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White Paper: Non-Ductile Concrete Buildings

Thinking beyond the ordinance: Creating a framework for reform to ensure economic viability, improve housing security, and foster sustainability.

October 2021



Acknowledgments

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CLARETTWEST

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About Omgivning

Founded in 2009, Omgivning originally focused on the revitalization of downtown Los Angeles through the adaptive reuse of existing buildings and spaces. Through the years, the firm has continued to grow its services to design for a variety of new construction projects and expand its imprint across greater Southern California and further afield. Today, Omgivning's design work has touched over 500 projects, from two million square foot historic landmarks to small, local cafés. From the design of boutique hotels, multifamily housing, workplaces, to retail, dining, and theaters, our projects are welcoming environments that become essential parts of their communities.

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Executive Summary

The purpose of the Non-Ductile Concrete (NDC) Ordinance is to reduce the seismic risk of existing non-ductile concrete buildings, which was one of the recommendations made by the Mayoral Seismic Safety Task Force to improve the resiliency of Los Angeles following a major earthquake. The ordinance requires all concrete buildings designed prior to January 13, 1976 to achieve the minimum structural requirements outlined in the ordinance within 25 years of receiving the "Order to Comply" notice from the City, or be demolished.

In the first few years since the adoption of the ordinance, a number of policy, administrative and technical challenges have been identified for buildings that are attempting to comply with the ordinance, and have resulted in unforeseen impacts.

The following suggestions have been identified as primary goals:



I. Policy Reform:

- A. Allow Article 9 Provisions "incentives" of 2040 Downtown Los Angeles (DTLA) Plan to be applied to NDC buildings city wide
- B. Provide tax and fee incentives
- C. Set up a mechanism to prioritize major structural deficiencies
- D. Set up a system to notify building owners of available sources of funding



II. Administrative Reform:

- A. Provide Project Phasing to allow for greater flexibility when complying with the ordinance and to set up a mechanism to prioritize major structural deficiencies
- B. Form a Los Angeles Department of Building and Safety (LADBS) non-ductile concrete liaison position and technical group within the LADBS Permit and Engineering Bureau
- C. Allow the use of the California Historical Building Code (CHBC) as justification for code interpretations
- D. "Lock in" a code cycle early in the plan check process together with a phased construction program
- E. Maintain consistent staff at LADBS and Los Angeles Fire Department (LAFD) to review NDC projects
- F. Allow approval of RFMs early in the design phase



III. Technical Reform:

- A. Continued LADBS coordination with the Structural Engineers Association of Southern California Existing Building Committee (SEAOSC EBC)

By raising these issues, and offering suggestions for solutions, we hope that the seismic risk to more buildings can be addressed in a more streamlined and expedited fashion. While it is anticipated that not all of the suggestions will be implemented, and the timeline of each implementation to be unknown, a goal of the NDC Working Group is to create a framework for continued dialogue with all stakeholders in order to calibrate the recommendations for reform until as many NDC projects have been retrofitted quickly and as safely as possible within the 25 year compliance date.

The team that participated in the development of this document supports the City's desire to reduce seismic risk and improve post-earthquake community resiliency.

Introduction

In 2015 Mayor Eric Garcetti signed into law a historic mandatory retrofit ordinance² to ensure that two of Los Angeles' most vulnerable building types, NDC buildings and wood-frame buildings with soft stories, are strengthened to improve their performance during earthquakes, mitigate loss of life and injury, ensure economic resilience and preserve affordable housing should "the Big One" strike Los Angeles.³

Under the auspices of the Mayor's Office, Omgivning initiated a working group to help improve Los Angeles' (NDC) Retrofit Program and associated Ordinance. Meeting over a span of two years with stakeholders including property owners, developers, structural engineers, general contractors, city agency representatives and advocacy groups, **the goal of the NDC Working Group has been to help analyze the current requirements and processes of the NDC Retrofit Program and Ordinance, provide recommendations for improvement, as well as solutions through new reform ideas.**



Working Group meeting at the Mayor's office. © Omgivning

The recommendations in this White Paper strive to refocus the City's initial aims by incentivizing the necessary work to be done to existing NDC buildings, helping to offset high costs, and increasing the percentage of completed projects. **These proposed solutions position the City of Los Angeles to further protect public health and safety, and also increases access to affordable housing, meets targets for LA's Green New Deal, and contributes to the future economic growth of the city.**

Unforeseen Impacts

While the purpose of the NDC Retrofit Ordinances is to "promote the public welfare and safety by reducing the risk of death or injury that may result from the effects of earthquakes," the compliance requirements have many unforeseen impacts. In many cases, the process to retrofit a building creates a disconnect between the City's goals and a building owner's capability to execute the required work and exacerbate the issues that the City and the Ordinance aim to resolve.

1. Retrofit Costs

From the limited sample pool of built work, the cost of the seismic retrofit work alone is estimated to cost between \$30-\$50 per square, and once the peripheral work is included, it is estimated to cost between \$50-\$100 per square foot. Or approximately between \$2.1M and \$6.8M total for retrofit work on a 7-story building of about 68,000 sf on a lot in the Historic Core of downtown Los Angeles. Peripheral work is considering the total comprehensive costs for a retrofit, that includes scope items, for an existing occupied building, that may be triggered by the retrofit; such as soft demo and hard demo, fire alarm, fire sprinkler upgrades, smoke control upgrades, mechanical, electrical, and plumbing disruption and relocation, stormwater disruption and relocation, historic rehabilitation, architectural interiors, distribution to utilities, and accessibility upgrades. This total comprehensive costs can push the total cost for a seismic upgrade to approximately \$100 per square foot without any increase in revenue from the building making many projects financially infeasible to building owners. While the costs for seismic retrofit work will fluctuate as market conditions change, it is unlikely that we will see significant cost reduction as more and more NDC buildings are retrofitted.

Per Mike Condon, Vice Chairman of Cushman & Wakefield, "Analyzing sale comp data for buildings over 40,000 sf built prior to 1978, and tracking these assets that had not previously undergone a recent major renovation, sales data indicates a decrease in transaction volume per year: eight sales in 2012, progressively down to two in 2018, and zero trades

in the non-retrofitted, historic building asset class in 2019. This trend also tracks in total dollar volume of sales in this subset peaking in 2016 and 2017 with \$235 million and \$285 million respectively, followed by \$44 million in 2018 and no such sales recorded in 2019. While the ordinance was passed in 2015, it took some time for the impacts of prohibiting programs and inflating costs to redevelop buildings under the new code to catch up and become an evident risk to investors."

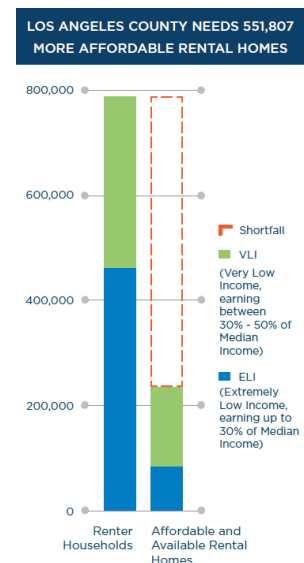
It is increasingly difficult for property owners or developers to secure financing or raise the funding to complete the required NDC retrofit when the market doesn't currently recognize the value of these improvements with increased rents. While the Los Angeles Housing + Community Investment Department (HCIDLA) has a Seismic Retrofit Cost Recovery Program⁴ in place, a substantial portion of the amount intended to help tenants to balance rent is actually used to offset the retrofit costs, and is better suited to soft-story retrofit work. These higher than anticipated costs and lost revenue resulting from downtime due to construction are often the sole responsibility of the building owner, even though there is a significant public benefit associated with the retrofit work being performed.

2. Reduction in Housing Units

The City is currently facing a housing crisis with a shortage of available units and chronic homelessness that our existing NDC buildings offer significant potential to ease, but also potential to further contribute to the crisis.



The Lane Building, adaptive reuse from office to housing, under construction. © Hunter Kerhart



Southern California Association of Governments Report

According to the Los Angeles Homeless Services Authority, homelessness rose by 16% in 2020 with 41,290 individuals living on the streets, in shelters and in vehicles within Los Angeles city limits.⁵ Additionally, the Southern California Association of Governments has reported that the City of Los Angeles has a responsibility to plan for over 455,000 units ranging from very-low income to above moderate income between 2021 to 2029.⁶ Strengthened NDC buildings that comply with the ordinance are expected to significantly contribute to the resiliency of the city, making it vitally important that the seismic retrofit program is successful.

The extensive work required can impact existing tenants leaving more people in a pinch to find housing. Existing NDC buildings that have residential uses require tenant relocation or removal for the retrofit work to proceed, and temporarily removes housing from the market for the duration of construction. This is in contrast to soft-story retrofits, which involve mostly exterior work, and do not displace existing tenants.

Many NDC buildings that are fully occupied are owned and operated by smaller scale owners, who will experience an even greater challenge to produce an increased level of income from the property post-retrofit. Several buildings that have gone through the seismic retrofit have been commercial properties where a developer assesses the pro forma of the building and tries to maximize the financial returns. Owners of smaller NDC buildings will require significantly more financial support than commercial



Fabric Building - Before + After © Hunter Kerhart



developers. If this financial support does not exist, then owners will be forced to pass the direct costs onto tenants or not bother to retrofit. In the case of residential buildings, there is the risk of contributing to the housing issue. This limits the potential that NDC buildings can contribute to the city's housing stock.

3. Impacts of Demolition

Another unforeseen impact is the enormous threat of demolition of these buildings. The demolition of these buildings contribute to a significant loss of embodied energy and carbon emissions, as well as a loss of local heritage through buildings that contribute to a neighborhood's sense of place. Every effort should be taken to ensure a building owner does not need to resort to demolition.

One of the most impactful sustainable steps we can take is to reuse and appropriately retrofit existing buildings. It takes 10 to 80 years for a new building that is 30 percent more efficient than an average performing existing building to overcome, through efficient operations, the negative climate change impacts related to the construction process.¹⁷ Demolishing a typical 50,000 square-foot commercial building creates nearly 4,000 tons of waste that goes into a landfill.⁸ The city's existing stock of NDC buildings also have potential to contribute to targets noted in the LA's Green New Deal.⁹

Unlocking the potential of existing buildings to realize new and innovative possibilities allows us to retain the character and history of our communities. Not all old buildings need to be saved, but if it's easier and cheaper to demolish the buildings, owners may choose this route. The Division 88 requirements for seismically retrofitting unreinforced masonry

(URM) buildings in the 1990s was successful in strengthening and maintaining over 5,700 URM buildings¹⁰ around the city that are much safer, being reused and continuing to contribute to the character of Los Angeles' neighborhoods. Similarly, the NDC ordinance has the potential to save a significant number of existing buildings that contribute to their communities, making it even more important for the NDC Retrofit Program to be successful.

4. Risk to Public Health and Safety if Buildings Are Not Strengthened

One unforeseen impact is that the safety of inhabitants, surrounding properties, and general public in proximity to these buildings are at extended risk due to the low percentage of buildings that are in the process of retrofitting. According to the latest NDC Retrofit Program data from LADBS, at six years into the program as of Q4 2021, approximately 31% (379 buildings total) of NDC buildings have completed the 3-year compliance goal of submitting a checklist. **The City should seek to understand why a majority of buildings have not met this initial step.** Only 11% (134 buildings total) of the 1,222 NDC buildings in Los Angeles have completed the 10-year compliance goal of submitting proof of a previous retrofit, or plans to retrofit or demolish the building. Only 3.7% (46 buildings total) have met the 25-year compliance goal of completed construction and obtaining certificates of compliance.

The Ordinance does note that, "it shall be unlawful for any person, firm, or corporation to maintain, use, or occupy any building within the scope of this division that fails to meet the minimum earthquake standards specified in this division....," however, there is no stated penalty for not meeting the time limits

for compliance, or simply choosing not to retrofit NDC buildings to meet the "minimum standards" specified in the Ordinance. As a result, building owners may continue to hold off on performing the required retrofitting work due to high costs and potential lost revenue if the building is currently occupied. Considering all of the obstacles discussed previously, some building owners may elect to "wait and see" to understand what consequences there might be at the 25-year compliance time limit.

Recommendations

The primary goal of the NDC Working Group is to identify challenges building owners are currently faced with when attempting to comply with the NDC Ordinance, and to suggest recommendations that are expected to increase the compliance rate of affected buildings as quickly, and as safely as reasonably possible through the following areas of reform.

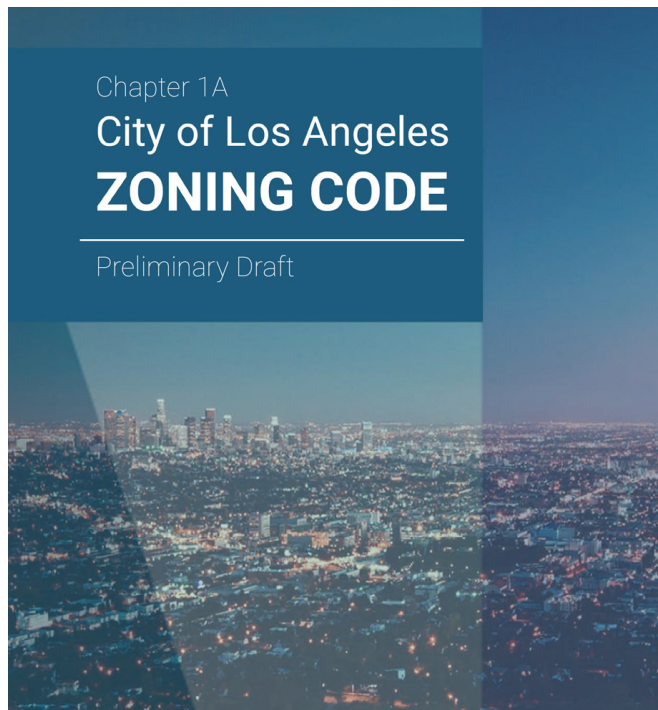
1. Create economic incentives that help offset the additional costs of retrofits through **policy reform**. Refer to Section I.
2. Provide consistency within the City jurisdictions, a more expedient permitting and construction process, and provide building owners with the ability to effectively implement phased construction while a building remains occupied, or temporarily occupied, to offer greater predictability for Owners and Consultants through clarity in the requirements through **administrative reform**. Refer to Section II.
3. Maintain and improve the existing relationship between LADBS and SEAOSC EBC to ensure mechanisms exist for technical dialogue between practicing engineers and building officials to offer alternative interpretations to the code based on understanding real world physical building conditions through **technical reform**. Refer to Section III.



Singer Building © Omgivning

I. Policy Reform

Policy Reform has the potential to make the most significant impact on accelerating the process to safely retrofit the approximate 1,200 NDC projects in Los Angeles. Implemented along with the proposed Administrative and Technical Reform ideas will greatly help align the NDC Retrofit Program with the original goals and intent of the Ordinance.



Los Angeles Zoning Code © Los Angeles City Planning

The typical construction cost to retrofit and upgrade other aspects of the building that are also triggered with the retrofit typically range between \$30/sf for retrofit only work and \$100 per square foot comprehensively. **The retrofits are simply not financially feasible for most property owners without significantly reducing the costs and/or without significantly increasing revenue from the building.**

A. DTLA 2040 Plan

Existing NDC buildings have immense opportunity to be converted to housing, or other uses, in a quicker timeframe than new construction to help Los Angeles meet its Housing Element goals. City Planners have made great strides developing the latest draft of the DTLA 2040 Plan Article 9 Provisions¹¹ for Adaptive Reuse projects in which there are impactful incentives for redevelopment of existing buildings. Incentives like “by right” approval process, additions and alterations complying with the provisions not counted towards a building’s floor area, removal of parking requirements, and density requirements may be significant enough to incentivize and encourage building owners and developers to retrofit their buildings. At the same time, it may encourage a full building upgrade, change of use to housing and activate the surrounding neighborhood. **The incentives in the Article 9 Provisions are strongly recommended to be adopted for use in all NDC buildings city wide.**

B. Tax and Fee Incentives

While the state and local municipalities currently have tax incentives as an incentive to retrofitting existing buildings, public awareness of these programs can be very limited. NDC buildings that are historic may take advantage of property tax credits through the Mills Act¹² or a percentage of construction costs through Federal Historic Tax Credits.¹³ The California Revenue and Taxation Code Section 74.5¹⁴ allows building owners to claim exclusion of seismic improvements from a tax assessment to reduce property taxes. Deferring assessed value for recently purchased NDC buildings could also potentially help reduce carrying costs by kicking in after the retrofit has been completed. **City fees, such as Linkage Fees and School fees, could also potentially be waived to provide Owner’s with another incentive to retrofit existing NDC buildings. A bulletin that notifies building owners of all available tax incentives and sources of funding through the City or State is recommended to allow all NDC retrofit projects to take advantage of these available incentives, and encourage the City of LA to assemble a resource to increase public awareness of such programs.**

C. Tenant Relocation

As noted in previous sections, occupied NDC projects pose a serious challenge regarding existing occupants. While the disturbance of tenants during the early investigation and design phase may be mitigated, disturbing occupants during the construction phase is unavoidable. Tenants must be relocated on a temporary or permanent basis, and each occupancy type faces its own unique challenges. The City should also be aware of hardships faced by the tenants that occupy these buildings as well.



Proper Hotel looking North on Broadway © Hunter Kerhart

1. Housing Tenants

Los Angeles has been faced with a housing crisis that has only been made worse by the pandemic. While the City has created a moratorium on tenant eviction to slow down the high rate of homelessness in our community during the pandemic, the housing crisis will continue to persist. This moratorium actually shifts much of the financial burden from the occupant to the very same building owners who are not able to finance the upgrades, further depleting their financial resources. The process of retrofitting a NDC building may cause a loss of existing leases and revenue for building owners, and may make housing more expensive. **The City of LA should consider ways to offset this loss of revenue by encouraging and allowing an expedited return of prior uses or tenants, along with other solutions proposed Section II.**

Although a Tenant Habitability Program (THP) exists for residential tenants facing a mandatory retrofit, the THP is best suited for smaller-scale Soft Story buildings. The retrofit process for a 7-story building of about 68,000 sf on a lot in the Historic Core of downtown Los Angeles can take an estimated eight to twelve months when compounded with other building

upgrades. The THP would relocate the tenants to a hotel, and only cover a portion of the hotel stay over the eight month retrofit period. The construction costs are then passed down to the tenants, raising the overall cost of housing for that property and for Los Angeles as a whole.

2. Office and Retail Tenants

While tenant laws for office and retail tenants are less stringent than for residential tenants, there are still significant challenges when retrofitting existing NDC buildings with office and retail uses. Typically, the most significant work in NDC retrofit projects occurs at the foundation and the total disturbed footprint can amount to around 75% of the total basement footprint. Utilities are frequently disrupted, and the power may need to be cut to allow for new foundations and foundation extensions to be poured. Waste and stormwater lines are also exposed and can be damaged during the demolition process. Due to the disruption in utilities, all building occupants are disturbed, even as projects are phased.

It is recommended that the City explore potential funding sources to assist building owners, such as funds anticipated to be allocated by the federal government for infrastructure and other public works improvements. The potential \$1 trillion infrastructure package recently passed in the Senate¹⁵ is a unique opportunity for Los Angeles to fund a substantial share of NDC retrofits and would be an appropriate investment of these funds to improve existing infrastructure, create and maintain affordable housing, and shift to a low-carbon future.

II. Administrative Reform

Through the joint efforts of the Mayor's Office, LAFD and LADBS a consistent direction, set of interpretations, and point(s) of contact within each department will allow for a more expedient permitting process. Across a sample of NDC buildings that have been permitted, the average time it takes to process a retrofit permit is approximately twelve months once the drawings are fully developed. While more recently submitted retrofit projects appear to be permitted in less time, this consistency will offer predictability for Owners and Consultants allowing improved preparation and documentation for the plan review process, as well as mitigating varying interpretations from a variety of plan check engineers.

A. Project Phasing

Property Owners typically phase their retrofit projects for financial reasons or to align with existing lease agreements to avoid tenant displacement. It is common for code cycles to be updated while these projects move through the plan check process. As code cycles are updated, previous work often is reviewed multiple times under the new code cycle and requires rework. Without the certainty of designing for a specific code cycle, architects and engineers may be left designing for unknowns in codes that have yet to be written. **Creating a mechanism to enable the strengthening component of the work to be phased,**



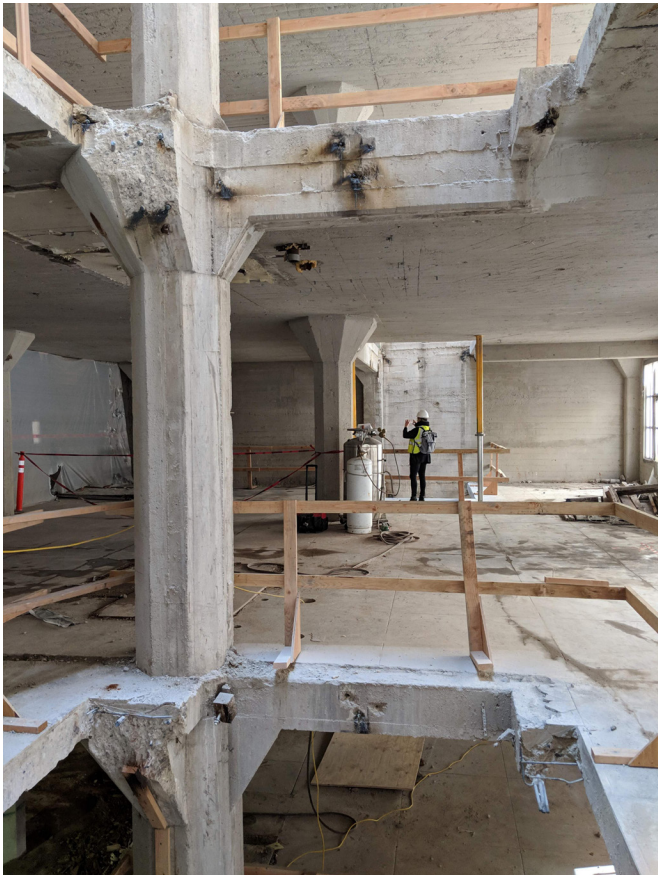
Lane Building © Reaume Richardson

either as a series of individual permits or a single complete permit, combined with "locking in" the Building Code at the time of plan check submission is recommended.

In order for the retrofit program to have minimal disruption, and displace as few tenants as possible, it is very important that building owners have the ability to phase construction during the duration of the 25-year program. Phasing must allow the required strengthening to be implemented over time, and without imposing additional design or cost penalties to the building owner. While removal of these units from the market to perform the retrofit work is temporary, loss of the building in an earthquake is permanent. **Every effort needs to be made to allow for greater flexibility in complying with goals of the ordinance. Project phasing allows for such flexibility.**

The phasing should explicitly allow for the following:

- "Locking in" the Building Code at the time of the original permit submission to ensure that the project does not need to comply with future code provisions. Perhaps the project could be plan check approved as a full project, along with



Fabric Building (shaft) © Omgivning

a phasing plan. This will provide an incentive for early action to avoid potential design and cost escalation stemming from the inevitable heightened rigor of newer code cycles.

- Develop technical requirements (Building Code compliance process) that Design Professionals can implement. Additionally, create Prescriptive Compliance Measures in Chapter 5 of the Los Angeles Building Code that addresses phased construction while a building remains occupied. This process should allow appropriate measures of risk to be evaluated and addressed during each stage of construction, specific to a building whose end goal is to be in full compliance with the NDC Ordinance.
- Extending the "open permit" time interval to allow for a longer inspection and construction schedule associated with phasing.

These phasing measures are also needed to allow building owners to more effectively implement strengthening in phases to prioritize major structural deficiencies.

B. Appointed NDC Liaison and LADBS Technical Working Group

1. Appointed NDC Liaison

Appointing a plan check liaison with consistent support staff through the Mayor's Office is recommended to assist all NDC projects through the plan checking process. This position would fill an important interdepartmental coordination role and could be in the Mayor's Office of Economic Development. The Liaison's goal would be to assist both the City and Design Professionals, and provide consistent guidance to seismically retrofit as many buildings as quickly and safely as possible. The Liaison would assist the Owner, Architect, Structural Engineer, and similar consultants with all plan check agencies through the Department of Building & Safety case management system. The 1999 ARO had a similar Mayor appointed Liaison who was viewed as invaluable in the process. The 1999 ARO was undoubtedly a huge success that provided approximately 130 buildings with seismic retrofits recognized as acceptable retrofits under LADBS Bulletin P/BC 2020-152.¹⁶

The NDC Liaison could also establish a general attitude to be carried throughout both LADBS and LAFD that encourages a deeper understanding of the challenges associated with adaptive reuse and promotes maintaining our existing building stock

rather than demolishing it. Generally, the hesitancy and time it takes to obtain approval for a Request for Modification (RFM) is one instance that demonstrates the expectation of plan check engineers that existing buildings comply with current code, which is often not possible. **A shift in approach where plan check engineers are willing to understand the architects' and engineers' solutions for challenges related to existing buildings is recommended to find reasonable code equivalency when current code cannot be met.**

2. NDC Technical Working Group

Additionally, early plan check support for consultants is needed that allows for Design Professionals to present ideas to LADBS before committing significant resources to go through plan check. The early plan check support should provide consultants with formal agreement and direction from LADBS and plan check engineers with authority to make decisions.

The NDC Technical Working Group must have decision-making authority, whereby Design Professionals can receive official advice specific to a project, prior to and during the development of any plan check or permit documentation. The members that make up the group must be highly experienced in technical and administrative aspects of the ordinance, across all City Departments.

C. California Historical Building Code

1. Fire Life Safety

It is recommended that consideration should be granted to use the CHBC as justification for code interpretations. If such flexibility was given on a case-by-case basis, it would give architects and engineers an opportunity to better preserve character defining features. There was similar discussion about the use of the CHBC during the development of the Bringing



Fabric Building (city) © Hunter Kerhart

Back Broadway Bulletin. The City Attorney ruled that the CHBC is mandated by the State to be used by LADBS and LAFD. While the CHBC does allow nonhistorical expansion or additions to historic buildings, provided they comply with current code, the intent of the CHBC is "to facilitate the preservation and continuing use of qualified historic buildings while providing reasonable safety for the building occupants and access for persons with disabilities."¹⁷ Allowing further use of the CHBC as justification for code interpretations, and requiring enforcing agencies to accept solutions that are reasonably equivalent to regular code would provide a cost-effective approach to preservation and implement sustainable strategies, while also providing reasonable safety of the occupants and access to persons with disabilities.

2. Seismic

The Structural Engineers Association of Southern California Existing Buildings Committee (SEAOSC EBC) will continue to coordinate with LADBS building officials to recommend solutions and best practices for how the CHBC can be applied to seismic requirements of the NDC Ordinance.

D. PDPP Process and City Bulletins

Retrofit projects often take years to design and permit while building owners pay significant consultant costs to Engineers and Architects. Once a project bridges a code cycle, the cost for architectural and engineering services often increases. This additional work extends both the design and plan check process, which has the opposite effect of the streamlining intent of the PDPP process. Reworking the PDPP process is recommended to honor a basis of design and establish the code cycle at the first PDPP submission. The inability for Architects and Engineers to formally "lock in" codes based on the first PDPP submission creates project uncertainty.

New bulletins are at times enforced retroactively to projects that are already in plan check. As a result, consultants have to rework their calculations and drawings, leading to additional coordination across all disciplines. New bulletins may be enforced retroactively during construction when bids and bank loans have already been finalized, sometimes leading to rework on already built components that frequently result in large construction change orders.

Larger retrofit projects inherently possess additional risk because they generally require plan check extension beyond the 18 month plan check period.

Projects seeking plan check extensions that are beyond the initial code cycle when they were submitted are generally required to agree to comply with aspects of the current codes, or may be at risk of not getting their plan check extension granted.

E. LADBS Administrative Reform

1. Consistent Personnel

Strong consistent leadership as it relates to administration and technical issues is imperative. **Maintaining consistent LADBS personnel, especially at the leadership level, is recommended to carry forward steady, maintain persistent interpretations and direction as it relates to NDC retrofit projects.** The dedicated group of plan check engineers at LADBS that only review NDC projects have greatly helped establish standardized interpretations of the NDC Ordinance, and have potential to benefit even further in conjunction with the appointed NDC Liaison and NDC Technical Working Group, guiding projects through the plan check process. Additionally, LADBS should promote and encourage staff to solicit technical discussions and review from SEAOSC EBC and other industry organizations, where appropriate, during plan check review.

2. Page Turn Kick Off Meetings

When plans are submitted for review, the plan checker often begins their review with very little background information or context from the design team. **Incorporating a page turn meeting with the plan checker assigned to the project and design team into the plan check review process is recommended in order for the plan checker to better understand the drawing package and ask any questions of the design team.** This meeting would occur once plans are assigned to a plan checker, and before their plan check review occurs.

3. Expedited Supplemental Permit Review

During construction, supplemental permits are frequently required due to unforeseen site conditions and design or engineering revisions necessary to accommodate these conditions. These revisions are reviewed and processed by plan checkers as supplemental permits, and are subject to the same plan check review and processing timelines as the original permit submission, which have the potential to delay construction and impact the project budget significantly. Per Ryan Afari of The Hillcrest Company, "the amount a building owner pays in carrying cost during construction for a building of 100,000 sf can cost around \$200,000.00 per month." **A process to**

expedite plan check review and processing while a project is under construction is recommended to help mitigate delays to the construction schedule and reduce the financial impacts. We recommend creating a mechanism that would allow the inspector the authority to review and approve changes to the permit documentation in the field to help mitigate schedule and financial impacts.

4. Release of Records

Examining original or historic structural drawings are one of the most valuable assets a building owner or engineer can have when performing due diligence on a potential project, as well as during the design phases. The original construction drawings for NDC buildings generally possess an accurate detailing of existing conditions. The current process of requesting drawings currently requires release from the original architect or engineer of record for buildings that were constructed. The policy of the Records Department at LADBS is to release the drawings after a 30 day period if the architect or engineer of record does not respond to the request, which is often the case, particularly for NDC buildings which were designed more than 50 years ago. **Streamlining the release of existing, historic or existing structural drawings in an electronic format is recommended to allow existing building owners, potential buyers and the engineering team to understand existing deficiencies without destructive measures and lengthy testing and investigation processes.**

F. LAFD Administrative Reform

Similar to the issues explained in the LADBS Personnel section above, **Maintaining consistent LAFD personnel is recommended to carry forward steady, maintain persistent interpretations and direction as it relates to fire life safety review of NDC retrofit projects.**



Fabric Building (interior) © Hunter Kerhart

The following approaches are also ways that LAFD may consider to better accommodate NDC Retrofit projects:

- Allowing a special plan check approach for Existing Occupied buildings.
- Allowing existing Fire Life Safety systems that are altered due to the seismic retrofit to be grandfathered if there is no change of use or addition to the building.
- Allowing existing buildings systems, including smoke removal systems, egress systems, and sprinkler systems, to be altered and not be required to comply with current code.
- Allowing all NDC buildings to use the Fire Life Safety Provision of the Bringing Back Broadway Bulletin.¹⁸



Fabric Building (exterior) © Hunter Kerhart

G. Request for Modification

Requests For Modifications (RFMs) are often a lengthy and time-consuming aspect of the plan check process, taking anywhere from 1-9 months to grant approval. RFMs often aren't even reviewed until the construction documents are fully coordinated or even after construction documents are completed. A denial of a RFM or acceptance of a RFM with conditions generally results in design changes and can even result in change orders in construction that significantly delay the project timeline. **Approval of RFMs early in the design phase or during the review of the first PDPP submission is recommended for both LADBS and LAFD plan review processes.** At the early stages of the design process, egress systems should be clearly expressed, identified, and agreed upon to a certain degree since early determination of existing

non compliant conditions in NDC buildings carry unknown risk factors associated with a lengthy RFM review and approval process. This process was used during review of Adaptive Reuse projects in the early 2000s and was proven to be successful.

Plan check engineers with LADBS and LAFD should also take into consideration that part of the justification for a RFM is that the building will be much safer after the retrofit is completed to allow for alternative reasonable code equivalency when regular code cannot be met due to challenges with existing conditions. This general approach could be established with the proposed NDC Liaison and communicated consistently throughout all departments that review RFMs.

As RFMs are proposed, their approval typically requires additional review by other agencies that can include Planning and Office of Historic Resources in addition to LADBS and LAFD. A review process that consists of a meeting between all agencies required to agreeing to the principles of the RFM is recommended to ensure timely and holistic decision making and provide either signature initialing, signature approval, or direction on the request and justifications. **An alternative approach may also be to allow incorporation of third party reviews of RFMs, wherein third parties will recommend or decline to recommend acceptance of an RFM on the basis of its merits.** Accepted third party reviewers would be industry experts with extensive experience in existing buildings and historical building codes to assist plan check engineers from LADBS and LAFD. This process could free up considerable resources to the City, alternatively relying upon the larger professional engineering community. If completed transparently according to guidelines acceptable to the City, there is no reason to believe that such a process would be less valid, nor less effective in terms of technical plan check accuracy or timeliness.

III. Technical Reform

The Structural Engineers Association of Southern California Existing Buildings Committee (SEAOSC EBC) meets regularly to discuss technical and regulatory requirements pertaining to existing buildings, including issues surrounding the NDC Ordinance. LADBS participation at these meetings is critical to ensuring a process for technical discussion exists between practicing engineers and building officials. Often, discussions stem through first-hand experiences of projects going through plan check. **LADBS should continue to encourage their staff, and to allocate resources to more effectively participate within SEAOSC EBC as part of their role-description within the department.** This resource could come in the form of an internal LADBS NDC Technical Group that meets regularly with SEAOSC.



Lane Building © Reaume Richardson

Closing Comments

The primary goal of the NDC Working Group is to aid in the success of the NDC ordinance and increase the quantity of NDC buildings being retrofitted within the 25 year compliance date.

As written in Section 91.9501 of the NDC Ordinance, "the purpose of this division is to promote the public welfare and safety by reducing the risk of death or injury that may result from the effects of earthquakes on existing concrete buildings" by creating "minimum standards" to mitigate structural deficiencies and "reduce, but not necessarily prevent, the loss of life, injury or earthquake-related damage."

While the intent is focused on public health and safety, the "minimum standards" set forth in the ordinance have raised many unforeseen impacts, including a significant financial hardship to the building owners. High retrofit costs, and a highly complex and lengthy plan check process, to comply with the Ordinance have rendered many retrofits as infeasible from a cost basis.

Additionally, a lack of incentives combined with limited awareness of incentives that are available

place many building owners in a position to wait to perform the work, and continue to leave existing NDC buildings underutilized, uninhabited, or at risk of demolition, or in worse case scenario, risk of collapse.

The amount of hardships faced by building owners, coupled with the challenges architects, and engineers face to bring buildings into compliance with the NDC Ordinance exist at the policy, administrative, and technical levels as detailed in the previous sections. Legislating requirements to retrofit existing NDC buildings can only go so far, while incentivizing the necessary work through policy reform has the potential to close the gap by helping to offset high costs, with the combination of streamlining the approval process through administration and technical form will undoubtedly increase the percentage of completed projects.

The recommendations detailed in this white paper will help position the City of Los Angeles to improve post-earthquake community resiliency, increase access to affordable housing, meet targets for LA's Green New Deal, and contribute to the long lasting future economic growth of the city.



The MacArthur with Asbury Building beyond © Hunter Kerhart

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THANK YOU!



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