

# Legislative Politics and Seismic Safety: California's Early Years and the "Field Act," 1925–1933

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California's first major earthquake safety policy initiative was 1933's Safety of Design and Construction of Public School Buildings Act, popularly known as the Field Act for its author, Assemblyman Don C. Field, who became the Field Act's legislative champion. The foundation for its enactment a month after the 10 March 1933 Long Beach earthquake was laid earlier by the 29 June 1925 Santa Barbara earthquake, the Dam Act of 1929, the drafting of a proposed *Building Code for California*, the formation of the Structural Engineers Association of California, and general acceptance of California's earthquake risk. This paper reviews the roles played by the pre-Field Act factors and the politics of the law's enactment, including the central role played by the State Division of Architecture in preparing the legislation and supporting Assemblyman Field's efforts. [DOI: 10.1193/1.1542890]

## INTRODUCTION

California is often viewed as a model for seismic safety policy, both nationally and internationally. While it is true that California has been innovative and has achieved a lead position, achieving that status was much more difficult and problematic than many practitioners and researchers appreciate. Using data from various archives, interviews, documents, and oral histories, this paper (part of a larger work in progress) provides a more complete—and probably surprising—account of how California started its rise to prominence in seismic safety policy. More specifically, this paper focuses on the legislative politics behind the enactment of California's first truly major earthquake safety initiative: The Safety of Design and Construction of Public School Buildings Act of 1933, popularly known as the Field Act.

The question of how fundamental changes in policy direction are made or at least find "windows of opportunity" has been the subject of a particularly rich vein of research in policy studies, including Kingdon (1984, 1997), Sabatier (1999), Sabatier and Jenkins-Smith (1993), and Baumgartner and Jones (1993), but reaching all the way back to Schattschneider (1960). The key study for this paper, however, is Birkland's 1997 study of disasters as potential focusing events, by which he means (p. 3) a "rare, harmful, sudden event that becomes known to the mass public and policy elites virtually simultaneously." Birkland (p. 26) argues that disasters are a particular form of focusing event and one that often "levels the [political] field," allowing change-oriented groups

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and leaders the chance to mobilize by “pointing to the event as an exemplar of what is wrong with existing policy.” A political window of opportunity then opens for suggested improvement.

Opening windows, however, is not as simple as it might appear. For example, the year 1933 was an important one in California’s rise to seismic safety leadership, largely because of the major policy innovations that followed the Long Beach earthquake. Less known and much less appreciated from a policy and political perspective was the 1925 Santa Barbara earthquake, which is unfortunate because without it, the Long Beach event would not have been the turning point that it was. As I will show, it actually required *two* events to open the political window at the state level and start California’s policy innovations and rise to seismic safety prominence.

## THE 1925 SANTA BARBARA EARTHQUAKE

### AN IMPORTANT BUT UNDERESTIMATED EVENT

On 29 June 1925, the southern California coastal city of Santa Barbara experienced a damaging earthquake of estimated Richter magnitude 6.3, the largest to strike an urban area since the 1906 event in northern California. Reuben W. Binder, then a practicing engineer with Bethlehem Pacific Coast Steel Corporation, reflected in 1952 on its importance:

The Santa Barbara earthquake of 1925 was the focal point for again arousing the interest of many practicing structural engineers in earthquake phenomena as affecting design.

Following the Santa Barbara shock, earthquake resistant requirements began to be incorporated into building codes. The first code to add earthquake provisions was that of Santa Barbara in 1925. The Palo Alto code followed with similar regulations.

The first edition of the Uniform Building Code of the Pacific Coast Building Officials Conference, published in 1927, contained in the appendix a chapter on earthquake provisions for optional use.

In 1928, the California State Chamber of Commerce sponsored the preparation of a Building Code for California. This project stimulated the wide-spread and active interest among engineers and architects in the subject of earthquake resistant design.

Interest in engineering problems in connection with earthquake studies influenced the formation in 1929 of the Structural Engineers Association of Southern California. In 1930, the Structural Engineers Association of Northern California was organized, and in 1932 the Structural Engineers Association of California came into existence (Binder 1952, pp. 186–187).

In very few words, Binder captured the enduring importance of the Santa Barbara event, which included (1) the first earthquake components in building codes, in Santa Barbara and Palo Alto, (2) new, although optional, earthquake components in the 1927 *Uniform Building Code*, (3) endorsement by a leading business organization (the state-level chamber of commerce) of the idea of a statewide building code, and (4) the emer-

gence of professional organizations with major interest in earthquake design. While most of these effects were below the waterline of public notice, they were critical for what would follow.

### THE STATE CHAMBER'S *BUILDING CODE FOR CALIFORNIA*

The State Chamber of Commerce initiated work in 1928 on a recommended *Building Code for California* (which was not completed until 1939, six years after the 1933 Long Beach earthquake), primarily using 100 volunteer "highly qualified technical men" from northern and southern California who became known as the "Committee of 100." The Chamber's initiative was clearly triggered by a post-Santa Barbara earthquake insurance "crisis," as later explained by no less a figure than Charles F. Richter, who noted that prior to the 1925 event:

[E]arthquake insurance had been written very extensively in southern California with little regard to the actuarial soundness, and that [1925] event was a great shock with some companies suffering losses in claims that were disproportionate for a comparatively moderate event (Richter 1982, p. 26).

This point was corroborated in the final 1939 recommended code by the State Chamber of Commerce, which also explained how and why they came to be involved in the first place:

The earthquake of 1925, which centered at Santa Barbara and caused heavy building damage there, resulted in a sudden and widespread demand for earthquake insurance. This in turn was followed immediately by an increase in earthquake insurance rates and in the amount of such insurance required by the State Corporation Commissioner before he would approve bond issues on certain types of buildings.

The result of this twofold handicap was a sharp recession of building in the state and, in the emergency, the aid of the State Chamber was urgently sought by business interests generally. The Chamber undertook an investigation that at once resulted in:

1. Reduction of earthquake coverage requirements by the State Corporation Commission.
2. Reclassification of buildings by the Board of Fire Underwriters and a readjustment of earthquake insurance rates.

But it soon became evident that the fundamental need was for a statewide building code which would require adequate standards of building construction and a reasonable resistance of such construction to earth movements, and to this task the State Chamber directed its attention (California State Chamber of Commerce, p. vii).<sup>1</sup>

The Chamber followed up and gave impetus to the adoption of building codes at the local level containing earthquake design requirements. As noted above, these requirements were contained in an appended chapter to the model *Uniform Building Code*

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<sup>1</sup>Upon completion of the recommended code, the State Chamber thanked its committee members and the business and industrial interests that financially supported the effort, concluding "that the group best equipped to promulgate the *Building Code for California* is the Pacific Coast Building Officials Conference" [now the International Conference of Building Officials, or ICBO]" (Ibid., viii).

(*UBC*). Although still optional, County of Los Angeles engineer F. M. Andrus noted that “the requirements in the 1927 Edition of this Code are among the first earthquake provisions to be written into any widely used building code in this country” (Andrus 1952, p. 314).

### THE EMERGENCE OF STRUCTURAL ENGINEERS ASSOCIATIONS

Structural engineering has its roots in the broader field of civil engineering. In fact, California’s registration laws still require a civil engineering license before a person may obtain one to practice structural engineering. In the decades after the 1906 San Francisco earthquake, the discipline of structural engineering came into its own largely because of the need for large buildings in the state’s rapidly expanding urban areas. This new “craft” logically established its own professional associations. One impetus for this emergence was structural engineer participation on the post-Santa Barbara “Committee of 100,” the members of which at that time were listed as belonging to the southern and northern sections of the American Society of Civil Engineers (ASCE).

Indeed, between the 1925 Santa Barbara and the 1933 Long Beach earthquakes, the structural engineers legislatively achieved passage (in 1932) of law that recognized the title “structural engineer.” The result of this “title act” was that “structural engineer” could be used by registered civil engineers who specialize in building design. A 1981 SEAOC document summarized the earlier legislative effort:

The minutes and records of the Association of Northern California indicate they spearheaded these efforts, and H. J. Brunnier devoted considerable personal effort to this task. Initially there was some difference of opinion about the scope that the license of structural engineer should have. Many thought it should include and regulate bridge designers as well as those who specialized in buildings. A few, particularly in the south, thought that the title should be tied to the architect’s license rather than to that of the civil engineer. Nonetheless, the structural engineer title in its present form (1981) was brought into being by the state legislature in 1932 (SEAOC 1981, p. 2).

To properly appreciate these 1925–1933 achievements, they must be placed in a larger California context that was both harsher and more negative than many would believe. It was still an uphill battle to have the state’s earthquake risk fully accepted. In a fascinating article, Arnold Meltsner illustrated the tenor of the pre-1933 times with a quote from a 1927 letter to Caltech President Robert Millikan. The letter came from Henry M. Robinson, a bank president and Caltech trustee, who urged Millikan “to stop the talk about the immediate approach of an earthquake.” Robinson was responding to statements by geology Professor John P. Buwalda of Caltech and Harry O. Wood, a research associate of the Carnegie Institute of Technology in Washington, D.C. (Wood was supervising what later became Caltech’s Seismological Laboratory). The Robinson letter was both a warning and a threat:

I wonder if you have any idea how much damage this loose talk of these two men is doing to the (property) values in Southern California. I wonder if you appreciate that one of the effects of the operation of these two men in their wisdom will be to turn the hands of all businessmen against the Institute for bringing into the community men who can talk so glibly about things which they cannot know and which will destroy

values unwarrantedly in this whole area. You can hardly appreciate how serious the situation is here and if we, together with Merriam [see below], cannot stop their talk about the earthquake problem. I for one am going to see what I can do about stopping the whole seismological game, and for the purpose of protecting the Institute (quoted in Meltsner 1979, p. 347).

In his treatment of the early and often tumultuous years of seismology in California, Meltsner explained the letter this way:

Robinson had two contradictory motives: he wanted to protect property values but he also wanted to protect the California Institute of Technology. He wrote to Millikan because he was a well-known physicist, recipient of the Nobel Prize in 1923, but, more importantly, a very prominent member of the Institute and a member of the advisory committee in seismology of the Carnegie Institution of Washington. In the letter, he also brought in John C. Merriam, the president of the Carnegie Institution, who was a supporter of seismological research. Since the Carnegie Institution, at the time, provided most of the financial support for the operation of the seismological laboratory and Wood and Buwalda were associated with the laboratory, Robinson probably thought that intimation of financial sanctions would cause one colleague to attempt to silence other colleagues (ibid.).

To reiterate, the years 1925 to 1933 constituted a kind of transition period when recognition of California's earthquake risk was slowly overcoming resistance and often virulent denial. The debate over earthquake risk in California, however, closed forever on 10 March 1933.

### **THE 1933 LONG BEACH EARTHQUAKE**

#### **A TRUE CRITICAL JUNCTURE FOR CALIFORNIA SEISMIC SAFETY**

The southern California coastal city of Long Beach and several nearby communities suffered a surprising amount of damage from the 1933 earthquake, which also registered an estimated magnitude of 6.3 on the Richter scale. Carl Geschwind has argued that the Long Beach event was a "climate change" forcing widespread acceptance that California was subject to earthquake risk, in part because groups were already formed to push the issue:

[I]n 1933, unlike in 1906, scientists and engineers were ready to use the earthquake to argue that Californians faced a serious threat from future seismic events. These seismologists and earthquake engineers embarked on a vigorous public relations campaign that succeeded in painting the Long Beach earthquake as a manifestation of a general hazard rather than an isolated occurrence (Geschwind 1996, p. 197).

More specifically:

[I]n the aftermath of the Long Beach earthquake seismologists, engineers, and architects promptly and energetically asserted the need for greater seismic safety as the earthquake's main lesson. Repeated again and again in a variety of settings, this message reached a wide audience, and it drew a number of influential endorsements from newspapers and public officials. In addition to shaping public opinion, the campaign-

ers for greater seismic safety also succeeded in prodding the public into action. Under the guidance of seismologists, engineers, and architects, a number of local jurisdictions as well as the state government began to incorporate provisions for earthquake-resistant construction into their building laws (Geschwind 1996, p. 226).

One indication of how the Long Beach event changed the political agenda and created a climate for further action was a *Los Angeles Times* story (March 13, 1933), “Gears Greased By Legislature”:

Whatever legislative relief is needed to ease conditions in the Southern California earthquake zone will be speeded through the lower house by Speaker Little, Chairman Cobb of the Ways and Means Committee and the entire Southern California delegation, with all other Assemblymen in sympathetic accord. Then it will be dumped into the Senate, where fast action is assured. The Governor will complete the cycle by signing any measure in this respect as quickly as it reaches his desk.

The structural engineers also benefited from the knowledge gained from the Long Beach earthquake,<sup>2</sup> as a structural engineering association document notes:

Probably no single incident had as profound an effect on the practice of structural engineering in the state of California as the severe earthquake that struck the city of Long Beach on the evening of March 10, 1933. The disaster occurred at a time when interest in the problem of earthquakes was prominent among structural engineers. Only nine days earlier at a meeting of the Southern California Association the program included motion pictures of shaking building models which had been subjected to varying load conditions and horizontal forces.

Two days after the earthquake a meeting of the board of directors of the Southern [Structural Engineers] Association was called by Professor Romeo R. Martel of the California Institute of Technology. Three major actions were taken at that meeting. First, a joint committee, consisting of ASCE, SEAOSC (Structural Engineers Association of Southern California), and the Associated General Contractors, made a complete report on the damaged area in order to ensure that reconstruction would be carried out on a sound basis. Second, a motion was passed that the Board of Building Safety of Los Angeles require that all buildings be checked for lateral and vertical forces. Finally, it was agreed that a letter be sent to the supervising architect of the U.S. Treasury Department strongly urging that all federal buildings built on the west coast be designed and checked for lateral forces by competent engineers (SEAOC 1981, p. 3).

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<sup>2</sup>Interestingly, in January 1925 and due to successful lobbying by influential Californians (apparently stimulated by the 1923 Kanto, Japan, earthquake), the U.S. Congress authorized the former U.S. Coast and Geodetic Survey's (C&GS) Seismological Field Survey (SFS) to investigate and report on earthquakes. In the summer of 1932, the SFS installed three of the nation's first strong motion instruments in the Los Angeles area. One was in Long Beach “almost on top of the [1933] earthquake,” and “they produced very satisfactory graphs” (*Engineering News Record*, April 6, 1933, p. 442).



Thus, from many viewpoints, the 10 March 1933 Long Beach earthquake opened the proverbial “window of opportunity” for the “modern era” of seismic safety in California. It did it for building codes, state laws, design and engineering practices, research, instrumentation, and political activism. Above all, the earthquake forever closed the “window of denial” by forcing business and public recognition that California was seriously threatened by earthquakes, as noted by geographer W. M. Davis (in 1934), who said that the earthquake:

...will be less remembered by reasons of its contributions to seismology—for as a crustal tremor there was nothing special about it—than it will be for having broken down the “hush-hush” policy that has hitherto been followed by the commercial organizations of the cities of southern California (Davis 1934, p. 1).

This point was echoed, also in 1934, by the *Engineering News Record*, which noted that “the statewide movement toward designing against seismic risk...is unlike anything that has occurred heretofore” and that “[a]pparently, an ‘earthquake-conscious’ viewpoint has come to stay” (*Engineering News Record*, July 5, 1934, p. 21). Reflecting from the perspective of the 1990s, Geschwind (1996, p. 237) offered the following summary:

The response to the Long Beach earthquake marked a significant change in Californians’ public attitude toward earthquakes. For the first time, a large number of influential newspapers and public officials accepted the contention of seismologists and engineers that Californians needed to guard themselves against seismic hazards. The state government as well as a number of municipalities also for the first time required earthquake-resistant construction; moreover, a group of engineers and bureaucrats with a vested interest in ensuring that buildings were actually earthquake resistant became entrenched within the State Division of Architecture. These developments established a pattern for Californians’ subsequent approach to earthquake hazards.

The first legislative triumph and in some ways the spiritual centerpiece of this new “earthquake conscious” California involved protecting children. While as with all legislation it had a formal title, it was at the time—and still is—known as the “Field Act,” and it is quite a story.

#### **THE SAFETY OF DESIGN AND CONSTRUCTION OF PUBLIC SCHOOL BUILDINGS ACT OF 1933: THE “FIELD ACT”**

In a 1976 discussion of the long-term legacies of the 1933 Long Beach earthquake, Gordon Oakeshott, former Deputy Chief of California’s Division of Mines and Geology, noted that:

The great and lasting good that came from the tragic and scandalous failures of school structures [in the Long Beach event]...was the passage of the Field Act by the State Legislature....I say “scandalous” failures because the strong shaking of the earthquake revealed shortcuts in construction practices, as well as design, in many school buildings (Oakeshott 1976, p. 104).

In fact, however, the question of the seismic safety of schools did not begin with the

Long Beach earthquake, for in 1917, the United States Commissioner of Education issued a bulletin stating the following about San Francisco (which had suffered so much in 1906):

There is far more danger from possible earthquakes to poorly constructed buildings than from fire, for in the former case little time is offered to escape. Every school building in the city should be so constructed as to be more than reasonably safe from damage by earthquake.

The people of San Francisco owe to the children of their city a large outlay for a large number of new school buildings thoroughly constructed against the danger of earthquake and also made entirely safe from fire. A city with the population and wealth of San Francisco, and with its comparatively small school population, should set the world a standard in the construction of safe and satisfactory school buildings (U.S. Department of the Interior 1917, pp. 188–189).

This 1917 report had negligible impact. The Long Beach earthquake changed all that.

#### **THE CHARTER: ASSEMBLY BILL 2342 OF 23 MARCH 1933**

California Assemblyman Don C. Field, a Republican building contractor from Glendale whose district included earthquake damaged communities, and who apparently was in the area at the time of the 10 March 1933 earthquake because, according to one account he “witnessed the collapse of buildings” (SSC 79-02, p. 9), introduced AB 2342 on 23 March 1933. The Assembly’s *Final History of the 1933 Session* (643) summarized the bill’s key provisions:

An act relating to the safety of design and construction of public school buildings, providing for regulation, inspection and supervision of the construction, reconstruction or alteration of or addition to public school buildings, and for the inspection of existing school buildings, defining the powers and duties of the State Division of Architecture in respect thereto, providing for the collection and distribution of fees, prescribing penalties for violation thereof and declaring the urgency of the act, to take effect immediately.

For the first time, California’s state government was going to regulate the construction of public schools with the intent of avoiding the failures evident from the Long Beach earthquake, where:

It is obvious that the time of the earthquake (5:55 p.m.) was fortunate in that loss of life was not great. If the time of the initial shock had been but a few hours earlier, the loss of life among school children would have been appalling (Bolin 1952, p. 309).

#### **AB 2342: THE POLITICS**

The formal processing of a piece of legislation is relatively easy to track, but the politics behind the legislation is much more difficult. Nonetheless, politics are the crux of any legislative story because it is how it “got done.” In the case of the Field Act, we



are very fortunate to have uncovered a rather detailed insider story from an unpublished 1957 interview with D. C. Willett, who in 1933 was an engineer serving as the chief assistant to the state architect.<sup>3</sup>

Willett's account of the story behind the Field Act is fascinating, and the language and detail merit extensive quoting. It also reflects the very personal nature of most politics—but in particular the California politics of the time. In the exchanges below D. C. Willett is “Mr. W” and “Mr. D” is interviewer Frank Durkee.

The first part of Willett's story focuses on the immediate reaction to the Long Beach disaster and the quest to “do something” at the state legislative level:

Mr. W: ...I think Don Field was the one that mainly was disturbed about what had happened—the buildings collapsing and everything—so he called Mr. McDougall [state architect] over to the Assembly Chamber and Mr. McDougall took me along—being the only engineer available, that is in a supervisory capacity....

I think it was a Saturday morning....Anyway, we went over and met with the three of them,<sup>4</sup> the senator and two assemblymen, Don Field being the main spokesman.

[T]he outcome was that I was ordered to contact the engineers in the State immediately.

Mr. D: The engineers. What do you mean?

Mr. W: The structural engineers, to develop the code requirements—a State Code. Most of them were in Los Angeles. The different ones that had been working on code development<sup>5</sup> were all down there....

[T]he schools were hit especially hard....I told the ones [engineers] I could get on the phone that we wanted to get immediate action on a code. So that held me over the weekend. Monday at noon we were sitting at the desk eating lunch...and the stories and pictures of the damaged schools were headlined (Meehan and Jephcott 1993, pp. 2–5).

Willett then shares that they “borrowed” some 1929 dam safety legislation as the template for what would become the Field Act. Willett also relates the truly startling fact that Field's original intention was not focused on schools. It was much broader, but political realities and problems of effective implementation (“enforcement”) intervened:

[W]e were discussing...what Assemblyman Field had asked us and how it could be

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<sup>3</sup>Entitled “A Transcript of Conversation Between Mr. D. C. Willett and Mr. Frank Durkee,” dated 21 October 1957, the material was compiled by Messrs. John F. Meehan and Donald K. Jephcott, both retired engineers from the State Architect's office. The transcript appears as Appendix 1 to an unpublished report, “Task 4, The Review and Analysis of the Experience in Mitigating Earthquake Damage in California Public School Buildings” (Summer 1993). The authors prepared the document for Building Technology, Inc.

<sup>4</sup>This may be “the Commission” referred to in other materials, which was probably an ad hoc joint committee charged to report directly back to each house.

<sup>5</sup>Probably refers to the committee mentioned in a paper presented before the Structural Engineers Association of Santa Maria, 16 October 1936, by C. H. Kromer, in which he refers to the origin of Appendix A, now known as Title 24, California Administrative Code. (Note from original interview document: most likely was the Committee of 100.)

worked out—and Fred [Fred Green, a senior engineer with the division of architecture] took the paper and he said, “You know what you ought to have; you ought to have a law governing school construction.” “Well, gee,” I said, “Fred, you’ve given me an idea.” So I immediately went upstairs to the Division of Water Resources; they had an act [Dam Act of 1929] regulating the design and construction of dams...all over the state.

Mr. D: ...[So] now, Assemblyman Field, when he first presented this idea, wasn’t directing it particularly at the schools then[?]

Mr. W: No, no, he wanted a general code and I frankly told him he could not enforce a general code throughout the State....

I went up and got the Dam Act and as soon as I finished lunch went over to the Assembly and got hold of Don Field. I said, “Don, I’ve got another idea.” I don’t know whether it’s worth a darn or whether you want it or not, but here it is....So I showed him the Dam Act; I showed him the pictures of the schools, and I said, “Now, listen, if you’ll make a law to make school buildings safe, we can enforce it.” I said, “We have the department that can put that over and make school buildings safe without any question, and there will be no trouble in the enforcement of it.”

Mr. D: Now, why would you expect that you could enforce such a law with respect to schools; but for general construction you were very doubtful that such a thing could be done?

Mr. W: Well, of course, the schools were public money...and it was the safety of the children, and the people would go for that where they wouldn’t go spending their own money for other safety measures. And not only that, the schools showed such tremendous defects in design and things that it was just ridiculous. So Don said, “This is just what we want.” He grabbed it immediately.

I came back to see Mr. McDougall...I went in and I said, “Chief, I’ve just been over talking to Don.” I got that much out when the phone rang (*ibid.*, pp. 5–7).

We cannot know with absolute certainty, but it seems that Field then called Governor Rolph, who acted literally within minutes. Indeed, what would become the Field Act was crafted over a single weekend to take advantage of the political window that Long Beach had opened. Even then it was not easy, at least not when it reached the Senate and opposition began to form:

Governor Rolf [sic] wanted Mr. McDougall to come to his office immediately. I said, “Here’s what he wants.” I gave him the papers, explained to him what I’d told Field and the things Field wanted, so he grabbed them and went to the Governor’s office....He came back and said, “Now, we’ve got to get up a law. You work with the Legislative Counsel. Assemblyman Field would like to have this complete so he can present it to the Legislature tomorrow. He says you can use his entire office. [It’s] at your disposal. Work up this law and get it in order, working through the Legislative Counsel and check with Don Field to see if it satisfies him.” So we started in—practically the whole office outside the architectural group—working on different phases, and the girls typing it up. As soon as we got the thing roughed out we took it over to the Legislative Counsel. They jumped in....

Mr. D: Excuse me, what you did at the time then was—well, did you take this Dam Act and sort of revise it for your purposes?

Mr. W: That's right. We took the Dam Act as the foundation, and applied it to schools. The structural features and the regulations that would control schools were added and put under architects and structural engineers.

[The principal engineer of the structural section] was down there [southern California] for several weeks....It was more or less left to me but this was done in a few days you understand, Saturday, Sunday. He didn't even know the school thing was cooking.

The thing that they were working on down there...was to get a regular code—a general building code—because that was what he had ben [sic] told to do. The development of a School Act was an afterthought....

It was really going. So after we got the thing assembled, roughed out and typed, we presented it to Mr. Field. Mr. McDougall and I went over together and asked him how it looked. "Why, you have thought of everything," he said. "This is just what I want." He said, "I'll tell what I want you to do. We won't have time to have this printed. I want you to have mimeographs made and put on every Senator and Assemblyman's desk so we can take it up the first thing tomorrow morning." He apologized for asking, but he said, "I think it's that important and you have to work tonight. Do whatever you can to get it mimeographed." So the next morning we had copies on everyone's desks....

It was passed with a unanimous vote in the Assembly. Then it was tied up. Mr. Leonard Starks, an architect in Sacramento, heard about it, and all thought we were slipping something over on the architects and it was just ridiculous. So they managed to send telegrams and everything to block the action in the Senate. So the Senate recessed. The engineers, some of them came back from Los Angeles. Of course, you understand, the preparation of the bill was done without the knowledge of anybody so you can see why they would be suspicious. And apparently Don did some pretty shrewd work to put it through the legislature. He was going to get it through without getting any kicks.

[T]hey [architects and building industry representatives] blocked the Act in the Senate. Well, it wasn't long until a group of engineers came up from Los Angeles. Earl Cope was President of the Structural Engineers Association of California at the time.

[H]e was a San Francisco engineer. Quite a few of them came up representing the engineers of the State and they wanted to know what the devil we were pulling on them. "Why, we haven't pulled anything," I said. "We used the Dam Act. If you can find anything wrong with it I would like to know." Mr. Cope read it and the statements, and he said, "Well, I'm for this." He said, "This is just what we should have and I'm for it, and I think the Association will back you to the limit on it." But the architects didn't like it.

Mr. D: Now why didn't they?

Mr. W: ...It forced them to hire structural engineers. [T]here are very few architects...qualified to handle the structural design of a building....And they...employed en-

gineers to do this work. But, this bill, the way it was set up, more or less forced them to. And they know that and they didn't want that. The bill was coming up [for a hearing] and the opposition, the architects, were trying to build a little opposition, and along with this, other opposition started in the Department of Education. The opposition did not especially come from the Department of Education as a Department, but came from the Schoolhouse Planning Chief. The head of Schoolhouse Planning thought the bill should be under Education and not under the Division of Architecture....But, knowing the educational set-up and knowing it to be dominated by educators, I told Don [Field] it would be just practically impossible if they wanted to enforce...it under Education. It had to be free of any ties and other things because we are going to have plenty of trouble enforcing it (ibid., pp. 7–12).

Willett then relates that the media, which at the time meant print media, were crucial in forcing the opposition to change their position:

As we went along...a Senate hearing was called. And prior to the Senate hearing...the newspapers of the State got the architects together, and they told them they would blast them in the headlines of the papers if they didn't go along with this bill; that work in the past was such that it needs supervision and that there was just no use of them opposing the adoption. So, as a result, the next morning, when the committee met, John Donovan, a prominent architect, gave one of the finest talks I have ever heard. Being an Irishman he could talk and had plenty of wit, an excellent speaker, and he gave one of the finest talks in support of the bill—which the day before he was bitterly against—and they saw that they had to come around (ibid., p. 13).

Frank Durkee then questioned Willett about the role of public opinion in the aftermath of the Long Beach event. The answer was positive, but the supporting anecdote was particularly vivid, followed by a discussion of how any violation of the Field Act came to be a *felony*:

Mr. D: ...At the time of the Long Beach earthquake, was there a great deal of public . . . resentment against such poor construction? I mean was there a demand on the part of the public to do something, or was this pretty much wholly from the legislative minds themselves, that they solve it?

Mr. W: No, I think it was the public, as I had been told by an inspector on one of the [existing school] buildings, where one person was killed and others hurt, that the mob went out to lynch him. He had to get out of town.

It was not his fault at all. I happened to examine the school that he inspected and he was following plans and specifications, but the plans and specifications weren't set up to withstand lateral forces. As a result there was a death in that school. But the thing that startled everybody, and this has been made public in statements by prominent educators, is that there would have been at least 6,000 children killed had this happened during school time. That statement was made by the head of the school department after examining the buildings in Long Beach....The main thing that had come up at the [Senate] hearing was that a violation of the code would have been a misdemeanor. That was in the Dam Act and we put it in this bill as being adequate. So a tall

dark complexioned fellow...with the Hearst Newspapers, the Los Angeles Examiner, demanded that it be made a felony for anyone to violate the Act.

I was sitting next to Don Field at the time....He agreed to the change and I can say now that that was one of the greatest things that ever happened to the Field Act, that it was made a felony (ibid., p. 14).

Later, however, Assemblyman Field found himself in political trouble in his home district—for reasons directly associated with the famous legislation. Field had a local, high-profile problem, felt that he had been betrayed, and was supremely angry. He would give D. C. Willett a true “cussin”:

[A]bout seven or eight months after the bill was adopted...[Mr. McDougall]...went...at Field's request and saw Don. The Division had examined...[a] big High School...and we pronounced the building unsafe for use. This was in Glendale—Don Field's district. The building was [an architectural] monument. So they [local officials] went out and hired a couple of civil engineers, and their report on the building concluded that outside of some minor alterations the building was safe for use. That made Don Field pretty mad...and he told him [McDougall] what he thought of the Division of Architecture...[McDougall] said he would send Willett down and he would spend whatever time was necessary to find out whether the report was right or whether it was wrong....He (McDougall) told me to first contact Assemblyman Field, be sure I knew everything he wanted and go through the building. If we had made a mistake, not to try to cover it up, but to come out and say so. So I went down there, and if I ever got a cussin,' I did from Don Field. He was rabid. He told me that he had absolute confidence in me and in the Division and that's the reason he had put this bill through [the Legislature]. He said we had apparently betrayed his confidence.

At two o'clock [on the day of Willett's arrival and after meeting with Assemblyman Field] I called him [Field] and said, “Don, every word in that report is the truth. There is nothing we could do otherwise. As far as I am concerned, the building is unsafe.” He said, “Can you prove this to a layman?” I said, “I can prove it to anybody.” He said, “Well, be at the school tomorrow at two o'clock. I want you to be able to show the people of Glendale why your report says this building is unsafe for use.”

I might say at this time that the election was very close at hand. Don was apparently going to lose it because of this deal.

So...at two o'clock he came and reported that there were three or four hundred people there. The whole side of the building was lined with people. They were fighting mad.

So, before we started the tour, Don got up in front on the steps of this monumental building and he told them what he had done, that Mr. McDougall had sent one of his best engineers down here...[and] he said, “I am turning you people over to Mr. Willett who says he can show you why this building is unsafe....” Then Don left [and Mr. Willett took people on a tour of the building, including the attic].

During a part of the time [when]...a bunch of newspapermen [were] there, a Colonel Evans, who was connected with the government on the loaning of money, looked over the situation and said—this was quoted, you'll see it in the papers—“Gentlemen, I

wouldn't build a chicken house the way this school has been built." So, the result was that after the examination and after the report, people couldn't do too much to thank Don Field for what he had done on behalf of their children.

Naturally, after that, Don Field was absolutely sold....[N]o one could touch [the Act] without asking us first. He asked many, many times when other bills or amendments came up, whether it would affect the Field Act or not. If we or Mr. McDougall said it was affected, he fought the thing to the end (ibid., pp. 18–20).<sup>6</sup>

#### **AB 2342: THE PROCESSING**

D. C. Willett's story of the Field Act (AB 2342) has to be complemented by a description of the more formal processing of the legislation, which has interesting aspects of its own.

On the day of AB 2342's introduction (the "first reading"), the Assembly unanimously consented to take the bill up on the floor, which eliminated referring it to committee, placing it on the "file" (to be heard at some future date), or sending it to the printer, any of which would have added time to the process. The Assembly also suspended other rules to accelerate it. AB 2342 was then read the second time, and the urgency clause was added. It was now "considered engrossed" (i.e., the original bill is compared with the printed version for accuracy purposes) whereupon it was read for the third time (on the Assembly floor). As Willett noted, it passed unanimously and was sent to the Senate for its action.

On March 24, the Senate took up AB 2342. The bill took a more traditional route in this house, but it still moved relatively rapidly (the politics described by Willett were obviously behind the scenes). After its first reading, AB 2342 was referred to the Committee on Government Efficiency. Six days later, on March 30, the legislation was amended, and the amended version was sent to and returned from the printer. One amendment added the provision requiring the supervision of construction, and:

...various other amendments...were proposed at the hearing, among them one to compel inspectors on school buildings to make affidavit to the quality of materials used. Due consideration will be given to all proposed changes to strengthen the bill by the author and enactment of the measure at an early date seems certain (*Southwest Builder and Contractor*, March 31, 1933, p. 13).

On March 31 the committee sent the bill to the full Senate with a "do pass as amended" recommendation. On April 3, AB 2342 was made a special order of business for 11:30 a.m. on April 4, where it was referred to the Committee on Finance. On April 5, it returned from that committee to the full Senate with a "do pass" recommendation. The urgency clause was read and adopted (a separate action), and AB 2342 passed the Senate unanimously, to be returned to the Assembly for concurrence with the Senate's amendments.

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<sup>6</sup>Just as the 1929 Dam Act provided the basis for the Field Act, many of the Field Act's features provided guiding principles for subsequent state legislation, including the Hospital Seismic Safety Act of 1972, the Emergency Services Buildings Seismic Safety Act of 1986, and the Private Schools Buildings Safety Act of 1986.



The Assembly agreed with the Senate's language for AB 2342 "without reference to committee," and the bill was ordered to be enrolled (i.e., printed as a clean version by omitting symbols indicating amendments and reviewed by the house of origin to see that the final text is in the form approved by both houses). Governor James Rolph, Jr., received the "correctly enrolled" bill at 10:25 a.m. on April 7. He signed it into law on 10 April 1933—30 days after the earthquake—as Chapter 59 of the *Statutes of 1933*. AB 2342 took immediate effect because of its urgency clause, which stated:

The series of earthquakes occurring in the southern portion of the State have caused great loss of life and damage to property. The public school buildings, constructed at public expense, were among the most seriously damaged buildings. Much of this loss and damage could have been avoided if the buildings and other structures had been properly constructed. The school buildings, which will be erected, constructed and reconstructed to replace the buildings damaged or destroyed by the earthquake should be so constructed as to resist, insofar as is possible, future earthquakes. These buildings will be erected, constructed and reconstructed at once and, accordingly, it is necessary that this act go into immediate effect in order that the lives and property of the people will be protected.

#### EARLY IMPLEMENTATION

Harry Bolin, a principal structural engineer for the State Division of Architecture's Los Angeles office, noted "the Division of Architecture was given a duty quite different from any of those carried on before," and:

Before enactment of the law, the Division of Architecture was concerned with the preparation of plans and specifications for, preparation of estimates of, awarding contracts for and supervising construction of State Institutions, State Buildings and such other buildings and structures as the State Legislature designated. When the law became effective, the Division of Architecture entered a new field, viz., safeguarding occupants of public schools by checking plans of public school buildings as to adequacy and supervising construction thereof. In a sense, the Division of Architecture...functions very much as a Department of Building and Safety for a municipality or a county, (but) the supervision of construction is more detailed and rigid (Bolin 1952, pp. 309–310).

While the Field Act may not have been a "full employment act for engineers," it certainly did alleviate the impacts of the Great Depression on the profession by providing work and valuable experience for many engineers who emerged later, especially in the 1950s to 1970s, as leaders of California's "earthquake engineering community." Numerous job applications were received when the state announced that:

An opportunity for structural engineers of high qualifications and experience to engage in the examination of important public buildings, including school houses, to determine their ability to withstand earthquake shocks, prepare structural plans, give consulting assistance to architects, structural engineers and contractors, check plans and supervise construction in accordance with standards set up by the State.... (*Southwest Builder and Contractor*, July 28, 1933, p. 17).

The Division of Architecture quickly had to adopt implementing regulations. It ac-

completed this by adopting as “Appendix A” (later Title 21 of the California Administrative Code) the optional 1927 recommended appendix to the first edition of the *Uniform Building Code—California Edition*, which was similar to the ordinance adopted by the city of Santa Barbara and was the beginning of code provisions for the seismic design of structures across the United States. As noted, the recommended code published in 1939 by the State Chamber of Commerce “was never adopted by any jurisdiction, but the provisions of the code were incorporated in the *Uniform Building Code* and in Appendix A.” (Zacher undated personal communication)

A 1934 article by Clarence H. Kromer, a principal structural engineer for the California Division of Architecture, noted one early benefit of local compliance with Appendix A:

It should be pointed out that buildings designed or reconstructed in accordance with Appendix “A” of the Division of Architecture are in general subject to materially lower earthquake insurance rates than would be the case for similar buildings designed without any regard to bracing or earthquake resistance. This reduction in rates, depending on the probable resistance of the structure, is relatively large (Kromer 1934b, p. 12).

It should be remembered that the Field Act was not retroactive, nor did it provide the state with authority to condemn or close any existing public school building. However, the act did permit local school authorities, or a specified percentage (10%) of parents of enrolled students to request (of the school authorities) that the state architect perform seismic evaluations of their buildings. In little more than a year after the passage of the Field Act, Kromer’s office received 333 applications for the review of plans for new schools, and more than 1,000 applications had been filed for the voluntary examination of existing schools (ibid.).

The subject of school board liability also apparently emerged quickly after the Field Act became law. This issue became more prominent later when it became apparent to the legislature that school boards were not strengthening or replacing deficient school buildings fast enough. Kromer summarized the situation as of 1934 when he wrote:

According to our understanding there is nothing in this act which places any additional responsibility on any school board other than that embodied in the existing statutes established prior to the enactment of this act. It does, however, provide the school board with a means of meeting its responsibility and even being relieved of it.

School boards throughout the state have been caused considerable concern by an opinion rendered by the Attorney General...[on] November 22, 1933. In this opinion, the question of liability or responsibility seems to hang on whether the district itself or its employees have been negligent in not taking proper precautions to provide safe buildings....

The school building act merely focuses attention on the matter of possible danger that might occur in the event of an earthquake and provides a method whereby school boards may have authoritative information regarding the structural condition of their buildings.

Except for the fact that a warning has been sounded and possible danger to life and

property recognized, it does not appear that it is any more necessary for school districts to go to the expense of making alterations or reconstructing their buildings than has heretofore been necessary nor is it any more necessary to close school buildings.

All that has been done is to attract attention and to emphasize responsibility of school boards but the responsibility itself has not been increased (ibid., p. 12).

The year 1935 saw the passage of Senate Bill 797, which modified the original law regarding the liability and responsibility of school trustees. On 6 January 1936, a Senate investigating committee met on the University of California, Berkeley, campus to hear especially from representatives of the California School Trustees Association about “exactly what the limit of their (trustees) responsibility is should anything happen to the children or to property due to an earthquake.”<sup>7</sup>

Nothing, however, is sacred nor permanently guaranteed in the public policy arena. About 75 legislative bills have been introduced since 1933 to amend or even abolish the Field Act. Some amendments passed and others failed. They fall into several categories: (1) to require the retrofitting or replacement of pre-Field Act buildings; (2) to exempt various buildings for specific times or uses; (3) to raise funds to upgrade existing pre-Field Act schools; (4) to eliminate or transfer to or share the state’s responsibilities with local building safety agencies; (5) to “streamline” the Field Act’s administrative processes; (6) to apply the Act’s principles to private schools; (7) to regulate portable or modular classrooms, especially their installation; (8) to require that school sites are evaluated before new schools are built or existing ones modified; and (9) to conduct an inventory of early Field Act buildings (because of advances in knowledge).

As recently as the 1999–2000 Regular Session, legislation was introduced to further amend the Field Act. Assembly Bill 300, for example, required “the Department of General Services (Division of the State Architect) to conduct an inventory of public school buildings that are concrete tilt-up school buildings and school buildings with non-wood frame walls that do not meet the minimum requirements of the 1976 *Uniform Building Code* and to submit a report to the Legislature and the Governor by December 31, 2000” (Chapter 622, Statutes of 1999, Legislative Counsel’s Digest).

Another piece of legislation, Assembly Bill 424, survived the process but was ultimately vetoed by Governor Davis on 29 September 2000. The bill would have allowed school districts to use a design-build contracting process for school construction projects greater than \$10 million. AB 424 caused “great concern” to and was opposed by the California Seismic Safety Commission, which noted that “The design-build process has contributed to the poor performance of buildings in past earthquakes” (CSSC, Newsletter, Winter 2000, p. 2).

Governor Davis also vetoed Senate Bill 1729 on 29 September 2000. This legislation would have “imposed additional requirements upon school districts,” and probably would have required the state to reimburse local school districts by extending site evaluations to “include an assessment by an engineering geologist in consultation with a geo-

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<sup>7</sup>Senator J. C. Garrison was one of the members and would later (in 1939) author the “Garrison Act,” which addressed the strengthening or replacement of pre-Field Act school buildings.

technical engineer (and the bill) “would require the department (Department of General Services) to provide for state-level monitoring and review of related school district seismic hazard mitigation measures.” (SB 1729, Enrolled version, Legislative Counsel’s Digest). Governor Davis’ veto message noted that such geotechnical reports are required when the DSA “has reason to believe that a geologic hazard exists...(and) this bill is unnecessary and would create a state mandated local program with reimbursable costs potentially in the millions of dollars” (Gov. Davis’ veto message, To Members of the California State Senate, Sept. 29, 2000).

A final recent example, Assembly Bill 2791, passed and was signed by the governor, becoming Chapter 463 of Statutes of 2000. This legislation strengthened the state’s enforcement of the Field Act by empowering “the Department of General Services to issue a stop work order when construction on a public school, a community college, or an essential services facility...is not being performed in accordance with existing law and would compromise the structural integrity of the building thereby endangering the public” (Chapter 463, Statutes of 2000, Legislative Counsel’s Digest).

### CONCLUSION

The 1933 Long Beach earthquake was a true critical juncture for earthquake safety policy in California. Nothing was ever the same afterwards, and the Field Act has an earned place in state history. No debate on that should exist. The counterfactual issue posed at the outset of this paper remains, however: Would the 1933 event have been as decisive for seismic safety in California without the 1925 Santa Barbara event? The answer, necessarily conjectural, raises fascinating questions about the relationship between disaster(s) and political windows of opportunity for major policy innovation. It also forces us to think in longer historical perspective.

Consider the following: Stimulated by the Santa Barbara event, California structural engineers organized and came into their own professionally between 1925 and 1933. They had a signal interest in earthquakes and had achieved legislative experience—and success—with the creation of their title act in 1932. Not recognized as important as it would prove to be, another disaster occurred in 1928, when the St. Francis Dam collapsed, giving California the 1929 Dam Act, which became the template for its much more famous cousin, the Field Act. That is, without the Santa Barbara earthquake and the consequent organizational (and therefore potentially political) development of structural engineers, the Long Beach earthquake would have occurred in a much less “prepared” scientific, professional, media, and public environment.

To be more precise, without the preceding Santa Barbara event, the Long Beach event would have had the impact of 1925 Santa Barbara—below the waterline organizing and incipient change in public consciousness, but not much more. California would then have had to wait for another damaging urban earthquake, which in fact did not occur until 1971 with the San Fernando event (the 1952 Arvin-Tehachapi earthquake was not urban, with the exception of some damage in Bakersfield). The entire history of California’s rise to seismic safety prominence would have been entirely different and might not have occurred at all without the close proximity in time of *two focusing events* (the 1925 and 1933 earthquakes). In retrospect, the Santa Barbara and Long Beach earth-

quakes respectively prepared and then opened the political window of opportunity for major policy innovations, a process that would then be periodically repeated with subsequent earthquakes (1971 San Fernando, 1989 Loma Prieta, 1994 Northridge).

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