Office of Statewide Health Planning & Development
Seismic Compliance Program and Product Report
In Accordance with Assembly Bill 100
August 31, 2021

Purpose and Objectives

A key function of the Office of Statewide Health Planning and Development (OSHPD) is to enforce the Alfred E. Alquist Hospital Facilities Seismic Safety Act of 1973 (HSSA or the Act). Please note that OSHPD is transitioning to a new name, the Department of Health Care Access and Information (HCAI), in the current fiscal year.

On February 9, 1971, a 6.6 magnitude earthquake struck the San Fernando Valley region of Los Angeles County near Sylmar, killing 64 people and costing over $500 million in damages. Two hospitals collapsed and nearly all of those killed in the Sylmar earthquake were either patients or employees in those hospital buildings.

The loss of life incurred due to the collapse of hospitals in the 1971 Sylmar Earthquake resulted in the Legislature enacting the HSSA. Specifically, Senate Bill (SB) 519 (Alquist, Chapter 1130, Statutes of 1972) established a seismic safety building standards program under OSHPD's jurisdiction for hospitals built on or after March 7, 1973. The Act emphasized that essential facilities, such as hospitals, should remain operational after an earthquake.

The Act required buildings to have special seismic detailing to resist earthquake forces with limited damage. Since March 7, 1973, the design, construction, and maintenance of California's hospitals have been governed by individual statutes, regulations, and design standards aimed at assuring hospital functionality following a major earthquake. The standards are intended to ensure that all patients are safe in an earthquake and the facilities remain functional to care for injured persons in the community after such a disaster. These standards are implemented by OSHPD and include stringent seismic design requirements, thorough plan review, approval of all designs, continuous construction inspection, materials testing, and strict monitoring of all construction projects.

It is the intent of the HSSA that hospital buildings that by definition house patients who are sick or injured, and that must be reasonably capable of providing services to the public after a disaster, shall be designed and constructed to resist, insofar as practical, the forces generated by earthquakes, gravity, and winds.

However, the HSSA, passed in 1973, only applied to new hospital buildings and the alterations or remodeling of existing structures. OSHPD had no authority to require upgrading of pre-HSSA structures to meet the mandated standards for new construction. When the Act became law, it was envisioned that these pre-1973 Act or nonconforming buildings would be replaced with new conforming buildings through

attrition. However, years later, a significant number of nonconforming hospital buildings with questionable earthquake performance were still in use.

The HSSA was amended in 1983 to preempt the local building department jurisdictions for hospital construction plan review and observation.

Almost 23 years after the enactment of the HSSA, in the early morning hours of January 17, 1993, another deadly earthquake hit the San Fernando Valley, this time centered in Northridge. Although the 6.7 magnitude earthquake caused 57 fatalities and up to $20 billion in damage costs, hospitals built in accordance with the standards of the Act survived the Northridge earthquake with minimal structural damage, while several hospitals built prior to the Act sustained major structural damage and had to be evacuated. However, some nonstructural components of the hospitals did incur damage, even in facilities that were built in accordance with the Act.

Eight months after the Northridge earthquake, SB 1953 (Alquist, Chapter 740, 1994) was signed into law, amending the Act to address issues of the survivability of both structural and nonstructural components of hospital buildings after seismic events. SB 1953 required General Acute Care hospital buildings that are not only capable of remaining intact, but also capable of remaining functional insofar as practicable and providing acute care services after a seismic event, the ultimate goal of the Act.

Services, Mandates and Activities, etc.

The HSSA authorized OSHPD and bestowed the responsibilities to implement the following programs and services. (1) Promulgation of Building Codes and Standards, (2) Plan Reviews and Building Permits, (3) Pre-approvals program, (4) Construction Observation, (5) Hospital Inspector of Record Certification Program, (6) Hospital Seismic Compliance Program, (7) Research, and (8) Emergency Response.

Hospital Seismic Compliance Program

The Hospital Seismic Compliance Program established by SB 1953 following the 1994 Northridge Earthquake required all acute care hospital buildings to be evaluated for seismic compliance and it was based on a two-step approach: (1) Buildings that provided acute care services and posed a significant risk of collapse during an earthquake had to be removed from service by 2008 or strengthened to a higher level of seismic performance. (2) All acute care hospital buildings, by January 1, 2030 must be capable of not only surviving a major earthquake, but also must be capable of providing on-going services after the earthquake. As such, buildings grandfathered under the HSSA that do not pose a significant risk of collapse are allowed to remain in acute care service until 2030. These buildings are not expected to be functional after a seismic event.

Seismic Evaluation

The seismic evaluation procedure regulations consist of eleven articles (California Administrative Code, Part 1, Chapter 6) and their primary purpose was to evaluate the potential earthquake performance of a building including its components and place it into specified seismic performance categories. The procedures were developed with experience gained in evaluating and seismically retrofitting deficient buildings in areas of high seismicity.

Seismic Performance Categories (SPCs)

One of the main provisions of SB 1953 is the development of earthquake, or seismic, performance categories, Structural Performance Categories (SPC) and Nonstructural Performance Categories (NPC) . These include seismic performance categories for new and existing general acute care hospitals facilities in various sub-gradations, from those capable of providing services to the public after a seismic event (SPC 5/NPC 5), to those at significant risk of collapse and that represent a danger to the public (SPC 1/NPC 1). Each facility receives both an SPC and NPC rating, and both seismic performance categories considered when determining a facility's compliance with the provisions of the Act.

Seismic Retrofit Regulations

The seismic retrofit regulations apply to all existing general acute care hospital buildings. The goal of these regulations is to develop retrofit and repair designs for existing hospital buildings to yield predictable seismic performance, whether at the essential, life safety level or the post-earthquake, functionality level. The requirements of seismic retrofit regulations must be used to upgrade from an existing seismic performance category to a higher category level. Specifically, these regulations were explicitly developed for use in the retrofit, repair, modification, or alteration of existing hospital buildings.

Specified Timeframes for SPCs

Each general acute care hospital building must be at certain seismic performance category levels by specified timeframes. For example, in the initial law, all general acute care hospital facility buildings at significant risk of collapse and that represent a danger to the public (SPC 1 level) had to be brought up to the SPC 2 Level ("Life Safety Level") by January 1, 2008 to be in compliance or removed from acute care services but provisions were made to allow this deadline to be extended to January 1, 2013, if compliance with the 2008 deadline would have resulted in a diminished capacity of healthcare services to the community. There were several legislative efforts to modify the original compliance deadline, which had already been extended to 2013. Eventually, the 2008 compliance deadline was moved to 2025. Timeframes for the submittal of seismic evaluations, compliance plans, and other seismic performance levels are cited in the seismic evaluation procedure regulations.

Plan Review and Construction Observation

The HSSA was amended in 1983 to preempt the local building department jurisdictions for hospital construction plan review and observation. Upon receipt of construction documents (plans, construction specifications, etc.), each submittal is reviewed by OSHPD Architects, Engineers, and Fire and Life Safety Officers to determine if the submittal is compliant with the requirements of the California Building Standards Code (CBSC) and the HSSA. After plan approval, the construction observation process involves the OSHPD field compliance unit for health care facility construction oversight verifying that projects are compliant with the approved construction documents and the CBSC. This can be broken up into several steps beginning with building permit issuance to the issuance of a certificate of occupancy. Please refer to the links to OSHPD's Seismic Program Websites section below for more detailed information on the Construction Observation Process.

Regulations Development

Hospitals (as defined in Section 129725 and licensed pursuant to subdivision (a) of Section 1250 of the Health & Safety Code) shall comply with the regulations developed by OSHPD as mandated by HSSA. Consequently, OSHPD is the authority having jurisdiction for hospitals and skilled nursing facilities (SNFs). This means that OSHPD develops the regulations and building standards and enforces them for these occupancies. Building codes and standards must be submitted to the Building Standards Commission for public review and comment before they can be adopted and become enforceable. In August 2021, there are 418 general acute care hospital facilities, comprised of 3,153 hospital buildings, that are affected by the provisions of SB 1953. If a building is to remain a general acute care hospital building beyond the specified dates established by the Act, the owner must conduct seismic evaluations and prepare both a comprehensive evaluation report, and a compliance plan, to attain specified structural and nonstructural performance categories which must be submitted to OSHPD.

Hospital Building Safety Board

The Hospital Building Safety Board (HBSB, or "Board") was established by SB 519 in the original Act of 1973. The Board is a citizen advisory board with members who are recognized experts in health facility design, engineering, and construction. The Board's purpose is to advise the Director of OSHPD on the administration of the HSSA, and act as a board of appeals with regard to seismic safety, and fire and life safety issues relating to hospital facilities.

The Director of OSHPD appoints sixteen Board members from nominations submitted by professional associations, as specified in the Act, and has the authority to appoint three more as ex-officio members. Appointed Board members serve 4-year terms with a

maximum of two terms. Six statutory ex-officio members, representing state agencies whose programs interface with the hospital design and construction program, also sit on the Board.

The Board is comprised of seven committees which are made up of Board members and consulting members. Each committee meets several times per year, each with a set of goals to assist OSHPD in administration of the Act. The work of the committees is overseen and approved by the Board at the Full Board meetings which occur three times per year. Please refer to the links to OSHPD's Seismic Program Websites section below for more information on HBSB and its committees.

Research

The HSSA (Section 129680(d)) authorizes OSHPD to conduct research regarding the reduction or elimination of seismic or other safety hazards in hospital buildings and research regarding hospital building standards. There has never been a greater emphasis on building science and technology than in the last three decades. Advances in building design methods, systems and materials occur every year. Consequently, through its inception OSHPD/ has commissioned/involved and/or conducted earthquake engineering research to improve understanding of the behavior and potential for damage of building structures under the forces generated and imposed by catastrophic earthquakes. As a result of this understanding, building codes, design and construction practices can be modified so that future earthquake damage is minimized and the objectives of the HSSA are fully met – functional hospital buildings in the aftermath of catastrophic earthquakes. Some recent examples are (1) Simulation of the seismic performance of nonstructural systems, Nonstructural Grand Challenge - University of Nevada, Reno sponsored by the National Science Foundation, (2) Seismic Response of a 5-Story Building Equipped with Nonstructural Components, etc.

Emergency Response

When a significant disaster occurs, the OSHPD Emergency Response Plan and the OSHPD Emergency Operation Center (EOC) are activated by the OSHPD Director or other authorized staff in concert with California Department of Public Health (CDPH), Emergency Medical Services Authority (EMSA) and Office of Emergency Services (OES). In such an event, OSHPD is mandated to respond as follows:

- Provide emergency structural, critical nonstructural, and fire and life safety assessment of acute care hospitals and skilled nursing facilities.
- Ensure rapid inspection postings of facilities in OSHPD jurisdictions in a disaster area.
- Provide information on OSHPD's emergency assessment status of facilities to CDPH, EMSA, OES and others as necessary.

- Arrange priority review, approval, and permitting of hospital repair and reconstruction of those affected facilities for a limited time period following a disaster.

Upon activation, OSHPD′s EOC is set up in OSHPD's Sacramento or Los Angeles offices in accordance with the Standardized Emergency Management System, to manage and coordinate the emergency response (a forward staging area may also be established). Priorities for inspection are established by OSHPD in cooperation with CDPH, EMSA, OES and the affected facilities.

The OSHPD Emergency Response Plan is based on the following emergency response policies:

- OSHPD is tasked in the California State Emergency Plan to provide assistance in two emergency response areas: 1) the Medical and Health Services Function, and 2) the Construction and Engineering Function. OSHPD′s priority is to assist EMSA with implementation of the Medical and Health Function response. Assistance to the Construction and Engineering Function is secondary and provided only if personnel and resources are available.
- OSHPD's primary directive is to maintain occupancy for hospitals and skilled nursing facilities as long it is safe to do so. Consideration is given to potential damage from earthquake aftershocks.

Long Term Goals of OSHPD's Seismic Programs

- Incorporate the latest science and engineering into the building codes so that new hospital buildings contribute to high degree to community resiliency.
- Research seismic response and damage through instrumentation of hospital buildings.
- Provide a framework where existing hospitals in California are continuously improved to be remain capable of functionality after a large seismic event.

OSHPD's Seismic Program and the Value to the State of California

California recognized the vital role that hospitals have in our society more than five decades ago, after the Sylmar Earthquake, when it adopted the HSSA. This law requires hospitals to be constructed to higher standards than other buildings. After the Northridge Earthquake in 1994, California realized that more was needed to make its hospitals seismically safe. As a result, California re-emphasized its commitment to hospital seismic safety with the enactment of SB 1953 in 1995.

The need for functioning hospitals after a major earthquake is obvious and rarely disputed. While emergency field hospitals, medical tents, and air-lifts to available

facilities are often used to supplement for damaged hospitals, they will never provide a sufficient substitute. Only modern health care facilities located within the damaged region and capable of functioning can adequately provide the needed medical assistance.

Hospitals are a beacon of life and hope for a community. Through their unique role in a society's survival capability hospitals are the first place that the public turns to in the event of a wildfire, terrorist attack, earthquake or some other natural disaster for emergency care. It is crucial that hospitals remain standing and functional during one of these events for the safety of patients and staff to provide medical care to victims. If these buildings are damaged so that they cannot function, society remains vulnerable.

In an article entitled "When Hospitals Fall Victim to Disaster," a reporter made the following observation after the catastrophic flooding in Iowa in 1998 regarding the role of hospitals after a disaster, "The epic floods in Iowa led to the evacuation of nearly 200 patients from Mercy Medical Center in Cedar Rapids... One of the things we've seen is people accept that disasters are going to happen, but hospitals are held to a different standard. There's a saying that "the last light on is always at the hospital." It's a physical, caring environment and a beacon of hope. I've got to imagine there's just a real emotional toll on the community to have a beacon in the community to have to shut down because the disaster is so severe."

This phenomenon was witnessed after the Northridge Earthquake in 1994. Emergency responders and inspectors arrived at hospitals in the affected area only to find hundreds of people congregated in hospital waiting rooms, parking lots and the surrounding vicinity seeking medical help or just wanting to learn the fate of family members or neighbors. In this manner hospitals play an important societal role for survivors as well as the injured, immediately following a disaster.

Without functioning hospitals, it takes much longer for a community to recover from a disaster. Vital services have to be in place before a community can get on about the business of recovery and normalcy of life again. Prolonged recovery seriously delays the area's economic and social renewal. Hospitals are often the largest employer in a community and the loss of the hospital may result in the closure of many other businesses in the community. Thus, an economic disaster follows on the heels of the natural disaster, compounding and extending the recovery efforts to where local recovery may take decades, if achievable at all.

Because the evacuation of seriously ill patients can be detrimental and sometimes fatal, hospitals cannot be evacuated like other buildings, making it imperative that they survive earthquakes intact. Replacing a heavily damaged hospital building can often take years, depriving the community of sorely needed healthcare resources.

Budget Information

The Hospital Building Fund (HBF or Fund 0121) is administered by OSHPD and is the funding source of all of OSHPD's seismic programs. OSHPD began Fiscal Year (FY) 2020-21 with an operating budget appropriation of $68.3 million that includes funding for FDD and the administrative divisions that provide support to the seismic program. Due to the COVID-19 emergency, the state anticipated significant economic impacts and a decrease in revenue for all funding sources including the HBF. State agencies were required to take steps to reduce their operating expenditures, be more efficient, and to be mindful of non-essential purchases. OSHPD staff identified operating savings and were able to reduce the department's FY 2020-21 seismic program operating budget to from $68.3 million to $64.2 million. In Fiscal Year 2021-22, OSHPD's seismic program operating budget is approximately $69.8 million.

Links to OSHPD's Seismic Program Websites

Seismic Compliance and Safety: https://oshpd.ca.gov/construction-finance/seismic-compliance-and-safety/

Building Permits & Construction Observation: https://oshpd.ca.gov/wp-content/uploads/2020/10/Additional-Information-FDD-Construction-Observation-Process.pdf

Hospital Building Safety Board: https://oshpd.ca.gov/construction-finance/hbsb/