



**CORNERSTONE**  
CONSTRUCTION GROUP, INC.

## **Surgical Cardiac Catheterization Lab construction that avoided contamination**

**Large So CA hospital turns to Redondo Beach-based Cornerstone Construction Group ([www.cornerstonecg.com](http://www.cornerstonecg.com)) to enlarge heart surgery suite**

**L**ife-saving advancements in medical technology and surgical techniques would accomplish little without exacting standards of hospital hygiene and infection control.

That's why renovation and expansion of a hospital operating room – where patients are at their most vulnerable – ranks among the most challenging construction assignments.

When a major medical center put out a call for bids to enlarge and enhance their surgical cardiac catheterization lab, Cornerstone Construction Group drew on their 30 years of experience in construction management services to health care institutions to carefully list the challenges before bidding.

### **A few major items from Cornerstone's list:**

- first and foremost, zero biological or other contaminants could be introduced to the existing surgical suites or the hospital at-large during construction;
- they would have to minimize the impact of construction on the surgery department and other routine hospital functions, such as loading and receiving;
- close coordination with the manufacturers supplying the new medical equipment would be necessary to head off any problems due to unexpected electrical requirements;



- care would need to be taken to ensure proper handling of medical equipment during shipping as well as the timing of delivery so that it arrived in sterile condition, ready for immediate installation;
- and not least, throughout the process Cornerstone would need to continually confer with hospital staff responsible for managing the project.

A key element of the plan that emerged included an unorthodox idea for in/out access, but there was a hitch: for competitive reasons, the costs could not be fully described within the bid package. Despite this obvious disadvantage Cornerstone Construction Group won the bid.

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**What was so unorthodox?**

Working together, the entire Cornerstone team made the bold decision to never come inside the surgery department, although it was located on an upper floor. Instead, they would enter the construction site from outside of the multi-floor building by removing exterior fixed windows that led directly into the room, thereby isolating the workspace from the rest of surgery. Access to the worksite was achieved by rigging external scaffolding and an exterior temporary elevator.

**There were a number of advantages to the scheme:**

- it enabled the general contractor to take all necessary safety precautions with relative ease, so the project went smoothly;
- noisy work could be performed at night and on weekends;
- because workers didn't need to "gown-up" to enter the construction site, they saved time and cost to the hospital; and

**Cornerstone has developed creative, cost-effective workarounds to prevent contamination of sterile medical environments for other hospitals as well, such as:**

- gaining access from a roof to an adjacent area in order to isolate the main room; and
- creating a negative-pressure ante-room where air can be scrubbed and serve as positive-and negative-pressure rooms.

A third party company that monitored contaminants inside and outside a recently completed facility said, "I've never seen construction and surgery areas so clean. The risk of infection actually went down during the construction phase." This outcome was a direct result of Cornerstone's terminal cleaning crew and internal infection control manager.



- the job site could stay open almost 24 hours a day, thus speeding the project time-line and reducing the inconvenience to the hospital.

With the added impact of construction crews, equipment and materials operating in tight proximity to the hospital's loading/unloading, keeping the hospital's six-truck loading and receiving bay open and operating was a challenge. The solution was to bring in stand-alone concrete barriers (the type used in highway construction) to keep shipping/receiving discreet from construction. During normal operating hours, a flagman would then work with the arriving truckers to take turns. Everyone cooperated and all ran smoothly.

**Avoiding change orders**

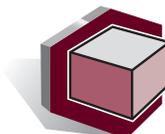
Even with the best plans, new problems occur every day on the job site.

While carefully reviewing new medical equipment specifications to prepare for a successful, trouble-free installation and operation, the Cornerstone team uncovered a problem: the manufacturer's control wires were not going to fit thru the conduits the manufacturer specified.

Had the error not been caught in time, there may have been serious consequences, beginning with the bane of every construction project – the dreaded change order.

Change orders are bad for everyone. Change orders cost the customer. Contractors lose productivity and money

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that can never be regained. The equipment supplier may need to redirect equipment to another customer, and then have to rush production and shipping of the next piece of equipment to meet the first buyer's schedule.

Instead, Cornerstone's years of experience earned major cost savings for the hospital. Often the manufacturers of sophisticated hospital equipment are based in Europe or Asia – markets with varying electrical requirements, as was the case here.

Leaving no room for the unexpected, the Cornerstone team got ahead of the problem by engaging with the manufacturers to go over every detail of the process and materials necessary for installation. They surfaced the supplier's error well prior to committing costly work, corrected the problem and avoided an expensive headache.

#### **Efficient and sensitive hospital communications**

It took 12 weeks to prepare and plan to install the lead radiation shielding, and another 12 weeks for construction before equipment could be brought in via hospital elevators – maintaining an uninterrupted sterile state of condition from the manufacturer to final installation.

Throughout the process, Cornerstone staff reported to the Chief Operating Officer of the hospital, who involved the Director of Facilities & Engineering and staff in decision-making. Weekly meetings took place with the Director of Nursing, Director of Environment & Facilities, and the Director of Infection Control & Interim Life Safety Measures to ensure good communication in order to tackle issues in real time.

### **About Cornerstone Construction Group, Inc.:**

After having served the U.S. Navy as a Chief Engineer during the Vietnam War and then having spent 12 years serving major SoCal medical centers as Director of Facilities and Construction, Vic Braden, along with his wife, Linda, founded Cornerstone over 30 years ago to provide design and construction management services to health care and commercial enterprises.

For decades, Cornerstone has developed a trained management staff including Project Managers, Supervisors and Journeymen Trades-in-House resulting in significant growth to the company. In 2007, their son V.J. joined the company. The family manifests a strong desire to invest in the continued development of the South Bay and over the years, has spent spare time and company resources helping their local communities.

The least-impact strategy employed by the Cornerstone team was both a success and a great relief to the doctors, nurses and other medical staff whose top priority during the construction process was patient care. Hospital management praised the team for their creative solutions and overall seamless management of the entire project.

