VI. PANORAMA CITY MEDICAL CENTER

a. Structure and Damage:

The hospital had 275 licensed beds: 202 acute general, 41 maternity and 32 pediatric. The hospital location was approximately 15 miles from the epicenter of the earthquake.

Panorama City Medical Center is a 10 story reinforced lightweight concrete shear wall structure. The basement and lower 3 stories have a rectangular plan, while the upper 7 stories consist of two circular sections, approximately 90 feet in diameter, connected by an elevator lobby (Figure 11).

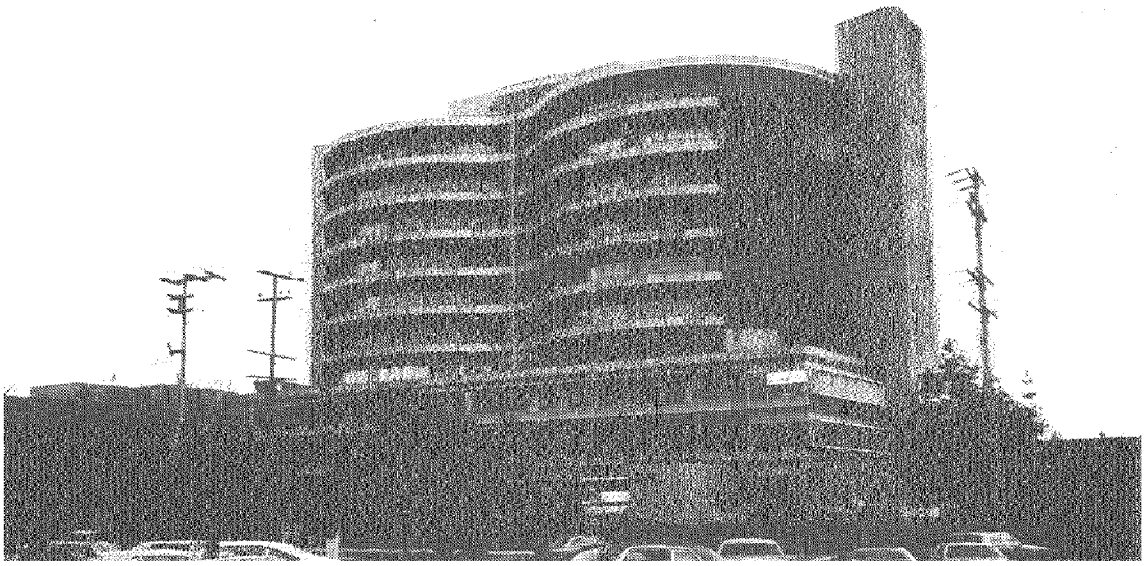

Figure 11: Panorama City Medical Center.

There was severe cracking of the shear walls in the first, second and third stories. The doors to the interior stairwell on the second and third floors were rendered inoperable due to the crushing of the spandrel beam in the shear wall. The fourth floor slab, which was the transfer slab between the circular tower shear walls and walls below, cracked and displaced vertically. There was no apparent sign of structural damage above the fourth floor level.

Over 90 glass panels, 4 x 8 feet in size, were broken and about 50

fell from the building. In addition , ten days after the earthquake many windows were blown out by wind.

All the elevators were out of service after the earthquake, and one elevator was still inoperable three weeks after the earthquake. The emergency power system remained functional. There were only two minor injuries to staff personnel and no patient injuries.

The hospital continued operation after the earthquake. In the middle of the morning, after the shock, the structural engineer responsible for the design of the building inspected the building and pronounced it apparently safe based on a visual examination: repairs could be made when design analysis was complete and the City had provided a permit to repair.

The initial estimate of dollar loss for this hospital, in structure and equipment, was $250,000. At this time the hospital administration could not anticipate that the total expenditures for direct costs of repair and equipment would be over $3 million and that over six years would elapse before the final payment of financial assistance from the Federal Government was received and the books could be closed.

b. The Experience:

This description of what happened at the Panorama City Medical Center is an edited version of a draft of a report on the earthquake by Kenneth Coston, the Hospital Administrator.

The earthquake occurred on Tuesday, February 9, 1971, at 6:01am. Mr. Coston arrived at the hospital around 6:40am and made a quick tour to survey the damage, to let personnel know that he was in the hospital, to reassure them and himself, and to inform them that the situation was being assessed and action to be taken would be determined as soon as possible. The personnel had the situation well in hand. Cleanup was proceeding as quickly as possible and patient care was remarkably routine considering the broken glass, spilled liquids, fallen and cracked plaster,

and the fact that outside telephone communications were practically non-existent. Personnel and patients could neither make nor receive outside calls for several hours in most cases, and several days in some, since one exchange near the epicenter was completely destroyed.

There were only two minor injuries to personnel in the hospital, and no patient injuries. All elevators were out of service for about 24-36 hours. One visitors elevator was out for several weeks due to cab damage as a result of falling counterweights.

The City power was off for about 20 minutes. The emergency generators came on line immediately and carried the emergency load until the City power was restored.

Although City water became cloudy and had a different taste, constant checking with the City gave assurance that the water was safe for drinking in spite of sporadic rumors that it was not.

Nursing personnel began to get those patients ready who, in their opinion, could be discharged by their physicians. In most cases relatives came to the hospital as soon as they could, since telephones were not working. In a few cases discharged patients called taxis to transport them home. These patients were discharged pending a determination of the building safety and whether or not total evacuation would be necessary. Approximately mid-morning structural engineers arrived and within a short time indicated that the building was structurally safe as far as a visual inspection could determine, and that evacuation would not be necessary because of any structural deficiencies; therefore patients who could not reasonably be discharged because of their medical condition were kept in the hospital. Elective surgery was cancelled for the next two days, but resumed on a routine schedule on the third. Obstetric patients were seen in the Emergency Room by an obstetrician, and if they could walk to the 5th floor Labor-Delivery area, they were accompanied by the nurse and delivered. Only one patient, who was in very active labor, was transferred by ambulance to the Sunset Hospital for delivery there. The area surrounding the hospital did not incur much serious damage nor were

there many injuries, therefore it was not deluged with emergencies.

Too much cannot be said about the response of the personnel during the earthquake. Night shift personnel, even though they did not know whether they had homes to go to or whether their families were injured or not, voluntarily stayed as long as they were needed. Day shift personnel came in as soon as they could get there - in some cases, even though their homes had been severely damaged or destroyed in the earthquake. Off-duty personnel came in to offer their services as soon as they could get there. In one case, women from the neighborhood, who were not Kaiser members, came to the hospital with brooms, dustpans, and vacuum cleaners, "because we knew there would be some cleaning up to do."

The dietary department arranged for food service to continue with no interruption even in the regimen of those patients who were on restricted diets. Food was passed up from the basement to the 10th floor by forming passing lines in the stairwell towers.

One major complication was created by the rupture of an earth-filled dam (Van Norman Reservoir) in the northwest foothills of the valley. Because of this problem approximately a 16 square mile area (2 x 8) below the dam was evacuated by about 80,000 people and eliminated normal traffic lanes through this area. In addition, damage to freeways in the same area of the dam posed problems. In Mr. Coston's case the evacuated area was between his home and the hospital and what was normally a 15 to 20 minute trip on surface streets took almost 4 hours on one occasion.

In spite of the fact that 91 pieces of 4' x 8' glass were broken, miraculously no one was even scratched. A team from Central Construction was sent out to remove broken glass and install temporary plywood. About two weeks later, Friday, February 19, 1971, at 10:30pm, strong winds buffeted the hospital and the plywood was being ripped off. The north side of the hospital was evacuated - in some cases by putting patients in the nursing station area and transferring a few to the Sunset Hospital and the extended care unit. This wind also broke more panes, which had been loosened by the earthquake. The strength of the winds created a

strong vacuum on the south side - opening many outside doors which could not be latched because the earthquake had misaligned them. Tape and wire were used to hold these doors closed.

March 20, 1971, at 2:30am, the switchboard operator notified the engineer that the entire board "had lighted up like a Christmas tree." After some searching, the engineer discovered that the coupling on the 4" main gas line was leaking, flaming up several feet. This dielectric coupling (union) is located in the enclosed cooling tower area of the air conditioning system. The main valve was immediately shut off and the Gas Company notified, as well as the Fire Department. Further checking revealed that the ground wire (34,500 volts) in the transformer room had shorted and completely melted. Later that morning it was discovered that the telephone switchboard at Safeco Insurance Company, one block north, was out of order, as well as the telephone terminals being shorted out in an apartment house about two blocks south of the hospital.

Detailed investigation by all utility experts concerned did not disclose any discernable cause, nor were they familiar with any similar incident. There could have been serious consequences had the gas not ignited immediately, but leaked and then been ignited by a spark from the fan or pump motors.

c. The Repairs:

The emergency repair work after the earthquake, such as removing debris, boarding up broken windows, prying open jammed doors, and arranging for detours, began immediately. The Kaiser Foundation was able to employ its own full-time maintenance and construction staff as well as some of the sub-contractors who regularly served the main health care facilities of Kaiser Foundation Hospitals in Southern California.

As the administration settled into dealing with the long term restoration of the hospital structure and equipment it found itself grappling with a number of time consuming important problems. One issue was the extent of the repairs that would be subject to financial relief

by the Federal Government. This was complicated by two factors: one was that of the code standard which should govern the repair work: that of 1958, which governed the original building; of 1971, when the disaster occurred; or the code of 1972 which reflected the experience of the disaster and which was in effect by the time submissions for aid from the Government were being made. A further issue was that of determining "betterment:" the need to repair sometimes gave the hospital the opportunity to make improvements - such as replacing painted wall surfaces with tiles - which represented a voluntary improvement by the administration rather than a restoration to an existing standard, and as such was not eligible for reimbursement.

Another time consuming issue was that of negotiations to establish the extent of reimbursement by the insurance company, for the building had been insured - for approximately $4,000,000 with $500,000 deductible - against earthquakes. The insurance settlement in turn reflected on the settlement negotiations with the Federal Government.

1. The Building Permit:

The design of the repairs themselves, particularly the strengthening of the shear walls, was subject to review by the Department of Building and Safety, City of Los Angeles, who would have to issue a permit before permanent repairs could begin.

Soon after the earthquake the structural engineer, architect, and director of facilities for Kaiser met with the Chief of Building Bureau, Department of Building and Safety, City of Los Angeles to discuss obtaining a permit to repair the hospital shear walls by the use of epoxy. The Building Bureau was reluctant to consider issuing a permit for the repair of Panorama City shear walls by filling the cracked walls with epoxy. However, consent was given to have one wall repaired by this method so that some engineering analysis could be made of the situation. A wall at the west side of the 1st floor in Panorama City was selected for this test and was repaired; the results were very encouraging. The average

compressive strength of the concrete core samples taken in the repaired areas was 5,250 lbs. per square inch as compared to a design strength of 3,750 lbs. per square inch. This information was conveyed to the Building Department during April 1971.

After this test a letter was sent from Kaiser Foundation Hospitals to the City requesting permission to proceed with epoxy repairs at Panorama City. The City replied by giving the parameters for the application of epoxy to repair a wall and also criteria for the design to use on the damaged structural elements of the facility preceeding these repairs. The City's letter implied that the walls would have to be brought up to the 1970 Code, as they were originally designed to the 1960 Code. This additional strengthening represented a time consuming and expensive addition to the repairs that was not previously contemplated.

In May 1971, a team again met with the Department of Building and Safety to discuss the repairs for Panorama City. The Department had taken a strong position that the value of the damaged walls when repaired by epoxy would only represent 70% of their original strength and that the structural portion of the building needed to be upgraded to the 1970 Code. Various methods were tried to convince the Department that this request was not in keeping with the team's understanding of the Building Code. When this approach met with no success a meeting was requested with the General Manager of the Department of Building and Safety.

A meeting was held in June, between the two teams, now reinforced by attorneys on both sides. The Manager of the Department of Building and Safety, after listening to the case, stated the Department's position: the Building Code gave him authority to require the damaged shear walls to have added structural strength. As the City seemed determined to insist on this method of repair, it appeared to be futile to ask for a hearing to see if this decision could be overruled. Therefore, the team accepted the responsibility for developing a design to incorporate the City's thinking into the

repair work at Panorama City.

A permit to repair the Panorama City Medical Center was secured, using epoxy to repair the cracked walls and gunite strengthening to bring the building structural system up to the 1970 Building Code.

It should be noted that code revision subsequent to 1971 would require shear walls some 1½ to 2 times stronger than those of the 1970 Code. If this hospital were to be damaged in the future, the owner would be faced with similar problems in obtaining a building permit.

2. The Scheduling of the Work:

The remedial work began, and the hospital administration was faced by a difficult problem of ensuring continuance of service while the construction work proceeded. A repair program was planned that would remove no more than 12 beds out of use at a time. At this time the adult surgical-medical beds were occupied 95-96%. Fortunately, the unique Kaiser hospital design, which used outside enclosed access balconies, allowed access to the rooms in segments. A dust wall was built to separate the construction areas from the patient areas, and this process was repeated around the rooms as spaces were completed and others started.

By the beginning of November 1971, a strategy was agreed upon that would start the shear wall additions of the first floor, with the wall running north and south along the corridor adjacent to the Hospital Administration area. This would allow the crews to determine the best methods of construction for the additions before starting in the Surgery area.

By November, two adjacent operating rooms would be made available to the Construction Department for the shear wall addition. When the addition was complete in this area, the two operating rooms would be put in service and two other operating rooms would be turned

over to the Construction Department for the wall addition. Other wall additions in the Surgery area would be scheduled as appropriate.

The floor repair required in the ICU area would be scheduled in April 1972. This would allow the physicians in the third floor, in the area below the ICU area, to be moved to the Phase II Clinic Addition. The Phase II Clinic Addition was then under construction and scheduled for occupancy in April 1972.

When the physicians from the third floor were able to move to the new Clinic Addition, the ICU area would be relocated to the 7th floor during the construction repair period. The interim relocation of the ICU area would be made to coincide with the relocation of the third floor physicians.

Finally, the remainder of the shear wall additions could proceed in a random pattern in order best to accommodate the schedule of the Hospital and Clinic personnel.

Since as of the end of November, and for a period for as long as 4-5 months, two of the six operating rooms would not be able to be used, a new operating room schedule was developed, which would allow the surgical schedule to be maintained by extending the afternoon operating time to 6:00pm for the rooms in use.

This plan was successfully carried out. In April 1972, the Surgery Department reported that in spite of working under these handicaps, and often being short of nursing staff, more procedures were being performed than in the previous year. In January 1971 there were 467 operations performed as compared with 518 in January 1972. In March 1972 there were 582 procedures - the largest number for a single month since the hospital opened.

The Radiology Department also reported that in spite of undergoing extensive repair work from the earthquake, which caused considerable inconvenience in providing service, the departments output of work had increased since the previous year.

3. The Cost:

In June 1972 the estimated costs of repair, prepared by the Kaiser Foundation Facilities Planning Office, were as follows:

Building repairs: painting & plastering	$ 80,000
Elevator repairs:	44,000
Glass & glazing:	18,000
Structural repairs:	1,300,000
Betterment costs, to meet new code:	75,000
Betterment, convenience:	100,000
Clean-up, time lost, etc.:	30,000
	$1,647,000

It was estimated that approximately $902,000 of this might be recoverable from insurance, and of the remaining $745,000 an amount varying from zero to $575,000 was potentially recoverable through the Federal Disaster Relief Act.

As of February 1971 all Kaiser Foundation Facilities in the region were covered by a first layer of $4 million earthquake insurance with a $500,000 deductible, so that the maximum net recovery available was $3.5 million. This coverage was spread over

12 insurance companies, in sums ranging from $35,000 to $1.6 million.

By September 30, 1972 the cost for 48% completion of repairs was $1,326,369: based on this, in November the estimated cost for 100% completion was $2,763,268. The elevator work and architect fees were 100% complete, and the structural engineers fees were 70% complete. In December the estimate for completion was revised to a total of $2,838,600.

During the period when repairs were being estimated, bid, and executed there was much negotiation as to how the costs would be apportioned between Kaiser, the insurer, and the Federal Government. The insurance policy involved was a fire insurance policy with an earthquake endorsement. Kaiser's attorney conceded that the policy required the insurer to pay for bringing the building up to the 1958 standards, but not those of 1970. This brought up the problem of how to apportion the cost. For example, in order to bring the shear walls of the building up to 1958 standards some additional amount of concrete was required to be added to the walls. In order to bring the building up to 1970 standards an additional amount of concrete over the 1958 standards would be required to be added. However, the major cost would be preparing the walls for the critical reinforcement. The actual additional cost involved in bringing the walls up to 1970 standards would be little if the reinforcing was all done as part of one job.

No precedent already existed dealing with this issue, so resolution was dependent on how the policy was construed. The policy stated it would pay the cost of repairing or replacing the property "...with material of like kind and quality...". Counsel was of the opinion that the term "like kind and quality" implied a structural strength quality, and that in order to bring the wall to 1958 standards the insurer would pay for the concrete to be added. It was not enough merely to restore the walls to their old dimensions; strength, not size, was the function of the walls.

By September 1973 the estimate to complete the repair work on all Kaiser facilities had risen to $3,600,000 and a preliminary offer of insurance settlement of $2,479,000 (less $500,000 deductible, or $1,979,000) had been received.* At a meeting with representatives of the Federal Disaster Assistance Administration, Kaiser officials discussed the effect of this offer on the request for assistance from the Federal Government. Kaiser presented the following estimate to the FDAA officials:

Construction repair estimated:	$3,600,000
Less Code changes (reimbursable by FDAA):	400,000
	$3,200,000
Less Betterment:	100,000
	$3,100,000
Less Deductible:	500,000
	$2,600,000
Other Undefined Items:	200,000
	$2,400,000

The bottom line number was felt by Kaiser to be a reasonable target for insurance adjustment. This position was agreed upon by FDAA, on the basis that it was up to Kaiser to obtain this sum from the insurance companies, and if they only obtained $1,979,000 the difference would be a Kaiser problem.

By April 1974 the insurance companies were talking about a 'ceiling' number of $2,175,000 (or $2,675,000 less $500,000 deductible) as the cost of repairs for all Kaiser facilities in the Region, or a settlement of $2,012,742 for Panorama City alone. This number was computed as follows:

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* Repairs to Kaiser Panorama City Hospital constituted approximately 90% of that total estimate.

Estimate to complete:	$3,381,887
Less 9.2% for Kaiser share:	311,136
Less 4% overtime:	135,273
Less 1/2 of 25% for continuing work in an occupied building:	422,736
	$2,512,742
Less $500,000 deductible:	$2,012,742

In July 1976 the State Controller reported his audit of the Kaiser records for the request, for all Kaiser facilities, by the County of Los Angeles on behalf of Kaiser for assistance from FDAA:

Repair expenditures Feb 1971 - Nov. 21, 1975	$3,359,449.85
Insurance recovery:	2,241,169.98
Medicare reimbursement:	78,719.00
Ineligible (for insurance or FDAA):	180,553.35
Elgible for Federal reimbursement:	$ 853,026.00

Since the State had previously paid an advance of $600,000 to Kaiser, a final payment of $253,036 was due, subject to approval of the State audit. In his final memo of March 22, 1977, reproduced overleaf, William J. Leseman closed his file on the administration of execution and payment for the repairs to Panorama City Medical Center.

OFFICE MEMORANDUM

To A. Krikorian

DATE March 22, 1977

FROM William J. Leseman, Jr.

re Final Payment Against Approved Application Under Public Law 91-606

LOCATION 1515 EXT.NUMBER 76841

COPIES TO J. W. Baldwin, L. G. Baldwin, R. G. Barnaby, W. K. Palmer, D. O. Wagster, R. B. Williams

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The attached check from the County of Los Angeles in the amount of $253,026.00 is our final payment from the federal government for the financial assistance for repairs as a result of the February 9, 1971 earthquake. Contrary to my request, this check was not made out to William J. Leseman, Jr.; therefore, you will have to deposit it against the account of Kaiser Foundation Hospitals and Kaiser Foundation Health Plan, Inc.

This check closes the file on the February 9, 1971 earthquake, 6 years, 40 days, 5 hours and 20 minutes later.

WJL:jb
Attachment