



San Francisco Health Network
Laguna Honda Hospital
and Rehabilitation Center

Laguna Honda Hospital Operations Updates: HVAC Presentation

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HVAC SYSTEM HISTORY

- The new hospital building included a mechanical HVAC system.
- The design was based on industry standards.
- However, there were challenges with the design. The design was not developed specifically for our location and the work was “value engineered” for budget reasons.



HVAC CHALLENGE #1 – OVERALL DESIGN

- The design of the HVAC system did not take into consideration the atmospheric conditions of our area (fog with high salt content) and the condition was made worse by placing non-marine grade HVAC equipment on the roof.
- The chillers and air handlers were also under sized.



HVAC CHALLENGE #2 – CONTROLS

- At completion of construction, when the HVAC system was commissioned, it was determined that there was not enough air flow in the building to perform a proper air balance test.
- The project team isolated two floors at a time, with all building windows closed and tried to overcome mechanical deficiencies by custom programming the controllers. This resulted in starving certain areas of the building to supply other areas of the building.

DESIGN FLAW & LAWSUIT

- After commissioning, it was determined that there was a design flaw in the HVAC system.
- A lawsuit was initiated, resulting in a settlement with the city. The settlement money went into the General Fund in lieu of making corrections to the system.

HOW LHH HAS MITIGATED THE CHALLENGES TO-DATE

- Facilities does a lot of work during heat waves to mitigate the temperatures in the different patient care areas. This includes:
 - Utilizing the Building Management System (BMS) to monitor building air temperatures even in individual resident rooms and suites.
 - Installed portable air conditioning units in the great rooms connected into the building exhaust to provide a cooling area on each of the patient floors.
 - Repeated notices to staff to keep windows and blinds closed.
- LHH also replaced roof top equipment that has pre-maturely reached its end of life. We replaced the chillers on both the North and South towers due to corrosion, and the Pavilion chiller is now at the point of needing to be replaced pre-maturely due to corrosion.

LHH'S PATH TO A WELL-FUNCTIONING HVAC SYSTEM

- The first step was to get capital to address the problem. It was determined that the project needed to be broken up into several stages to assess and make corrections of the deficiencies.
- Phases 1-3 included removing the custom programming and upgrading 400 controllers and performing air balance testing to address where the system was lacking air flow.
- We have completed Phases 1 and 2 and are in Part 2 of Phase 3. This is a large phase with a lot of moving parts.
- Phase 4, the final phase, will be informed by the results of Phases 1-3. Phase 4 will be a construction effort to correct ducting and/or to add HVAC equipment to produce adequate air flows and cooling.