

## Innovation, Technology and Teamwork Lead to Early Opening of Kaiser Permanente's New Hospital in Fontana

FONTANA, CA – Patients are now receiving high-quality, affordable health care at Kaiser Permanente's new state-of-the-art hospital in Fontana, California. Built by **McCarthy Building Companies, Inc.** and designed by **HMC Architects**, the new 7 level hospital boasts a technologically advanced patient-centered design.

Located on the southern end of the Kaiser Permanente Fontana Medical Center site, the new 490,000 square foot tower is one of the largest healthcare facilities in the Inland Empire. The new hospital was built to meet the latest, more rigorous seismic safety standards established by the state of California. It replaces the existing Kaiser Permanente Fontana Hospital tower, some of which will be converted for outpatient use.

Serving as general contractor, McCarthy's contract entailed construction of a 314 bed hospital, a 50,000 square foot hospital support building, and a 23,000 square foot central utility plant. Prior to beginning construction of the hospital in May 2009, McCarthy built a new member and doctor parking lot and relocated utilities at the site.

"Building a major hospital facility on an extremely tight site surrounded by an operational medical center took a great deal of planning and coordination," said McCarthy Senior Project Manager **Lucy Villanueva**.

One of the most challenging aspects of the project was the proximity of the new hospital to existing structures, located only 25 feet away from an operational medical office building and 70 feet away from other medical facilities. McCarthy conducted tie-ins to two existing medical office buildings at a second story pedestrian bridge and an underground pedestrian tunnel as well as various utility tie-ins, all while ensuring operation of existing facilities.

Villanueva says that close collaborating with hospital administration and project subcontractors and suppliers was required to minimize disruption to neighboring facilities. McCarthy also utilized 'just-in-time delivery,' staged materials off-site and shuttled construction workers in from a remote parking area.

The new Fontana hospital is based on Kaiser Permanente's innovative template design that allows for enhanced flexibility to accommodate changing practices and technologies. Kaiser Permanente's electronic medical record system, sophisticated imaging systems, wall-to-wall wireless computer network and free Wi-Fi for members are some of the technological features in the new hospital. More than 20 specialty services are available in the new tower including a Cardiac Catheterization Lab, Labor and Delivery and Neonatal and Pediatric Intensive Care Units. Cardiac Surgery Services will be added in 2014. The hospital features: All private patient rooms; a 24 hour, 51 bed emergency department; 24 hour phar-

macy; a healing garden and mediation room as well as a cafe. The hospital support building is attached to the new hospital and includes medical offices, radiology, a pharmacy and a specialty clinic.

"The patient-centered design at Fontana is focused on a continuum path to healing throughout three stages of the patient experience: Anticipation, transition and healing," notes **John Kouletsis**, VP of Facilities Planning and Design at Kaiser Permanente. The facility boasts large windows providing an abundance of natural light to help ease stress and contribute to patient healing. "Warm colors are used throughout the facility to activate the space and presents a more welcoming patient experience," adds Kouletsis. Each floor features its own accent color that is visible through the main tower to aid in wayfinding. All patient rooms have an acoustic design that reduces noise, and the hospital's labor and delivery suites feature a home-like setting to comfort expectant and new mothers.

The facility incorporates numerous sustainable design solutions including: Energy efficient lighting, electrical, air conditioning and plumbing systems; use of reclaimed water for cooling towers; site bio-retention basins; light colored sustainable roofing; dual pane exterior window glazing and natural day lighting.

Likewise, McCarthy used sustainable building methods throughout the project such as recycling building materials, minimizing unrecyclable construction waste and maintaining proper indoor air quality. In an effort to streamline the submittal process, as well as dramatically reduce the amount of paper used on the project, McCarthy utilized the Submittal Exchange online service to electronically process over 95 percent of all submittals.

"According to Submittal Exchange, the use of this software on the Kaiser Permanente Fontana project has saved more than 130 trees," said Villanueva.

Additionally, a Digital Plan Room with two large monitors for viewing the drawings electronically was used to replace the stacks and rolls of paper drawings. This not only saved space, but significantly reduced the reproduction costs and use of paper for printing the large quantity of drawings required for the project. To encourage the subcontractors to do the same, McCarthy distributed all drawing updates electronically.

A key aspect to delivering this complex healthcare project early and within budget was the design-assist delivery method, which the design and construction team used to complete the project's design documents before construction began. "This early collaborative approach among the design engineer and the trade contractor helped reduce costly and time intensive changes during construction," said Villanueva.

Helping to further the design-assist effort, the project team utilized Building Information Modeling (BIM) coordination technology to manage the hospital facility's complex structural, architectural, and mechanical, electrical and plumbing systems.

"The Kaiser Permanente Fontana Medical Center project was fully coordinated utilizing Navisworks and its clash detection capabilities. All overhead utilities

were completely modeled to assist the project team in efficiently coordinating the extremely complex systems designed for this project," explained Villanueva. "The ability to resolve design and constructability issues effectively and early in the process, directly attributed to significant cost savings in the field and allowed for a faster, more efficient installation. "The largest benefit to the 3-D modeling process was the ability to prefabricate the majority of the plumbing, HVAC piping, ductwork and electrical systems. Over 60 percent of these systems were prefabricated in off-site facilities and shipped to the project just-in-time for installation. The prefabrication process was another key contributor to the reduction of the project duration, as well as increasing the quality of work due to the controlled fabrication environment," added Villanueva.

**Theresa Ashby**, transition director, Kaiser Permanente Fontana Medical Center said, "The efficiencies and workflow innovations that we were able to leverage during the construction of the Fontana Replacement Hospital have allowed us to provide cutting-edge healthcare to the residents of the Inland Empire much sooner than we had initially anticipated."

Additional project consultants include: structural engineer **Saiful Bouquet** and mechanical engineer **Ted Jacob Engineering Group**. The design-assist subcontracting team is **Herrick Corp, Sharpe Interiors, Berger Bros, Tower Glass, Swisslog, Cosco, Southland Industries** and **SASCO**. ❖