

**ICC
TRI-CHAPTER
UNIFORM CODE COMMITTEE (TUCC)**



AMENDMENT NUMBER: Structural 1

APPROVAL DATE: June 10, 2010

SUBJECT: Proposed amendment to the stability coefficient (θ)
equation in evaluating P-delta effects

This amendment is developed by the Tri-chapter Uniform Code Committee and is intended to enhance regional consistency in application and enforcement of the Building Code. Please verify acceptance of this amendment with your local building department prior to its application.

CODE REFERENCE(S):

2010 CBC Section 1613.8, ASCE 7-05 Section 12.8.7

ISSUE(S):

Section 1613.8 is added to 2010 CBC Section 1613 to read as follows:

1613.8 ASCE 7, Section 12.8.7. Modify ASCE 7, Section 12.8.7 by amending Equation 12.8-16 as follows:

$$\theta = \frac{P_x \Delta I}{V_x h_{xx} C_d} \quad (12.8-16)$$

RATIONALE:

The importance factor, I , was omitted from Equation 12.8-16 by mistake while transcribing it from the 2003 NEHRP Recommended Provisions (FEMA 450) Equation 5.2-16. For buildings with importance factor, I , higher than 1.0, the stability coefficient should include the importance factor. The proposed modification is consistent with the provisions adopted by DSA-SS and OSHPD as reflected in Section 1615.10.7 of the 2010 California Building Code. It is also consistent with ASCE 7-10 Equation 12.8-16 that will be adopted in the next code cycle. TUCC had supported the proposed modification during the 2007 code adoption process. This proposed amendment is a continuation of an amendment adopted during the previous code adoption cycle.

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AMENDMENT NUMBER: Structural 2

APPROVAL DATE: June 10, 2010

SUBJECT: Proposed amendment to isolated spread concrete footings special inspection

This amendment is developed by the Tri-chapter Uniform Code Committee and is intended to enhance regional consistency in application and enforcement of the Building Code. Please verify acceptance of this amendment with your local building department prior to its application.

CODE REFERENCE (S):

2010 CBC 1704.4 Concrete Construction.

ISSUE (S):

The proposed amendment modifies the type of exceptions from requiring special inspection for isolated spread concrete footings of buildings three stories or less above grade plane.

1704.4 Concrete Construction. The *special inspections* and verifications for concrete construction shall be as required by this section and TABLE 1704.4.

Exceptions: *Special inspections* shall not be required for:

1. Isolated spread concrete footings of buildings three stories or less above *grade plane* that are fully supported on earth or rock, where the structural design of the footing is based on a specified compressive strength, f'_c , no greater than 2,500 pound per square inch (psi) (17.2 Mpa).

RATIONALE:

Results from studies after the 1994 Northridge earthquake indicated that a lot of the damages were attributed to lack of quality control during construction. The proposed amendment improves quality control during construction and therefore needs to be incorporated into the Code.

Revise CBC Section 1704.4 exception No. 1 to allow special inspection not to be required for isolated spread footing where the structural design of the footing is based on a specified compressive strength, f'_c , no greater than 2,500 psi.
This proposed amendment is a continuation of an amendment adopted during the previous code adoption cycle.

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AMENDMENT NUMBER: 3

APPROVAL DATE: August 12, 2010

SUBJECT: Proposed amendment to plain concrete

This amendment is developed by the Tri-chapter Uniform Code Committee and is intended to enhance regional consistency in application and enforcement of the Building Code. Please verify acceptance of this amendment with your local building department prior to its application.

CODE REFERENCE (S):

2010 CBC 1908.1.8, ACI 318 Section 22.10.1.

ISSUE (S):

Revise section 1908.1.8. ACI 318 section 22.10.1 that allows the use of plain concrete in residential structures assigned to seismic design category D, E or F.

1908.1.8 ACI 318, section 22.10 Delete ACI 318, section 22.10, and replace with the following:

22.10 - Plain concrete in structures assigned to seismic design category C, D, E or F.

22.10.1- Structures assigned to Seismic Design Category C, D, E or F shall not have elements of structural plain concrete, except as follows:

~~Structural plain concrete basement, foundation or other walls below the base are permitted in detached one and two-family dwellings three-stories or less in height constructed with stud bearing walls. In dwellings assigned to seismic design category D or E, the height of the wall shall not exceed 8 feet (2438 mm), the thickness shall not be less than 7¹/₂ inches (190 mm), and the wall shall retain no more than 4 feet (1219 mm) of unbalanced fill. Walls shall have reinforcement in accordance with 22.6.6.5.~~

- (a) Isolated footings of plain concrete supporting pedestals or columns are permitted, provided the projection of the footing beyond the face of the supported member does not exceed the footing thickness.

Exception: In detached one and two-family dwelling three stories or less in height, the projection of the footing beyond the face of the supported member is permitted to exceed the footing thickness.

- (b) Plain concrete footing supporting walls are permitted, provided the footings have at least two continuous longitudinal reinforcing bars. Bars shall not be smaller than No. 4 and shall have a total area of not less than 0.002 times the gross cross-sectional area of the footing. ~~For footings that exceed 8" inches (203-mm) in thickness, a~~ minimum of one bar shall be provided at the top and bottom of the footing. Continuity of reinforcement shall be provided at corners and intersections.

Exception:

- ~~1. In detached one and two-family dwellings three stores or less in height and constructed with stud bearing walls, plain concrete footings without longitudinal reinforcement supporting walls are permitted.~~ with at least two continuous longitudinal reinforcing bars not smaller than No. 4 are permitted to have a total area of less than 0.002 times the gross cross-sectional area of the footing.
- ~~2. For foundations system consisting of a plain concrete stem wall a minimum of one bar shall be provided at the top of the stem wall and at the bottom of the footing.~~
- ~~3. Where a slab on ground is cast monolithically with the footing, on no. 5 bar is permitted to be located at either the top of the slab or bottom of the footing.~~

RATIONALE

The proposed amendment addresses the problem of poor performance of plain or under-reinforced concrete footings during a seismic event. This amendment reflects the recommendations by the Structural Engineers Association of Southern California (SEAOSC) and the Los Angeles City Joint Task Force that investigated the poor performance of plain and under-reinforced concrete footings observed in 1994 Northridge earthquake.

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AMENDMENT NUMBER: 4

APPROVAL DATE: September 9, 2010

SUBJECT: Proposed amendment to CRC to prohibit plain concrete continuous footings without longitudinal reinforcing in Seismic Design Categories D₀, D₁ and D₂

This amendment is developed by the Tri-chapter Uniform Code Committee and is intended to enhance regional consistency in application and enforcement of the Building Code. Please verify acceptance of this amendment with your local building department prior to its application.

CODE REFERENCE(S):

2010 CRC Section R403.1.3

ISSUE (S):

Modify Section R403.1.3 by adding wording to the first sentence of the first paragraph to specify the minimum amount of longitudinal reinforcing, and by deleting the portion of the Exception to this section that allows the use of plain concrete footings without longitudinal reinforcement, to read:

R403.1.3 Seismic reinforcing. Concrete footings located in Seismic Design Categories D₀, D₁ and D₂, as established in Table R301.2(1), shall have minimum reinforcement of at least two continuous longitudinal reinforcing bars not smaller than No. 4 bars. Bottom reinforcement shall be located a minimum of 3 inches (76 mm) clear from the bottom of the footing.

In Seismic Design Categories D₀, D₁ and D₂ where a construction joint is created between a concrete footing and a stem wall, a minimum of one No. 4 bar shall be installed at not more than 4 feet (1219 mm) on center. The vertical bar shall extend to 3 inches (76 mm) clear of the bottom of the footing, have a standard hook and extend a minimum of 14 inches (357 mm) into the stem wall.

In Seismic Design Categories D₀, D₁ and D₂ where a grouted masonry stem wall is supported on a concrete footing and stem wall, a minimum of one No. 4 bar shall be installed at not more than 4 feet (1219 mm) on center. The vertical bar shall extend to 3 inches (76 mm) clear of the bottom of the footing and have a standard hook.

In Seismic Design Categories D0, D1 and D2 masonry stem walls without solid grout and vertical reinforcing are not permitted.

Exception: In detached one- and two-family *dwellings* which are three stories or less in height and constructed with stud bearing walls, ~~plain concrete footings without longitudinal reinforcement supporting walls and~~ isolated plain concrete footings supporting columns or pedestals are permitted.

RATIONALE

This proposed amendment to the CRC is made to be consistent with TUCC amendment 3 that modifies the plain concrete provisions in CBC Section 1908.1,8 and ACI 318 Section 22.10.1.

This proposed amendment addresses the problem of poor performance of plain or under-reinforced concrete footings during a seismic event. This amendment reflects the recommendations by the Structural Engineers Association of Southern California (SEAOSC) and the Los Angeles City Joint Task Force that investigated the poor performance of plain and under-reinforced concrete footings observed in 1994 Northridge earthquake.

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AMENDMENT NUMBER: 5

APPROVAL DATE: September 9, 2010

SUBJECT: Proposed amendment to CRC to prohibit the use of gypsum board and limit the use of Portland cement plaster as prescriptive wall bracing materials in Seismic Design Categories D₀, D₁ and D₂

This amendment is developed by the Tri-chapter Uniform Code Committee and is intended to enhance regional consistency in application and enforcement of the Building Code. Please verify acceptance of this amendment with your local building department prior to its application.

CODE REFERENCE(S):

2010 CRC Section R602.10.2.1 and Table R602.10.1.2(2)

ISSUE (S):

Add a new footnote "d" to the end of CRC Table R602.10.1.2(2), to read:

d. In Seismic Design Categories D₀, D₁, and D₂, Method GB is not permitted and the use of Method PCP is limited to one-story single family dwellings and accessory structures.

Add the "d" footnote notation in the title of Table R602.10.1.2(2) after the three footnotes currently shown, to read:

TABLE R602.10.1.2(2)^{a,b,c,d}

Add a new subsection R602.10.2.1.1, to read:

R602.10.2.1.1 Limits on methods GB and PCP. In Seismic Design Categories D₀, D₁, and D₂, Method GB is not permitted for use as intermittent braced wall panels, but gypsum board is permitted to be installed when required by this Section to be placed on the opposite side of the studs from other types of braced wall panel sheathing. In Seismic Design Categories D₀, D₁, and D₂, the use of Method PCP is limited to one-story single family dwellings and accessory structures.

RATIONALE

The proposed amendment addresses the problem of poor performance of gypsum wallboard and Portland cement plaster as wall bracing materials in high seismic areas. This amendment reflects the recommendations by the Structural Engineers Association of Southern California (SEAOSC) and the Los Angeles City Joint Task Force that investigated the poor performance of these bracing materials that were observed in 1994 Northridge earthquake.