



CORNERSTONE
CONSTRUCTION GROUP, INC.

Replacing Blood Analyzer Unit at a major Southern California medical facility

Facility Description

An award-winning medical facility in Los Angeles County, a hospital that offers comprehensive services: emergency room, surgical including robotics, imaging, gastroenterology, neuroscience/neurology, maternity, occupational therapy, pediatrics, and palliative care.



Infection Control was Mandatory

The ability to manage infection control was one of the key drivers in this hospital's search for an experienced construction team to replace an aging blood analyzer unit with the newest available technology.

The process of replacing such a unit is arduous, complex, and lengthy, with many components that need extensive preplanning and onsite coordination. For those who know, one does not simply switch out the blood analyzer unit as one would replace an old photo-copy machine with a new one.

Infection control required the use of special temporary barriers around the site. Generally speaking, there are two types of infection control barriers that can be employed:

Starc Walls, a hard barrier prefab wall and **Zip Wall systems**, fire-rated plastic hanging from the ceiling. Which one is employed depends upon specific conditions in the area where the work takes place. For example, if a temporary wall requires a 1-hour fire system, **Starc Walls** cannot be used.

No Need for this medical facility to Outsource Blood Analysis at any time

A blood lab is one of the busiest hubs in a hospital's testing arena. Typically, a hospital outsources this type of work during an onsite lab upgrade. Along with finding the space to relocate the current lab's equipment, expanded data storage and network capability for multiple computers was necessary to house the two systems. Without this, the hospital would need to outsource blood analysis.

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Cornerstone's long (~30 years) experience in dealing with problems specific to medical facility construction gave them the know-how to plan, organize and make this dual-use project work. The hospital, working with Cornerstone, was able to accommodate both space and data system requirements needed to retain the vital function of blood analysis onsite during the upgrade.

Fortunately, with these accommodations, the old system remained fully functional while the new system was being installed, and then tested (the process for which can take up to 30-45 days.)

A Multi-phased Collaboration

In this type of complex collaborative project, Cornerstone is brought in to execute a phased plan, identified by the architect of record before construction begins. It is not unusual that the phases specified might conflict with the actual conditions encountered once the work begins... which is what happened during this project.

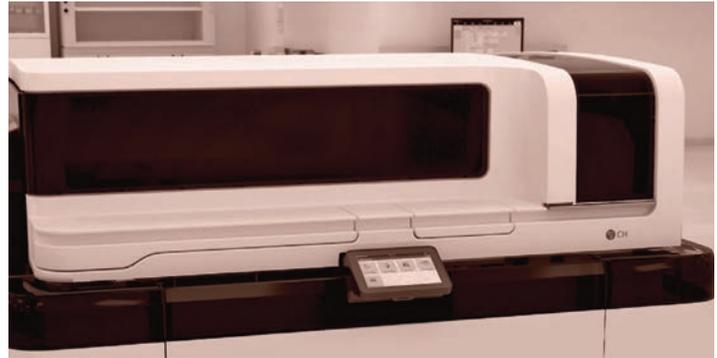
In the case of the blood lab replacement, there were some existing conditions that were not addressed in the original architectural project drawings, including a structural issue that emerged during the installation at the new location site. For example, the new machine is water cooled, with water flowing in and out. Some existing plumbing lines had to be cut and capped. This created a 'floor chase'.

Because a new sink had to be installed in the floor, it demanded support. So, Cornerstone not only had to deal with new plumbing requirements, but also had to backfill under the floor sink with concrete. Due to the weight of the new unit, the structural engineer required that Cornerstone use 5,000 psi concrete rather than standard 3000 psi concrete.

Cornerstone's abilities and knowledge base enabled their team to absorb some of the delays and reduce the amount of lost time that others might not have been able to skillfully trouble-shoot and problem-solve in real time.

Phase 1 – Completed in Six Weeks

Cornerstone mobilized storage facilities and porta potties, began lab relocation, office furniture removal, and set up infection control containment. They went thru the Infection Control Risk Assessment (ICRA) check-list, met



with the infection control specialist, and did a walk-thru to ID any breaches (one example of which was with soft barriers where negative air pressure tended to pull the tape away from the walls).

When they arrived on the scene the blood lab's condition conflicted, as mentioned above, with the architect of record's Phasing Plan.

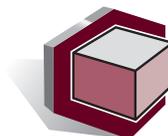
After a plan was developed to deal with the outlined problem, Cornerstone moved the office furniture and relocated the lab.

Then, demolition in the containment area commenced. The data power poles, existing cabinetry, and cabinet sink were removed. That's when Cornerstone ran into the plumbing floor chase—the water lines came up thru the floor into the cabinet sink. The plumbing problem had to be removed, which necessitated contacting the architect of record, the Office of Statewide Health, Planning and Development (OSHPD), District Structural Engineer (DSE) and the Inspector of Record to let them know what was found.

In addition, the old Vista 500 unit had to be temporarily anchored which also took time.

Cornerstone safely cut and capped the mechanical, electrical, and plumbing lines for a safe/OFF and then, they had to open up the walls, frame and patch the dry-wall, prime and paint after backfilling at the chase because that was where the new analyzer unit was to be located.

Simultaneously with Phase I in the contained area at the blood lab, new power was run from the basement to the



blood lab. *This took a few weeks to complete.* Cornerstone set up a small, soft-barrier containment area and then installed a water purification system, while roughing in plumbing and a separate location for the system which feeds the analyzer unit.

Phase 1 was now complete: Along with the specified work in the original plans, *Cornerstone had removed the containment system, patched the floor and then removed the containment area --* But not without an *Additional Change of Design (ACD)* needed to indicate the particular areas that hadn't been shown on the original architectural drawings. These changes had to be added into the design and reviewed by the compliance officer (the CO), the DSE and the fire Marshall.

Peace of Mind with effective Infection Control

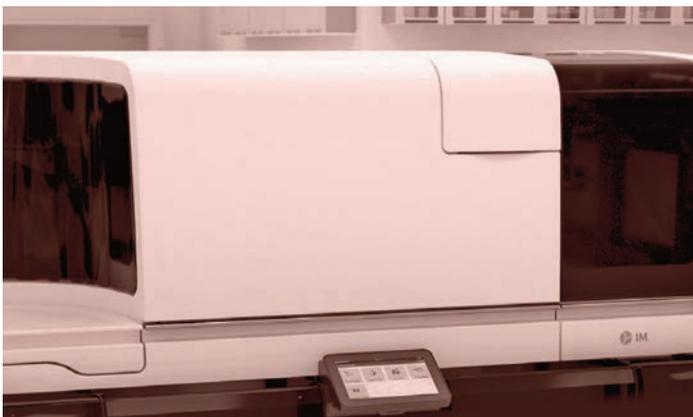
To assure hospital management of infection control procedures, Cornerstone posted a daily infection control checklist assuring the air inside the infection control unit was clean:

- the sticky mats for footprints were freshened,
- the filter for the HEPA system was cleaned, and
- the smoke detectors were covered or removed at the end of each day.

This standard operating procedure conducted by Cornerstone is not executed by all construction companies. Hospital managers were able to review the checklist, so they knew which items were being managed.

Phase 2 – Completed in Four Weeks

When Siemens' installers arrived and moved the equipment into place, they realized they needed additional power that



had not been previously identified, along with additional UPS (battery back-up) for the system. This required additional work for Cornerstone to run power to the specific locations of the additional UPS.

This was necessary because, In the event of a power failure, the hospital's generators would power up the hospital and the UPS would provide emergency power until the generators were online (which takes about 30 seconds).

Cornerstone had to add the remedy into the design and await approval before execution. This was more than just the power, but the structure as well. The equipment required seismic bracing to allow the UPS to remain in place without failure.

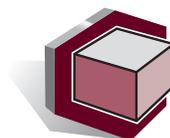
The space where the additional UPS were to be located was limited and so additional structural support was required. This, too, had to be reviewed by the DSE and required multiple inspections.

Infection control required setting up a containment area where the new electrical panel for the new analyzer system was to be installed. This meant opening the wall, reframing, hanging new dry wall and patching back.

The installation should have taken 15 working days, but solving the UPS problem detailed above added two weeks to the schedule.

Cornerstone Expertise – A Big Plus

When the wall for the panel was opened, Cornerstone discovered something else that was not indicated in the original plans. The designated panel was deeper



than the existing wall which caused another delay -- a structural delay.

Once again, the structural engineer and DSE had to review the situation and the proposed solution.

Only five more days were needed to accommodate the delays. This was attributed to Cornerstone's experience and the Cornerstone team's creative ability to trouble shoot, knowing the expected OSHPD requirements, and knowing the type of materials needed. This knowledge base was a big plus for the project.

Phase 3 – Phase 3 was the essential downtime for construction because calibration and testing were taking place with the new Siemens blood analyzer by the Siemens team.

Phase 4 Cornerstone removed the Vista 500 unit, installed new cabinetry, counter tops, and reinstalled existing office furniture for storing blood lab equipment.

Adapting to The Best Laid Plans

Construction is a real-world activity. And the stakes are raised when working in the life or death environment of a medical facility. Unforeseen factors inevitably arise. The most important planning step is working with experienced professionals with a track record of responding to the unexpected with wisdom and creativity.

About Cornerstone Construction Group, Inc.:

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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.

