SUPPLEMENTAL PLAN CHECK CORRECTION SHEET FOR HILLSIDE CONSTRUCTION ON SLOPES GREATER THAN 33 PERCENT (2020 LABC)

Plan Check #: _____ Permit Application Number: _____

Job Address: _____

Plan Check Engineer: _____ Phone: _____

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.

This is a supplemental correction sheet. Please see the master correction sheet for instructions and additional information.

If you have any questions or need clarification on any plan check matters, please contact your plan check engineer and/or his or her supervisor.

Review the following checked information bulletins. Revise plans to show compliance (Copies can be obtained at www.ladbs.org).

☐ P/BC 2020-024 Structural Observation

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PART I: GENERAL REQUIREMENTS

A. GENERAL REQUIREMENTS

1. This ☐ (new) building or ☐ (addition) to an existing building shall be designed to comply with the provisions of section 1613.9, Seismic Design Provisions for Hillside Buildings, as it is constructed on or into slopes steeper than 1 unit vertical in 3 units horizontal (33% slope). Furthermore, it also applies to the entire building even if only a portion of the building is supported on or into the slope. *1613.9.1*
2. The addition and the existing structure acting together as a single structure shall comply with section 1613.9. *Exception: Any existing lateral load-carrying element whose demand-capacity ratio with the addition considered in not more than 10% greater than it's existing demand- capacity ratio prior to the additions shall be permitted to remain unaltered. LA Existing Building Code 503.4.*
3. Identify the Base Level Diaphragm on structural framing plans. *1613.9.3; 1613.9.4.2*
   a. Base Level Diaphragm is defined as the floor at, or closest to, the top of the highest level of the foundation including the highest floor level connected to the stems of the retaining/basement walls.
4. The base shear, including forces from the base level diaphragm, shall be resisted by direct connections from a diaphragm strut or collector provided in the base level framing to the foundation. Where the floor below the base extends to the uphill foundation, the connection shall be made directly to the foundation. *1613.9.5.1*
5. Max. spacing between primary anchors/collectors is 30 ft. *1613.9.5.2*
6. Where an interior vertical lateral resisting element (e.g. Interior shear walls) occurs above and in contact with the base level diaphragm, a diaphragm strut and primary anchor directly below the element shall be provided and connected to the uphill foundation. *1613.9.5.2*
7. Provide details for primary and secondary anchors. *1613.9.8*
   a. Wood diaphragm strut collector and wood members connected to the primary anchor shall be min. 3 x members.
   b. Provide minimum washer size of .229 inch by 3 inches by 3 inches (5.82mm by 76mm by 76mm), when they are used to connect anchors to wood members.
   c. The diaphragm to foundation anchorage shall NOT be accomplished by the use of toenailing, nails subject to withdrawal, or wood in cross-grain bending or cross-grain tension.
8. Grade beams shall extend at least 12 inches (305 mm) below the lowest adjacent grade and provide a minimum 24-inch (610 mm) distance horizontally from the bottom outside face of the grade beam to the face of the descending slope. *1613.9.10.1*
9. Where a footing or grade beam extends across a descending slope, the stem wall, grade beam, or footing shall extend up to a minimum 18 inches (457 mm) above the highest adjacent grade. *1613.9.10.2*
   EXCEPTION: At paved garage and doorway entrances to the building, the stem wall need only extend to the finished concrete slab, provided the wood framing is protected with a moisture proof barrier.
10. Wood Ledgers. No ledgers are permitted when supporting a vertical load of more than 100 pounds per lineal foot and located within 48 inches of adjacent grade. Galvanized steel ledgers and anchor bolts, with or without wood nailers, or treated or decay resistant sill plates supported on a concrete or masonry seat, may be used. *1613.9.10.2*
11. Sill Plates. All wood framed walls, including nonbearing walls, when resting on a footing, foundation, or grade beam stem wall, shall be supported on wood sill plates bearing on a level surface. *1613.9.10.3*

12. Column Base Plate Anchorage. The base of isolated wood posts (not framed into a stud wall) supporting a vertical load of 4,000 pounds (17.8 kN) or more and the base plate for a steel column shall comply with the following: *1613.9.10.4*
    a. When the post or column is supported on a pedestal extending above the top of a footing or grade beam, the pedestal shall be designed and reinforced as required for concrete or masonry columns. The pedestal shall be reinforced with a minimum of four No. 4 bars extending to the bottom of the footing or grade beam.
    b. The base plate anchor bolts or the embedded portion of the post base, and the vertical reinforcing bars for the pedestal, shall be confined with two No. 4 or three No. 3 ties within the top 5 inches (127 mm) of the concrete or masonry pedestal.
    c. Anchor Bolts Embedment. The base plate anchor bolts shall be embedded a minimum of 20 bolt diameters into the concrete or masonry pedestal. The base plate anchor bolts and post bases shall be galvanized and each anchor bolt shall have at least two galvanized nuts above the base plate.
13. Steel Beam to Column Supports. All steel beam to column supports shall be positively braced in each direction. Steel beams shall have stiffener plates installed on each side of the beam web at the column. The stiffener plates shall be welded to each beam flange and the beam web. Each braced connection or structural member shall consist of at least two 5/8 inch (15.9 mm) diameter machine bolts. *1613.9.10.5*
14. Top and bottom of footings and grade beams shall be level or stepped when the ground slope exceeds one vertical in ten horizontal. *1809.3*

B. DOWNHILL DIRECTION

1. In developing the base shear for seismic design, the structural system factor (R) shall not exceed 5.0 for bearing wall and for building frame system. *1613.9.4.2.2*
2. Each diaphragm below the base level diaphragm shall be designed for all tributary loads at that level using a minimum seismic force factor not less than the base shear coefficient. *1613.9.7.2*
3. Provide calculations for primary anchors (at and below the base level) per Sec. 1613.9.5.2
    a. Primary anchor and diaphragm strut shall be provided at each foundation extending downhill, underneath interior lateral force resisting elements above and in contact with the base level diaphragm, and not to exceed 30 ft. spacing.
    b. The load path and diaphragm struts shall be fully developed into the diaphragm and into the foundation. The foundation must be shown to be adequate to resist the concentrated loads from the primary anchors. *1613.9.8*
4. Provide secondary anchors in the uphill foundation connecting to diaphragm struts in the base level diaphragm. *1613.9.6.1*
5. Maximum spacing of secondary anchors shall be 4 ft. and shall be uniformly distributed along the uphill diaphragm edge. Secondary anchors shall be designed for a minimum force not less than 600 pounds per lineal foot. (The foundation need not be designed to resist these additional forces). *1613.9.6.2*
6. Below base level, provide secondary anchors at each floor diaphragms to the uphill foundation. Such anchors shall be uniformly distributed along the uphill diaphragm edge, spaced at maximum 4 feet on center, and designed for a minimum force equal to the base shear coefficient times the accumulated dead load of the building tributary to that level and not less than 300 pounds per lineal foot. (The foundation need not be designed to resist these additional forces). *1613.9.7.4.2*
7. Primary and secondary anchors and diaphragm struts shall be designed as follows: *1613.9.8*
    a. Design load. Design for 125% of the tributary force.
    b. Allowable stress increase. The 1/3 allowable stress increase permitted under Sec. 1605.3.2 shall not be used when working (allowable) stress design method is used.
    c. Seismic load factor. Use seismic load factor 1.4 for steel and concrete anchorage when the strength design method is used.
    d. Symmetry. All connections shall be symmetrical.
    e. Wood ledgers. Wood ledgers shall not be used to resist cross-grain bending or cross-grain tension.
    f. Primary Anchors, splices, and connections shall be designed in accordance with provisions of Section 1613.9.8
8. Wood structural panel wall sheathing, cement plaster and lath, gypsum wallboard, and tension-only braced frames shall not be used to resist lateral forces below base level. *1613.9.5.4*
9. Braced frames. This may be used to transfer forces from the primary anchors and diaphragm struts to the foundation provided the lateral forces do not induce flexural stresses in any member of the frame or in the diaphragm struts. Deflections of frames shall account for the variation in slope of diagonal members when the frame is not a rectangular shape. *1613.9.5.4*

C. NORMAL TO DOWNHILL DIRECTION

1. Story drift below the base level diaphragm normal to the downhill direction shall not exceed .007 times the story height at strength design force level. The total drift from the base level diaphragm to the top of the foundation shall not exceed 3/4 inch. (Where the story height varies because of a stepped footing or story offset, the story height shall be an average height). The calculated story drift shall not be reduced by the effect of horizontal diaphragm stiffness. *1613.9.9.4*
2. In developing base shear, the structural system factor (R) used shall not exceed 5.0 for bearing wall and building frame systems. *1613.9.9.2*
3. The design lateral force shall be distributed to each resisting elements of varying heights in accordance with the stiffness of each individual element. *1613.9.9.5.1*
4. The stiffness of a stepped plywood shear wall may be determined by dividing the wall into adjacent rectangular elements, subject to the same top of wall deflection. Sheathing and fastening requirements for the stiffest portion shall be used for the entire wall. Each section shall be anchored for shear and uplift at each step. The minimum horizontal length of a step shall be 8 feet and the maximum vertical height of a step shall be 2 feet 8 inches. *1613.9.9.5.2*
5. Cement plaster and lath, gypsum wallboard, and tension-only braced frames shall not be used to resist lateral forces below the base level diaphragm. *1613.9.9.6*

D. ADD NOTES ON PLANS

1. Nuts of the primary and secondary anchors fasteners shall be finger tight with ½ wrench turn prior to inspection and covering.
2. Power-driven fasteners shall not be used to anchor sill plates except at interior nonbearing walls not designed as shear walls.
3. Exterior anchor bolts and post bases shall be galvanized and each anchor bolts shall have at least two galvanized nuts above the base plate.
4. The top of exterior pedestals must be sloped for positive drainage.
5. All main footing and grade beam reinforcement steel shall be bent into the intersecting footing and fully developed around each corner and intersection.
6. Continuous Inspection by a Los Angeles City licensed deputy inspector is required for all structural connections, footings, grade beams and retaining walls during installation.
7. Structural Observation by the Engineer or Architect of Record is required in accordance with Information Bulletin P/BC 2020-024. Complete attached form.

ADDITIONAL CORRECTIONS: