

**Supplemental Plan Check List for Chapter 95:
Voluntary - Earthquake Hazard Reduction in existing Reinforced
Concrete Buildings and Concrete Frame Building with Masonry
Fill. (2014 LABC)**

Plan Check Submittal Date: _____

Plan Check / PCIS App #: _____

Job Address: _____

Applicant: _____ Phone: _____

P.C. Engineer: _____ Phone: _____
(print first / last name) E-mail: firstname.lastname@lacity.org

**Your feedback is important, please visit our website to complete a Customer Survey at
www.ladbs.org/LADBSWeb/customer-survey.jsf.**

If you have any questions or need clarification on any plan check matters, please contact a plan check supervisor or call our Customer Hotline at (213) 482-0056.

For instruction and other information, read the master plan check correction sheet attached.

A. APPLICATION

1. Provide a fully dimensioned **plot plan** to scale, in ink in 8 ½" x 11" or on the application plot plan sheet provided. Show building lines, easements, lot size, zone boundaries, highway dedication lines, street center line, alley, parking spaces, area separation walls, and location of all buildings. (Show type of construction, number of stories, and use of all buildings.) Must agree with plot plan shown on plans. (106.3.2.1)
2. Project's valuation is \$ (_____). Additional plan check fee needs to be paid. See attached permit application.
3. Complete the following application items: _____.
4. **Prior to the issuance** of a building permit, the following is required from the agent of the owner or contractor:
 - a) **Permits obtained by owner**
An authorization letter from the owner to pull permit(s). Owner's signature must be verified by notarization or personal identification, or
 - b) **Permits obtained by contractor**
The following is required from the contractor or his/her agent:
 - ☐ Certificate of Workers Compensation Insurance made out to the Contractors State License Board.
 - ☐ Copy of City of LA business tax registration certificate or a newly paid receipt for one.
 - ☐ Copy of contractors state license or pocket ID.
 - ☐ Notarized letter of authorization for agents of contractor.
5. Alterations which involve 100 square feet or more of asbestos containing material require a copy of the written notification to the South Coast Air Quality Management District (AQMD). The notice must be dated 10 days prior to permit issuance. (H & S 19827.5)
6. **Two sets of plans** will be required when permit is issued. Plans shall be:

- ☐ a) Quality blue- or black-line drawings with uniform and **light background** color.
 - ☐ b) Max. 36" x 48" and min. 24" x 36" size with minimum **1/8" lettering**. (P/GI 2014-006)
 - ☐ c) Sticky-back details used must produce prints without contrasting shades of background color.
7. Provide documents to show that the building was designed under building codes in effect prior to January 13, 1976, or built with building permits issued prior to January 13, 1977. (9502)
 8. A structural analysis of the building shall be made by a structural engineer (SE) licensed by the state of California.(9505)
 9. An evaluation report by a CA licensed structural engineer shall be submitted to the department for review and approval. The report shall include all observed structural conditions and necessary repair/upgrade recommendations.(9514). The report shall describe the existing lateral load resisting system of the building and its current conditions.

B. PLAN DETAILS

1. Provide the following with each set of plans: (9516)
 - ☐ a) Floor Framing ☐ New ☐ Existing
 - ☐ b) Floor plans (layouts) ☐ New ☐ Existing
 - ☐ c) Roof Framing ☐ New ☐ Existing
 - ☐ d) Foundation Plan ☐ New ☐ Existing
 - ☐ e) Diaphragm Construction ☐ New ☐ Existing
 - ☐ f) Elevations of Structural System ☐ New ☐ Existing
 - ☐ g) Wall sections ☐ New ☐ Existing
 - ☐ h) Schedules, sections and details showing reinforcement of walls, slabs, beams, joists, girders, columns and foundations, etc.
 - ☐ i) Sections and details showing attachments and joining of new and existing structures.
 - ☐ j) Specifications and/or general notes fully describing applicable demolition and shoring procedures, materials and methods of construction, testing and inspection requirements.
2. Floor and roof framing plans must show:
 - ☐ a) Size of typical framing members and their direction of span.
 - ☐ b) Adequate dimensions and details.

C. CALCULATIONS

1. Chapter 95 of the Los Angeles Building Code provides voluntary retrofit standards that, when fully followed, will substantially improve the seismic performance of these buildings but will not necessarily prevent all earthquake damage. (9501)
2. Provide a complete load path for resisting the effects of seismic loading.(9508.1)
3. The soil site class, shall be taken as Type D in the absence of a soils investigation.(9508.2)
4. The structure shall be analyzed using the dynamic lateral analysis procedures of Section 9509 for having one or more of the features listed in Table 12.3-1 and Table 12.3-2 ASCE 7-10 (9508.3.3)
5. The equivalent lateral force procedure of Section 9510 may be used for regular structures or irregular structures having plan irregularity only of not more than four stories.(9508.4.2.)
5. The simplified analysis may only be used for regular structures of not more than four stories conforming to the requirements of section 9511. (9508.4.3)

6. Alternative lateral analysis procedures using rational analysis based on well-established principles of mechanics may be used in lieu of those prescribed in Chapter 95 when approved by the superintendent of building.(9508.5.1)
7. The seismic ground motion values shall be determined in accordance with ASCE 7-10 and may be one of the following (9509.2):
 - a) The elastic design response spectrum shall be 75% of the response spectrum described in ASCE 7-10 Section 11.4.5
 - b) The site-specific design response spectrum shall be 75% of the site-specific response spectrum described in ASCE 7-10 Section 11.4.7
8. All existing and new concrete and masonry elements shall be included in the 3-D model of the physical structure to adequately represent the spatial distribution of mass and stiffness of the structure.(9509.3)
9. Analyze diaphragms per ASCE 7-10 Section 12.3.1.3 to determine if they can be considered as rigid diaphragms for cast-in-place reinforced concrete floors with span-to-depth ratios more than 3:1.(9509.3)
10. Floors other than cast-in-place reinforced concrete floors shall be analyzed in conformance with ASCE 7-10 Section 12.3.1.3 to determine if they must be considered as flexible diaphragms. The effective in-plane stiffness of the diaphragm, including effects of cracking and discontinuity between precast elements, shall be considered.(9509.3)
11. The effective stiffness of concrete and masonry elements or systems shall be calculated as the secant stiffness of the element or system with due consideration of the effects of tensile cracking and compression strain.(9509.4.1)
12. The secant stiffness shall be measured as the slope from the origin to the intersection of the force-displacement relationship at the assumed displacement by a nonlinear analysis.(9509.4.1)
13. The estimated stiffness of beams and columns in dynamic analysis shall be revised if the ratio used exceeds the ratio calculated by Formulas(9-1), (9-2) and (9-3) by more than 20%.(9509.4.1)
14. The effective stiffness of an infill shall be determined from a nonlinear analysis of the infill and the confining frame.(9509.4.2)
15. The stiffness effects of the infill shall be included in the 3-D model of an infilled frame structure. The secant stiffness of the force-displacement relationship shall be used to determine the effective area of the diagonals.(9509.4.3)
16. Show how the effective stiffness of elements and systems are determined by an iteration method and how they are used for calculating dynamic displacements.(9509.4.4)
17. Show that a difference from the effective stiffness used and that recalculated is less than 10%.(9509.4.4)
18. At least 90% of the participating mass of the structure shall be included in the calculation of response for each principal horizontal direction.(9509.5.2)
19. All torsional effects including accidental torsional effects shall be considered in the 3-dimensional analysis.(9509.5.4, 9511.3.4, ASCE 7-10 Section 12.3.1.3)
20. Check diaphragm capacity specially at (stair)(elevator)() openings. Provide chord and drag calculations.
21. Provide calculations to show that the horizontal diaphragm at _____ level is adequate for transferring lateral force in the _____ direction from the upper lateral resisting elements to the lower elements due to an offset. Allowable yield stress, per Table 95-E, may be used.
22. Provide testing data to determine the stress-strain relationship of concrete, masonry and reinforcement per Section 9509.6.
23. Show that maximum displacement calculated by the response spectrum analysis, using the appropriate effective stiffness, is less than the displacement that causes any of the following effects:(9509.7)
 - ☐ a) Compressive strain of 0.003 in the frame confining infill or in a concrete shear wall;
 - ☐ b) Compressive strain of 0.004 in a reinforced concrete column. Unless the engineer can show, by published

experimental research, that the existing confinement reinforcement justifies higher values of strain;

- c) Peak strain in masonry infill as determined by experimental data or by physical testing as prescribed in Section 9513;
- d) Displacement that was calculated by the nonlinear analysis as when strength degradation of any element began;
- e) A story drift ratio of 0.015 using the dynamic analysis procedure or the forces specified in Section 9510. This limitation shall not supersede the limitations of Items a) through d).

24. The compressive strain shall be determined for combined flexure and axial loading per Section 9509.8.2.

25. The required in-plane shear strength of all (columns) (piers) (shear walls) shall be the shear associated with the moments induced at the ends of (columns) (piers) and at the base of shear walls by the story displacements. No strength reduction factors shall be used in the determination of strength.(9509.9)

26. The building has a non-parallel lateral load resisting system(triangular)(). (Three) () separate analyses are required in which the input angle of design spectrum shall be parallel to each side of the (triangle) ().

27. Provide foundation analysis, design and details.

D. NOTES ON PLANS

1. Specify that the necessary permits from Public Works will be secured and the necessary barriers, protection fences and/or canopies will be erected along public ways prior to starting construction.(3306)

2. All structural plan sheets and index sheet of calculations (showing number of pages) must be signed by the same civil/structural **engineer or architect**, licensed by the State of California. (107.3.4)

3. Place this statement next to your seal on the first page of the plans (9516.3):

"I am responsible for this building's seismic strengthening design in compliance with the minimum seismic resistance standards of Chapter 95 of the Los Angeles Building Code."

Or, when applicable:

"The Registered Deputy Inspector, as a condition of use for structural design stresses requiring continuous inspection, will be responsible to me as required by Section 1704 of the Los Angeles Building Code."

4. Use of materials approved under a Los Angeles City Research Report shall conform to all the procedures, conditions, material specifications and installation stipulated in the report. The information shall be shown on the plan or a copy of the report shall be attached to the plan.

5. Deputy inspection is required for all epoxy bolts per L.A. Research Report.

6. Structural Observation by a CA state licensed Structural Engineer, as authorized by Section 1710, shall be required for the anchorage system wall anchors, anchor connectors, continuity ties and other elements that are part of the load path supporting the concrete/reinforced masonry walls. Complete the attached Structural Observation Form and incorporate it into plans.

7. Incorporate all comments marked on the checked set of plans, calculations, and this correction sheet. Bring originally checked plans & calculations with corrected plans to the verification appointment.

8. Void or delete all plans, details, and notes that do not pertain to this project.

