Building for the Future of Healthcare

Healthcare is rapidly changing, more than any time in history. Over the last 10 years healthcare facilities have required one of the highest levels of capital expenditure of any non-industrial business. We anticipate an even higher level of capital investment in the coming decade due to the combination of an aging population, rapid advancements in diagnosis/treatment, changing care modalities, and the roll out of the Affordable Care Act. Changes in Medicare, Medicaid, and cost reimbursement will drive further pressure on keeping patients healthy instead of just treating diagnosed ailments. All healthcare services will need to be more convenient to access. We are also seeing an increased amount of rehabilitation and therapy facilities and wellness centers at hospitals to cut down on re-admittance rates.

Uncertainty still remains one of the biggest challenges, especially relative to reform, reimbursements, and government regulations. Jim R. Miller, Executive Vice President, JE Dunn Healthcare said, “We are seeing architects investigate facility designs that can, over time, function as lab space, patient rooms, or even surgery or treatment spaces, knowing that all of these could occur in series of renovations. We are also seeing trends such as hospital towers being combined with medical office buildings to bring a range of caregivers into close proximity and support the ongoing shift to wellness over treatment.”

Hospital administrators need to think and plan for flexibility in all situations. A hospital built today may actually undergo regular - even ongoing - renovation and upgrades as matter of business, not as an exception to normal operations. Facilities built today must be even more efficient, sustainable and flexible.

Digital Medicine goes Mainstream

In addition to changes in the healthcare built environment, an equally large change is occurring in healthcare information technology. Digital information systems that integrate and manage records of diagnosis, treatment, imaging, and wellness activities are already in place in many state-of-the-art facilities, and we predict even wider-spread use in the coming years. Digital medicine collapses the distance between patients and care givers, dramatically changing IT infrastructure and space requirements.

The increased emphasis on technology is not reserved only for healthcare operations. Widespread use of Building Information Modeling (BIM) technologies can also improve efficiencies and productivity when constructing medical facilities. We have experienced cost savings on numerous JE Dunn projects recently thanks to the use of BIM early in the construction process.
Multi-Trade Prefabrication for Healthcare Projects

By Chris Hermann, JE Dunn in Rockford, Illinois

Although various terms of prefabrication have been performed for decades, the construction industry continues to redefine the process with more and more projects being prefabricated. Prefabrication is the assembly of components or structural elements in a controlled environment before being transported to the jobsite. Prefabrication can include modular rooms, walls or panels, panels for floors, roofs, ceilings, stairways and even entire structures. The process can be performed at a shop facility or on-site at the jobsite.

Prefabricated is being defined as an element that is formed to perform the function it is designed to perform. Currently, we have numerous healthcare projects in Kansas City, Denver, and Pittsburgh that are utilizing prefabrication. Prefabricated systems are available today that can be installed on a timely and economical basis. If prefabrication is not right for your project, we can still assist with educating the team on the process.

Read more about prefabrication benefits at two JE Dunn projects for Hospital Corporations of America.

Sky Ridge Medical Center Winter Surgery Center Addition

The main challenge for adding mid-scale prefabrication to the Sky Ridge Medical Center included fitting how many different configurations of pre-manufactured bath pods would be utilized, how many of these bathrooms were to be used in each patient unit, and coordinating all of these different bathroom configurations with the units that would receive them. As a result of these requirements, the team to coordinate and coordinate early on the bath pods. We worked closely with the manufacturers to ensure the pods were all dimensionally accurate, and coordinating all of this in advance of procurement. The project team met weekly to ensure the pods were all dimensionally accurate, and coordinating all of this in advance of procurement. The project team met weekly to ensure the pods were all dimensionally accurate.

Overland Park Regional Medical Center

JE Dunn is implementing prefabricated patient room modules and install at Overland Park Regional Medical Center as a case study in the Kansas City market. The entire bathroom and hallway area is constructed off site in a warehouse space concurrent to the site work and then installed in one day. The cost savings of this project will allow for the project to be completed sooner, thereby reducing the overall project duration. The team is utilizing the prefabrication to streamline the construction process in terms of schedule, quality, and safety. With the benefit of all prefabricated on a construction project,

Healthcare – The Dunn Difference

The JE Dunn Healthcare Group is an integrated team of experienced healthcare construction professionals who have a long history of delivering successful projects to our clients. The team is dedicated to providing healthcare facilities, bringing unique value in establishing specialized processes, markets and methods. Our team’s focus on continuous improvement brings you the latest knowledge as the healthcare and construction industries continue to evolve.

Collaborative Project Delivery (CPD)

CPD is a project delivery approach that facilitates team-based collaboration to achieve best value for the project owner. CPD integrates people, process, and technology to improve project outcomes. It involves the pre-identification of project team members at the project’s inception, the allocation of responsibilities, and the establishment of a comprehensive communication plan for the duration of the project. CPD is a proven approach to improve project outcomes, reduce costs, and increase the overall value to the owner.

We Care Program

Throughout the construction process, the primary goal is to manage the process in advance to ensure patient safety and minimize risk. The We Care Program is our commitment to providing the best possible care and service to our clients. The program is designed to ensure that all aspects of the project are completed in a manner that is safe, efficient, and cost-effective.

Mechanical and Electrical Engineering

In the design and construction of healthcare facilities, the safety, health, and comfort of patients and staff are of utmost importance. The mechanical and electrical systems are critical to these outcomes, and our team is dedicated to ensuring they are designed and installed with the utmost care and attention.

Information Technology and Control

The ongoing expansion of information technology, communication, security, and operational controls and other monitoring systems can help ensure the delivery of safe and efficient healthcare services.

Get SmartBox

Workshopping and documenting pressure differences, decibel levels, humidity and air quality are necessary to manage proper safety during construction and create a healthy environment. But at JE Dunn, we take it one step further to simplify our monitoring process.

The SmartBox was the brainchild of JE Dunn’s own Carl Beebe, who worked with Omnisense to develop the technology. STEAM Box delivers an updated digital model that follows the project’s progress through the entire lifecycle. STEAM Box facilitates a much easier construction process during the winter months allowing us to frame the building within an already enclosed structure.

Catholic Health Initiatives 39,185-square-foot ambulatory care center features both an outpatient surgery center and a birthing center. Originally designed to be constructed over a high-rise building, and then download the recorded data to determine the conditions within the building. The SmartBox allows for the collection of data from various locations within the building and can provide real-time feedback to the project team.

Top Projects

South Central

JE Dunn recently completed the San Jacinto College Medical Center, a 135,000-square-foot health facility housed within the newly constructed San Jacinto Community College at its South Campus. The building houses five areas of scientific study, and includes research stations, wayfinding systems, and designations of related pharmaceutical environments. One of the novel features is a pharmacy equipped with a robotic dispensing arm and video teleconferencing. The project consists of a central pharmacy with automatic dispensing, and a research laboratory with a 3,000-weigh capacity electronic balance. The project is currently under construction (JE Dunn Construction).

West

JE Dunn recently completed the all-new 132,500-square-foot engineering and construction building was completed in 2011. The project utilized prefabricated construction systems. Located in a 100-acre site directly across the street from the existing Trinity office, the new building is located on a 100-acre site directly across the street from the existing Trinity office, the new building is designed to meet the needs of a growing population and is designed to accommodate future growth.

Midwest

The University of Missouri Healthcare System hired JE Dunn to design and build a new $900 million, 950-bed hospital to replace the old 250-bed hospital at the University Hospital in Columbia. The new facility is a 750,000-square-foot hospital that includes a medical/surgical tower, a pediatric tower, and a children’s tower. The project also includes an outpatient clinic, a research center, and a patient parking garage.

East

JE Dunn recently completed the new North Texas Health Science Center in Fort Worth, which is expected to open in 2012. The project is a 171,000-square-foot medical facility that includes a medical/surgical tower, a research center, and a patient parking garage. The project, located in Fort Worth, Texas, is a state-of-the-art medical facility that includes a medical/surgical tower, a research center, and a patient parking garage.

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Healthcare Project Types

Although we rank consistently in the top 10 contractors in the nation for healthcare building, at JE Dunn we build a wide range of project types such as education, mission critical, corporate environments, and more. In many cases, our healthcare projects are an aggregate of varying building types. Hospitals need space beyond operating rooms such as cafeterias, offices, labs, data centers, parking structures, and central utility plants. Our range of building type expertise helps us provide a multi-function facility that can fulfill all needs of a hospital, its staff, doctors and patients. Here are just a few projects that include building types that span beyond traditional healthcare spaces:

Mission Critical

JE Dunn recently completed the Saint Luke’s Hospital data center in Kansas City, Missouri. Saint Luke’s needed its data center to be open and running before the rest of the building around and above it was completed. To protect against leaks, JE Dunn built a temporary roof membrane over the deck above the IT center, and had it constantly monitored for moisture. We had to closely monitor for dust, due to the construction of the facility that was being built all around it, including the new kitchen facility. Keeping the data center completely dry and dust-free were our main challenges during this process. The data center and new Mid America Heart Institute are now both open and fully functioning.

Energy

Parkland Hospital Central Utility Plant (CUP) is an 81,146-square-foot facility comprised of cooling towers, a generator building, domestic water storage tank, chillers, boilers and a heat pump chiller. The heat pump chiller sends free heat to the hospital while generating chilled water, which results in significant energy and water savings. Through its chilled water capacity of 13,750 tons, at its peak 15,961 gallons per minute can flow to the new hospital and clinics. In addition, the plant can provide 192,000 pounds per hour of steam.

Science and Technology

The OHSU/OUS Collaborative Life Sciences Building (CLSB) (pictured) is a unique, multi-use facility for advanced biomedical research, undergraduate science education, and medical and dental professional programs. There will be five floors of collaborative research laboratories, designed to accommodate the nation’s premier cancer research scientists. In support of these research efforts is the Oregon Center for Spatial Systems Biomedicine – which will include complex laboratory spaces to accommodate complex microscopes that have extremely low tolerances for vibration, electromagnetic interference, heat and cooling variances, and lighting requirements.

Government/Military

The JE Dunn + HWA National Healthcare Design-Build Team constructed a 55,615-square-foot, 2-story dental clinic replacement on Lackland Air Force Base. The 59th Medical Wing's MacKown Dental Clinic provides advanced dental specialty care and the Air Force’s dental residency training programs. Serving primarily active duty members, the services provided include general dentistry, dental laboratory, dental specialty services and residency training programs, including periodontics, endodontics, and prosthodontics. The clinic directly supports specialized services to Wounded Warriors with traumatic maxillofacial injuries helping to rebuild lives.

Education

Equally as important as healthcare facilities are educational facilities to train the next generation of healthcare providers. JE Dunn has recently completed healthcare education facilities for University networks such as the University of Kansas and Georgia Regents University.

Sports/Recreation

Mercy Orthopedic Hospital, a new construction hospital for Mercy Health Systems, is currently under construction in Fort Smith, Arkansas. The facility is the third and final addition to the River Valley Orthopedic campus and includes a state-of-the-art rehabilitation gym and in-ground therapy pool.