

SUBJECT: **ORDINANCE ESTABLISHING SEISMIC STRENGTHENING PROVISIONS FOR TWO CATEGORIES OF EXISTING BUILDINGS IN THE CITY AND AMENDING THE WEST HOLLYWOOD MUNICIPAL CODE**

INITIATED BY: **COMMUNITY DEVELOPMENT DEPARTMENT**
(Stephanie DeWolfe, Community Development Director)
(Cynthia Zabala, Acting Building Official)



STATEMENT ON THE SUBJECT:

The City Council will consider a draft ordinance amending the West Hollywood Municipal Code to introduce new seismic retrofit provisions for the strengthening of two existing building types. The ordinance has been amended from prior versions to exempt common interest developments and establish disclosure requirements upon sale of property at the request of the City Council. This report also addresses the requested research with respect to the building type data collected by the Consultants for the seismic survey.

RECOMMENDATIONS:

1) Introduce on first reading:

ORDINANCE NO 17-____ : AN ORDINANCE OF THE CITY OF WEST HOLLYWOOD ESTABLISHING SEISMIC STRENGTHENING REQUIREMENTS FOR TWO CATEGORIES OF EXISTING BUILDINGS IN THE CITY AND AMENDING TITLES 13 AND 9 OF THE WEST HOLLYWOOD MUNICIPAL CODE.

2) The Ordinance shall be operative one year after its effective date.

BACKGROUND / ANALYSIS:

Ordinance Summary

At the Council meeting on June 19, 2017, the City Council directed staff to return with an ordinance for seismic strengthening provisions for existing non-ductile concrete and pre-Northridge Steel Moment Frame structures and exempt residential condominium type buildings from mandatory retrofitting. The ordinance currently being considered is similar to that which was previously presented at the April 3, 2017 Council meeting but also includes the following revisions as directed by the City Council:

Section 13.36.020 exception 5 - exempting the mandatory retrofit of residential common interest developments (condominium type buildings) from strengthening provisions for

non-ductile concrete buildings except that these building shall be required to submit an engineering report as required by section 13.36.050.

Section 13.40.020 exception 3 - exempting the mandatory retrofit of residential common interest developments (condominium type buildings) from strengthening provisions for pre-Northridge steel moment frame buildings except that these building shall be required to submit an engineering report as required by section 13.40.050.

Section 3 - adds a new Chapter 9.25 to the West Hollywood Municipal Code which requires a disclosure upon the sale of a property with a building type subject to strengthening provisions of the ordinance.

Section 6 – Indicates that the Ordinance shall become operative one (1) year after its effective date.

If West Hollywood adopts this ordinance, it will join other cities including the City of San Francisco, Berkeley, and Los Angeles, in addition to Santa Monica, in taking further steps toward addressing life safety issues of potentially vulnerable buildings

The Importance of Acting Now

According to the USGS there is a 50% probability that a magnitude 6.0 earthquake will occur in the next 25 years in the Los Angeles area. A significant earthquake will not only affect life safety, but also loss of shelter and significant economic loss. USGS has recently published an earthquake scenario in Southern California known as the The Great Shakeout. This scenario expects an economic building loss of \$33 billion dollars and 1,800 deaths in Southern California. Many of these deaths will be attributed to collapse of both non-ductile concrete and pre-Northridge steel moment frame buildings.

One way to reduce the devastation is to be proactive rather than reactive by waiting for a disaster to occur before addressing the seismic deficiencies in our existing building stock. Current building codes require new buildings to adhere to the most current building standards, however the Code does not require existing buildings to be upgraded unless the building is undergoing major alterations. As such, many city jurisdictions in California are now implementing mandatory seismic ordinances to reduce the risk of these existing seismically vulnerable buildings.

Non-Ductile Concrete Buildings

Non-ductile concrete buildings are considered to be one of the most seismically vulnerable building types by the structural engineering community. Unlike wood and steel, concrete can't bend. It's known by engineers as "non-ductile." Instead of bending, concrete columns can snap like a piece of chalk. Structural engineers use steel reinforcing bars known as rebar to make the columns stronger and more flexible. The rebar forms a cage inside the concrete, allowing it to crack and bend without crumbling.

The poor performance of pre-1979 concrete buildings is well documented and can cause major damage and often collapse when they experience severe seismic shaking. The 1971 Sylmar San Fernando Earthquake caused \$500 Million dollars in property damage including several building collapses in two major hospital campuses. The earthquake claimed 65 deaths of which 49 deaths were attributed to masonry and non-ductile concrete buildings. Over the next decade following this catastrophic event, the engineering community began to research and implement better ways to design and construct these buildings so they can better sustain seismic shaking. Building codes now require new concrete structures to provide additional reinforcement to improve ductility, but the code did not address existing buildings. Even buildings listed as "reinforced concrete" on the permits may not have enough steel to withstand seismic shaking. The only way to know whether an older concrete building is at risk is to have an engineer inspect it. The performance of older buildings in an earthquake can be improved by various strengthening methods. Retrofit standards for older buildings require them to be strong enough to remain standing so occupants can safely evacuate. Although those buildings may still experience damage, retrofits are intended to save lives.

Retrofit requirements as specified in the ordinance will apply to concrete buildings built under building code standards enacted before 1979. Seismic strengthening for these types of structures requires a complete building analysis by an Engineer to determine what deficiencies exist. Because these types of structures are typically of larger scale and are more complex it is difficult to determine the extents of retrofit work until an engineering analysis completed. There are estimated to be approximately 55 of these concrete buildings within the City. There are also an additional 60 buildings that are classified as 'undetermined' building types, some of which may also fall into this category after additional investigation as determined by the required engineering report.

Pre-Northridge Steel Moment Frame Buildings

In the Northridge earthquake, many beam-to-column connections in steel moment-frame buildings experienced brittle fractures, even at low levels of shaking. Prior to this event, the connections were believed to be very ductile and were widely utilized in the construction of tall buildings.

There is some uncertainty regarding the number and extent of this problem in existing buildings and a majority of them have been left unaltered. In the Los Angeles area, approximately 155 steel structures were surveyed after the earthquake with 60% of those found to have connection damage. As a result, they may be susceptible to collapse in the event of a major earthquake

Building codes have been updated to change the design and construction standards for new buildings, but as with non-ductile concrete, codes do not address existing buildings that were built under old standards. The performance of older steel frame buildings can be improved in a number of ways that will increase the likelihood that occupants will be able to evacuate safely after a major seismic event.

The proposed ordinance requires a complete building analysis by an Engineer to determine what deficiencies exist in these types of buildings. Because structures of this type are typically more complex it is difficult to determine the extents of retrofit work without an engineering analysis. There are estimated to be approximately 31 pre-Northridge moment frame buildings within the City. There are also an additional 60 buildings that are 'undetermined' building types, some of which may also fall into this category after additional investigation as determined by the required Engineering Report.

Ordinance Summary: Prioritization/Time Limits for Compliance

Prioritization

The prioritization for Non-Ductile Concrete and Pre-Northridge Steel Moment Frame Buildings is prioritized based on the number of stories as shown below:

**TABLE B
PRIORITY DESIGNATION**

Priority	Description
Priority I.	Buildings with 8 or more stories
Priority II.	Buildings with 3 to 7 stories
Priority III.	Buildings with 2 or less Stories

For these types of buildings, larger/taller buildings typically have higher occupant loads and are structurally more vulnerable during a significant seismic event; therefore these buildings were targeted first for strengthening.

Time Limits for Compliance

The time period for compliance is done in a two phase approach. The first phase begins with an engineering report demonstrating whether the building conforms to the design provisions within the chapter for non-ductile concrete structures or pre-Northridge steel moment frame buildings and all building deficiencies must be identified. As part of phase 1, the top five major deficiencies must be retrofitted within 10 years from notice to the owner. Phase 2 requires that the remaining building deficiencies be retrofitted and must be completed within 20 years after notice to the owner. The ordinance does allow for extensions to be granted should a building owner demonstrate with substantial evidence that a good cause for an extension exists. Below are the time limits showing the required milestones at each phase.

TIME LIMITS FOR OWNER

	Phase 1: Engineering Report & Major Deficiency Mitigation ^{a, b}				Phase 2: Complete Retrofit ^d		
Phase	Submit Engineering Report & Determine All Deficiencies	Submit Retrofit Plans for Major Deficiency Mitigation	Obtain Building Permit & Commence Construction	Complete Major Deficiency Mitigation Construction ^c	Submit Retrofit Plans	Obtain Building Permit & Commence Construction	Complete Construction
Milestone	3 Years from notice to the Owner	5 Years from notice to the Owner	7 Years from notice to the Owner	10 Years from notice to the Owner	13 Years from notice to the Owner	15 Years from notice to the Owner	20 Years from notice to the Owner

a. All buildings within the scope of this Chapter are required to submit an engineering report & determine all structural deficiencies. Buildings that do not contain any of the Major Deficiencies as defined in this Chapter are not required to submit Retrofit plans for Major Deficiency mitigation, commence construction, and complete construction in Phase 1, but shall provide Retrofit plans and complete construction within the time limits provided in Phase 2.

b. Phase 1 Retrofit plans must indicate preliminary Phase 2 Retrofit extents. Minimum Phase 2 scoping requirements shall be as specified by the Building Official.

c. Completion of Phase 1 may be extended by 3 years if Retrofit plans in accordance with the scope of Phase 2 are designed, approved, permitted and constructed within Phase 1.

d. The Building Code version governing Phase 1 shall be permitted to be utilized in Phase 2.

Public Access to Research

At the City Council meeting on June 19, 2017, the Council directed staff to make the research from the building survey available to the public. Staff is working with the Consultants to finalize and reconcile the building information with the adopted ordinance(s). Once this has been completed, the information will be available on the City's webpage which is estimated to be in October 2017. A visual survey conducted from the public right of way was performed as the initial phase of the seismic program with the purpose of categorizing buildings by type of construction. The survey does not contain information with regard to if a building is structurally sufficient or the extent of any strengthening required. Buildings that have been categorized as a construction type that is subject to the seismic ordinance, requires an evaluation by a structural engineer to determine if there are any structural deficiencies and how to mitigate these deficiencies (if any).

CONFORMANCE WITH VISION 2020 AND THE GOALS OF THE WEST HOLLYWOOD GENERAL PLAN:

This item is consistent with the Primary Strategic Goal(s) (PSG) and/or Ongoing Strategic Program(s) (OSP) of:

- OSP-9: Upgrade Existing Buildings & Infrastructure.

In addition, this item is compliant with the following goal(s) of the West Hollywood

General Plan:

- SN-1: Reduce injury and damage from natural hazards.
- H-2: Maintain and enhance the quality of the housing stock and residential neighborhoods.

EVALUATION PROCESSES:

Staff will explore enhancing the City's permitting system to include the ability to track the progress of each building required to comply with the retrofit ordinance and provide notifications to building owners at each timeline milestone.

ENVIRONMENTAL SUSTAINABILITY AND HEALTH:

A retrofit program would increase life safety and minimize catastrophic building damage during a significant seismic event as well as lessen the economic impact following an earthquake.

This ordinance is exempt from the California Environmental Quality Act (CEQA) per section 15301, 15302, and 15308.

OFFICE OF PRIMARY RESPONSIBILITY:

COMMUNITY DEVELOPMENT DEPARTMENT / BUILDING & SAFETY DIVISION

FISCAL IMPACT:

None at this time. Potential future fiscal impacts that may be considered and will be brought back as separate agenda items:

1. The cost of potentially retrofitting City owned buildings. The cost of an engineering report and analysis would be required for each building as well as construction costs for strengthening each building (if required).
2. Cost of upgrades to the City's existing permitting system to include enhancements to assist with tracking the progress and issue notices for those properties required to comply with the seismic retrofit program.
3. Staff will also be exploring the options of providing incentives such as waiving plan check, permit, and planning fees associated with a seismic retrofit.
4. Staff will explore the need of additional consultants to assist with the influx of additional plan reviews and inspections generated by the buildings required to be seismically strengthened.
5. As part of the implementation, structural engineering consultant(s) would be required to provide plan review services for non-ductile concrete structures and moment frame structures. The analysis for these structures is complex and requires a consultant with expertise in this field. An RFP for this scope of work would be required and would be brought back to the City Council at a later date.

ATTACHMENT:

ATTACHMENT A: Ordinance No. 17-_____