, and heated and chilled water systems. The most complex cutover—the bulk oxygen main—required four months of planning.

In constructing a new seven-level patient tower at **Boone Hospital Center** in Columbia, Missouri, our team managed the relocation of a 20-inch water main, existing storm lines, telephone and cable utility lines, gas lines, and the main electrical service. We used creative earth shoring techniques to bury the existing above-ground utility lines while ensuring these deep excavations were safe for hospital workers and visitors.



At **Community Hospital South** in Indianapolis, we constructed a five-story patient tower addition in 12 sequential phases. The installation of a new tap and key for water main service required the implementation of a bypass loop to maintain operations of the existing hospital's water service. The project included the rerouting and replacement of all steam pipe, storm, sanitary and chiller lines as well as medical gas and vacuum lines.

These projects illustrate the meticulous planning and expertise required to construct critical infrastructure and utility systems to support today's complex healthcare projects.