



**Supplemental Plan Check List for  
Unreinforced Masonry (URM) Retrofit**

Plan Check / PCIS App #: \_\_\_\_\_

Job Address: \_\_\_\_\_

P.C. Engineer: \_\_\_\_\_ Phone: \_\_\_\_\_

(E-mail: first name.last name@lacity.org)

**For instruction and other information, read the master plan check list attached.**

Obtain the following Information Bulletins, Affidavits, or Forms from our web site ([www.ladbs.org](http://www.ladbs.org))

**IB P/BC 2008-053**

**A. APPLICATION**

1. Provide fully dimensioned **plot plan** to scale, in ink, on back of first sheet of typed application. Show lot size, streets, alleys, location of building (s), and location of SHEAR RESISTING ELEMENTS at the first floor, and location of adjacent buildings. Plot plan to be drawn with ink.
2. Provide a complete and correct legal description.
3. Complete or correct items NO. \_\_\_\_\_ on application.
4. Valuation has been increased to \_\_\_\_\_.
5. The permit application must be signed by the property owner, or licensed contractor, or authorized agent at the time the permit is to be issued:
  - a. For owner-builder permits: Owner's signature can be verified with owner's driver license. Owner's representatives must present owner's approval with a notarized letter from the owner.
  - b. For contractor building permits: Prior to the issuance of a building permit, the contractor shall have the following:
    - i. Notarized letter of authorization for agents.
    - ii. Certificate of workers Compensation Insurance made out to the Contractors State License Board.
    - iii. Copy of Contractors State License or pocket ID.
    - iv. Copy of City of Los Angeles business tax registration certificate or a newly paid receipt for one.
6. Specify Rating Classification as per Sec. 8804
7. Obtain clearances as per attached clearance sheet.

**B. PLAN DETAILS**

1. Provide ONE set of plans (TWO sets when permit is ready to be issued), ONE set of calculations and ONE set of shear test report.
2. Plan and calculations must be signed by a Civil or Structural Engineer or Architect licensed by the State of California.
3. Provide accurately dimensioned:

_____ Plot Plan	_____ Foundation
_____ Floor Plan	_____ Elevations
_____ Construction Services	_____ Structural details

4. Shear test report.
  - a. Tests must be conducted by laboratory approved by the Department. Wet signature report required.
  - b. Existing clay tile or concrete block walls shall be clearly identified in the report with dimensioned sections of the units, the lay out of the units in the wall, amount of mortar in bed head and collar joints, and the particular procedures to carry out the required push tests.
  - c. Provide a plan view showing exact location of all tests on the report.
  - d. Number and/or location of tests done not comply with Sec. 8809.5.2:
    - 2 per URM wall at 1<sup>st</sup> and top stories.
    - 1 per URM wall at intermediate stories.
    - But not less than 1 per 1500 sf of wall surface.
  - e. All sheets of the report must be stamped and signed (WET SIGNATURE) by test lab engineer.
  - f. Responsible Engineer must sign test location acknowledge (see Guideline #8 attached).
  - g. Minimum quality of mortar in 80% of the in-place shear tests shall be not less that the total of 30 psi plus the axial stress in the wall at the point of the test. Total wall load must be used in determining "net shear".
  
5. Plans must show location of shear test on elevation and plan views. (8810.3)
  
6. Reproduce shear test results on plans. (8810.3)
  
7. Show existing diaphragm construction at each floor and roof. (8810)
  
8. Dimension distance between floor/roof anchor lines on elevations.
  
9. Provide details and specifications for the repair of any cracked or damaged unreinforced masonry wall. (8810 .2.6)
  
10. Provide specifications for the following:
  - a. Type of soil and bearing value, per Table 1804.2
  - b. Species and grade of lumber
  - c. Plywood
  - d. Concrete (type and f ' c)
  - e. Masonry
  - f. Grout and Mortar
  - g. Reinforcing steel
  - h. Structural steel
  - i. Roofing (repair of)
  - j. Testing of grouted anchors.
  
11. Maintain a minimum of 20 square feet of openings in every 50 linear feet or fraction thereof of exterior wall in the story on at least one accessible exterior wall of the building , or provide sprinklers. (903.2.10.1)
  
12. Exterior walls of wood construction are not permitted in a building of Type Type III-A or III-B construction, except as permitted by Section 602.3.
  
13. Buildings are not permitted to be derated to Type V in Fire District #1. (7204)
  
14. Provide class "A" or "B" fire retardant roofing material. (1505, Table 1505.1)
  
15. Note that cores shall be taken of existing roofing from locations chosen by inspector at start of work or building shall be re-roofed where core thickness exceeds 1 inch.
  
16. Existing plumbing and electrical lines shall not be embedded in new concrete or pneumatically placed concrete, unless encased in a metal chase and detailed on the plans. (1906.3)
  
17. Structural elements (including walls and footings) that project into public property require an approval from Public Works prior to the issuance of a building permit. (3202)
  
18. Separate building permits are required when buildings are located on separate lots with a common party wall.

19. Show size, spacing, and direction of all roof and floor members on roof/floor plans. (8810.3)
20. Provide a cross section which shows existing masonry wall construction. Wythes must be bonded by header courses every 6<sup>th</sup> courses. (8809.2.1)
21. Exterior walls fronting streets shall be checked for veneer as follows:
  - a. Color photos of walls facing streets shall be submitted to Plan Check for verification of presence of veneer.
  - b. Exterior walls covered with plaster shall be uncovered for veneer check and color photos are required.
  - c. For veneer anchor requirements, see 8809.2.2.
  - d. The veneered wall shall be checked for h/t requirement and shear capacity excluding the veneer for effective thickness, t.
22. Provide details of all new and/or existing tension wall anchors. Maximum spacing of anchors is 6'-0" for wall 13" or thicker 3'-0" for 9" wall. (8810.2.1)
23. Clearly indicate spacing of tension anchors and shear bolts on roof and floor plans.
24. Provide a combination shear/tension anchor at 2' max from inside face of return wall at all corners (to reduce corner cracking, Sec. 8810.2.1).
25. Grouted/Epoxy tension anchors shall be used only when the exterior wall surface is not accessible.
26. Epoxy use in unreinforced masonry building must be approved by a current Los Angeles City Research Report prior to any use in the field. Specify product name and current Los Angeles City Research Report number on plans.
27. Parapets and exterior wall appendages shall be removed or braced, parapets shall not be reduced to heights less than required by Sec.91.0704.11. Refer to Earthquake Safety Division Guideline #6 for parapet bracing and removal requirements.
28. Provide chord for horizontal diaphragms. (8810.2.2)
29. Provide a layout for plywood sheathing or diaphragms showing ends of plywood sheets bearing on joists or rafters and edge of plywood located on center of individual sheathing boards as per Table 88-I.
30. Provide a detail showing how continuity of the existing diaphragm will be maintained when cut in order to install anchors, braces, etc.
31. Provide shear transfer details for use of 10-d nails at plywood sheathing over existing straight sheathing. See attached "Earthquake Safety Division Guideline #9".
32. Provide details for transfer of forces at the break in the plane of the roof diaphragm.
33. Shear bolts in unreinforced masonry walls shall not bear on the joist pockets.
34. Provide minimum area of reinforcement for all masonry infills.
35. Provide details and specifications for pneumatically placed concrete, which shall be applied under continuous inspection by a registered Deputy Building Inspector. Testing shall be conducted by a testing agency approved by the Department. Proper preparation of existing surfaces must be included in specification. When dry mix (Gunitite) is used, specify all pertinent conditions per Sec. 1924 and "EQ Div. guidelines" on plans. When shotcrete is used, refer to Information Bulletin No. P/BC 2008-51 and specify the conditions to be met.
36. Provide columns under trusses and beams when supporting vertical loads from the roof or floor levels. (8810 .2.3)
37. Provide a shear resisting element at both mezzanine edges in each direction.

38. Show roof/floor ceiling lines on all elevations & sections. Ceilings (except lightweight acoustic ceiling) shall be anchored to URM walls and braced back to the roof diaphragms, if 3' or further from the roof diaphragm. (8810.2.1)
39. Cross walls used to lower classification from high to medium risk must have length equal to 1.5 times the story height. (8803, Exception)
40. Call out cross walls on floor plans and dimension their length.
41. Show all cracks and deteriorated areas on wall elevations and indicate how repairs are to be done. (8810.3)
42. Use of partial infills is prohibited.
43. Brace top of large infills (out of plane) to diaphragm.
44. Brace top of frames to diaphragm for lateral support (out of plane).
45. At locations where wall thickness changes, tension anchors shall be attached to the thicker wall.
46. Indicate all field welded connections on plans.
47. The checked set of plans and calculations are part of these corrections. Address all items written there-in, re-submit, and allow sufficient time for rechecking.
48. The checked set of plans and calculations are part of these corrections. Address all items written there-in and return those at verification time.

**C. CALCULATIONS**

1. Use the following in computing seismic forces:
  - a. Include partition loads. 12.7.2 ASCE7
  - b. Include 25% of floor live load for storage and warehouse uses. 12.7.2 ASCE7
  - c. Distribute lateral forces over the height of the structure. 12.8.3 ASCE7
2. Use seismic factor per Risk Classification \_\_\_\_\_.
3. Maximum load per anchor is limited to allowable values of Table 88-1.
4. H/t exceeds limits of Section 8809.2.1 and 8811.
5. Provide anchors across openings in the diaphragm adjacent to walls and design horizontal element to carry force.
6. Use of "government" anchors is limited as follows:
  - a. No allowable value given at roof level. Provide new anchors. (8810.2.1)
  - b. Allowable value (s) at floor level, must be established by tests, which comply to Sec. 8809.8. Test report prepared by approved testing laboratory must be submitted prior to issuance of building permit.
  - c. Specify spacing of government anchors on plans. (8810.3.2)
  - d. Allowable tension value is 40% of the average of tested anchors having the same wall thickness and joist orientation. (8809.8)
7. When shear resisting elements are added in line with URM, rigidity distribution is required to check stability of URM.
8. New shear walls of CMU which resist seismic forces shall be designed to resist 1.5 times the prescribed seismic forces. (2106.5.1)
9. Steel moment frames shall comply with Sec. 2205.
10. Design of concrete grade beams shall use appropriate load factors.

11. Allowable Roof DCR is exceeded. Provide cross walls per Sec. 8811.4.2.

**D. NOTES ON PLANS**

1. Specify all applicable time constraints on plans as required by compliance order:
  - a. Work shall commence within 30-days of permit issuance.
  - b. All work shall be completed within 180-days of permit issuance.
2. 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. (3306.1)
3. Specify that a separate mechanical permit will be secured for all electrical, plumbing, and heating-ventilating work.
4. Specify that Building and Safety General specification sheet E.Q.-1 is part of the plans and reproduce E.Q.-1 sheet or incorporate all applicable notes on plans.
5. No door shall be placed so that, when opened, crosses over a building line. (3202.2)
6. Specify that "Plans and details were developed based upon a field investigation by the responsible engineer and reflect the actual conditions of the building as observed."
7. Provide note: At the start of the work, constructor and building inspector shall walk the job and settle areas such as pointing, crack repair, veneer and other details that need field verification such as thickness of URM walls, distance between floor/roof anchor lines, floor and roof sheathing and framing construction to match plans, mortar conditions, and field locations of shear tests. All deviations shall need approval from the plan check supervisor. Sec. 8810
8. All steel 3/16" or less in thickness which is exposed to weather shall be corrosion resistant steel designated ASTM A242/A588 with further provisions to prevent standing water, or steel made corrosion resistant by a coating of non ferrous metal or other coating approved by the Department.
9. Structural Observation per Section 1709 is required for this project. The engineer of record shall prepare an inspection program, including the name(s) of the individuals or firms who will perform the work. The inspection program shall be shown on the first sheet of the structural plans.
10. Where special inspection or testing is required, the registered design professional in responsible charge shall include a "Statement of Special Inspections" on the plans. (1705)
11. Contractors responsible for the construction of a wind or seismic force resisting system/component listed in the "Statement of Special Inspection" shall submit a written statement of responsibility to the LADBS Inspectors and the owner prior to the commencement of work on such system or component per Sec 1706.1
12. Specify that one-fourth of all grouted bolts shall be tested by a registered Deputy Building Inspector. (8809.6)
13. Note that continuous inspection shall be provided by a Registered Deputy Inspector for all structural welding, except single pass fillet weld not exceeding 5/16" may have periodic inspection. (1704.3.2)
14. Specify that all reinforcing steel welding requires continuous inspection by a Registered Deputy Building Inspector. (1704.3.2.)
15. Specify that all field welding of reinforcing steel shall be performed by welders specifically certified for reinforcing steel. Prior to welding, the "Carbon Equivalent" (CE) of steel shall be determined in accordance with AWS D1.4-05.
16. Check weld ability of existing members, proprietary straps and other hard wares before welding.~
17. Specify that all masonry walls having deteriorated mortar joints shall be properly pointed. Such work shall



