Visit report 20/10/16: Sutterhealth Hospital

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As the study tour's finale drew near on October 20, we visited the Sutterhealth Hospital project grounds just west of downtown San Francisco. Thanks to the project's close proximity to our hostel, it was just a 15-minute walk. The visit started off with several presentations about the construction of an entirely new and earthquake-proof hospital and we ended the visit with a tour on the actual construction site.

California is obviously very prone to earthquakes, which has become visible over the past decades. For instance, the 1933 Long Beach earthquake destroyed several elementary schools, prompting state officials to come up with statewide regulations with regard to constructions and earthquakes. In 1971 the San Fernando earthquake hit Southern California, decimating a brand new hospital which had just been put into operation. This particular event marked the beginning of tighter regulations on earthquake-proof engineering of hospitals. Hospitals are now categorized according to Seismic Performance Categories (SPCs). Level 1 is considered unsafe and must be removed by 2020. Level 2 buildings are safe initially, but unable to operate properly afterward. These buildings must be improved or replaced by 2030. Levels 3 through 5 are considered safe.

While the Sutterhealth Hospital is classified as a privately non-profit hospital (which means it may run a profit margin, but must invest it in the hospital itself rather than paying dividends to shareholders), it must still comply with state regulations. No state funds are available, so all funding has a private source.

The hospital is located nearby three main seismic faults: the San Andreas, San Gregorio and Hayward faults. Though the former is probably best-known and could induce the most powerful earthquakes, the latter is most likely to cause the next major earthquake as it has remained quiet for a long period now. Design choices are based upon statistics, accounting for the three faults' proximity and likelihood of causing damage.

As a result, the hospital design differs from 'regular buildings' in that it boasts a Supplemental Damping System (SDS) with base isolation, pioneered in Japan in the 1990s. In a nutshell, this entails box-like structures filled with a very viscous jelly in which the building's horizontal beams are situated. In this way, more than 80% percent of the earthquake's energy impact is mitigated in the horizontal direction, which is the governing direction for earthquake loads. What is more, the newly constructed hospital will be self-sustaining for about four days. To this end, the building features its own fuel tanks, electricity generators, drinking water tanks and its own waste water treatment plant.

Apart from its engineering style, the project is pretty unique in terms of (contract) management. Rather than fighting over each construction dispute, all (sub)contractors are together responsible for the project's succession. For instance, if one contractor fails miserably in doing is job and thus causes great financial losses, all involved parties bear these losses. Conversely, the parties partially share any savings made on the project. According to the project manager, collaboration and weekly meetings are key in this approach. Interestingly, no major problems or disputes have occurred so far and the project is projected to be completed by 2019. Apparently this project management approach works out very well. Additionally, the hospital building has been divided into parts according to the amount of work involved rather than area size. This allows for a very easy project planning in a Gantt chart. Each week, another construction team (e.g. plumbers, electricians, etc.) did their jobs in a particular section and reported early in the week on their progress and expected completion time.