



DAN KALB

COUNCILMEMBER – DISTRICT ONE

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TO: Oakland City Council and Members of the Public
FROM: City Councilmember Dan Kalb
SUBJECT: Multi-Story Non-Ductile Concrete Seismic Retrofitting
DATE: November 21, 2024

RECOMMENDATION

Adopt a RESOLUTION DIRECTING THE CITY ADMINISTRATOR TO WITHIN EIGHTEEN (18) MONTHS: (1) STUDY AND PRESENT TO THE CITY COUNCIL A STRATEGY FOR DEVELOPING A CITYWIDE PROGRAM THAT INCLUDES MANDATORY STANDARDS FOR EARTHQUAKE HAZARD REDUCTION OF EXISTING MULTI-STORY NON-DUCTILE CONCRETE BUILDINGS, AND DEVELOPING AN INVENTORY OF AND SCHEDULE FOR MANDATORY RETROFITTING OF EXISTING MULTI-STORY NON-DUCTILE CONCRETE BUILDINGS, AND (2) PRESENT A STATUS REPORT ON AN ORDINANCE REQUIRING THE RETROFITTING OF SUCH BUILDINGS IN ORDER TO PROTECT THE LIFE AND SAFETY OF OAKLAND RESIDENTS AND WORKERS, WITH THE GOAL OF PRESENTING AN ORDINANCE FOR THE PROGRAM TO THE CITY COUNCIL WITHIN TWO YEARS

EXECUTIVE SUMMARY

Given the City of Oakland’s proximity to the San Andreas and Hayward fault lines and the likelihood of another major earthquake within the next 30 years, the City must adopt additional standards to protect the health and safety of our community. Many older Non-ductile concrete buildings are seismically unsound and present a risk in the event of a major earthquake. This Resolution requires that within the next 18 months, the City Administrator develop (1) a program for the inventory of such buildings, (2) standards for seismic retrofitting of these non-ductile, concrete building, and (3) a timeline for compliance. Further, the City Administrator—presumably delegated to the Department of Planning and Building—shall provide a status update on the preparation of an ordinance to require the retrofit of these buildings. The City of Los Angeles has an ordinance that may provide a good model for our City.

BACKGROUND/ LEGISLATIVE HISTORY

The City of Oakland is located in a geologic area of high seismicity and prone to earthquakes of significant magnitude. In 1906 a 7.8 earthquake killed 3,000 and displaced over 225,000. In 1989 the 6.9 magnitude Loma Prieta earthquake killed 63 people, injured 4,000, and left 10,000 Bay Area residents homeless. World-leading experts and scientists in seismicity have predicted major

seismic activity in the Northern California region in the near future with catastrophic destruction potential. This is because a fault line known as the Hayward Fault runs through the extent of the City, and the City of Oakland Safety Element has deemed the Hayward Fault an active earthquake fault. A major earthquake on the Rogers Creek Fault, also in the East Bay, likely cause serious impacts in Oakland as well.

In 2019, based on legislation authored by CM Kalb and the Department of Planning and Building, the City of Oakland adopted and implemented a Soft Story Seismic Retrofit Program. This program works to save lives by strengthening/retrofitting buildings with large ground floor openings particularly prone to collapse during an earthquake. However, many structures, such as multi-story, non-ductile concrete buildings, remain without retrofit requirements. Non-ductile concrete is a type of concrete that is very brittle, and was used extensively in buildings built before 1977.¹² This kind of construction was found to be a major cause of death during the 2023 earthquakes in Turkey.³

In 2015, the City of Los Angeles passed Ordinance #183893, which includes the L.A. Non-Ductile Reinforced Concrete Ordinance. All buildings with reinforced concrete construction or with construction permits dating before January 13, 1977, are subject to this ordinance. The City has around 1,500 buildings which fall under the scope of this program. Their program specifies the following timeline:

MILESTONE	REQUIREMENT
BEGIN PROCESS	◆ Order received by building owner
3 YEARS AFTER ORDER	◆ Complete and submit the City's Non-Ductile Concrete Building Checklist, which is required to be completed and signed by a licensed engineer or architect
10 YEARS AFTER ORDER	Obtain one of the following: 1. Permit for seismic retrofit of the building in conformance with the NDC Ordinance OR 2. Permit for demolition of the building OR 3. City's approval of proof that the building was previously retrofitted in conformity with certain older requirements of the Los Angeles Building Code OR 4. City's approval of proof that the building was previously retrofitted in conformity with the engineering requirements of the NDC Ordinance OR 5. City's approval of a structural analysis showing that the building in its existing condition meets the engineering requirement of the NDC Ordinance ◆
25 YEARS AFTER ORDER	Complete one of the following: ◆ 1. Construction of the seismic retrofit OR 2. Demolition

Source: <https://www.seismicordinances.com/non-ductile-concrete-structures/los-angeles>

ANALYSIS

¹ <https://www.partneresi.com/resources/glossary/non-ductile-concrete/#:~:text=Most%20concrete%20buildings%20built%20prior,resist%20forces%20caused%20by%20earthquakes.>

² The 1976 Uniform Building Code of California incorporated principles of ductility into concrete design to address health and safety concerns.

³ <https://www.preventionweb.net/news/turkey-syria-earthquakes-concrete-construction-under-scrutiny#:~:text=In%20place%20of%20a%20local,rods%20for%20detailing%20at%20connections.>

In order to implement a program, the City of Oakland must develop (1) an inventory of applicable buildings, (2) standards for retrofitting, and (3) an ordinance to require retrofitting of these buildings, and (4) a timeline for compliance. This will take some time, however given the impending danger of another large earthquake, this must be in the near future. This Resolution provides the Planning and Building Department with 18 months to study the issue and present the City Council with a strategy for developing a citywide program.

FISCAL IMPACT

According to the National Institute of Building Sciences, every \$1 spent on building retrofits for earthquake safety produces \$13 in post-disaster benefits.⁴ For property owners, a concrete building seismic retrofit generally falls within a range of \$3,000 to \$7,000 per average-sized home--larger buildings or complex retrofits could cost considerably more, sometimes reaching hundreds of thousands of dollars.⁵

The cost to the City is unknown as this will depend on the number of staff hours needed to develop and then implement the program. Planning and Building staff will be able to better estimate this cost once they develop a work-plan and begin work on research.

COORDINATION

Our office worked with the Oakland City Attorney's Office and the Department of Planning and Building to create this Resolution. Additional outreach is underway. For questions, please contact Keara O'Doherty, Chief of Staff to Dan Kalb, (510) 238-7014, kodoherty@oaklandca.gov.

Best,



Dan Kalb
City Councilmember, District 1

⁴ <https://www.spur.org/news/2023-08-07/multifamily-seismic-retrofit-program-secures-15-million-state-more-investment>

⁵ <https://www.californiarésidentialmitigationprogram.com/resources/blog/how-much-does-a-earthquake-retrofit-cost#:~:text=What%20is%20the%20Average%20Cost,required%2C%20which%20we%20explain%20below.>