

STATE OF CALIFORNIA  
 STATE AND CONSUMER SERVICES AGENCY  
 CALIFORNIA BUILDING STANDARDS COMMISSION  
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Office Use Item No. \_\_\_\_\_

**PARTICIPATION COMMENTS FOR THE NOTICE DATED OCTOBER 2, 2009**  
 Written comments are to be sent to the above address.

**WRITTEN COMMENT DEADLINE: NOVEMBER 16, 2009**

Date: 10/8/2009

From: Ali M. Fattah  
 Name (Print or type)

  
 (Signature)

City of San Diego, Development Services Department  
 Agency, jurisdiction, chapter, company, association, individual, etc.

1222 First Avenue, MS # 401 San Diego California 92101  
 Street City State Zip

I/We (do)(do not) agree with:

The Agency proposed modifications As Submitted on Section No. CBC 1803.5.12

and request that this section or reference provision be recommended:

Approved  Disapproved  Held for Further Study  Approved as Amended

**Suggested Revisions to the Text of the Regulations:**

**1803.5.12 Seismic Design Category D, E or F.**

For structures assigned to Seismic Design Category D, E or F in accordance with Section 1613, the geotechnical investigation required by Section 1803.5.11, shall also include:

1. The determination of lateral *earth* pressures on foundation walls, and retaining walls *supporting more than 6 ft of backfill height*, due to earthquake motions.

*Remainder of section no changed.*

The attached was sent to the Structural Design / Lateral Forces CAC Committee and was informed of the committee hearing the item. I also understood that the committee recommended approval. The code change we submitted does not appear in the package as shown for the 2<sup>nd</sup> 45 day public comment period.

The proposed code change is significant to the City of San Diego and other California Jurisdictions. We presented the code change at the SEAOC Code Committee meeting in September and a committee member that serves on the above referenced committee as well as a SEAOC representative that attended the meeting indicated that the item had moved forward. The committee offered support to the effort.

**Reason:** Section 1-802 (a) and (b) 2 Compliance with the subject regulation is routinely impossible or onerous. Currently chapter 18A permits a lesser design standard for State buildings and schools and hospitals that are required a higher level of protection from earthquake hazards than for buildings not regulated in Chapter 18 A. This requirement adds unnecessary costs to the cost of construction.

The proposed code change deletes a current requirement. The current requirement is onerous on small structures and light framed structures as well as for retaining walls. The California Building Code has an amendment that was added in the 1990's that addresses this issue and limits application to retaining walls higher than 12 ft and applies to hospitals, school projects and State owned buildings (See Section 1806A.1 General. This has caused an unusual situation whereby State buildings and State regulated occupancies such as schools and hospitals have been granted less restrictive standards than those granted to other projects; the opposite has been true until this issue has arisen. The City of San Diego currently provides handouts for pre-engineered retaining walls and provides this height exception for retaining walls and swimming pool walls.

Evidence from recent earthquakes and recent experimental research results, including work recently completed in research at the University of California, Berkeley, CA (Al Atik and Sitar, 2008 ) have demonstrated that the retaining walls structures would have to move in order to develop the failure wedge postulated in the so-called Mononobe and Okabe method. This method was developed by Okabe (1926) and Mononobe & Matsuo (1929) as an extension of Coulomb's static earth pressure theory to include the inertial forces due to the horizontal and vertical back-fill accelerations. The M-O method was developed for dry cohesionless backfill retained by a gravity wall and is mainly based on the following assumptions (Seed & Whitman 1970):

1. The wall yields sufficiently to produce minimum active pressure and the soil is assumed to satisfy the Mohr-Coulomb failure criterion;
2. When the minimum active pressure is attained, a soil wedge behind the wall is at the point of incipient failure, and the maximum shear strength is mobilized along the potential sliding surface; and
3. The soil wedge behaves as a rigid body, and accelerations are constant throughout the mass.

However, this condition can only occur when the wall has already failed due to other causes and the current body of field evidence does not provide any evidence of existence of this proposed mechanism of failure.

We understand that DSA and OSHPD may be repealing Section 1806A.1 paragraph 2 after which this code change has been modeled. By not limiting the scope of this Section the CBC will place onerous requirements on minor projects that increase the cost of construction and design analysis for what apparently research has shown to not be a problem.

**Cost Impact:** The code change proposal will not increase the cost of construction.

**HEALTH & SAFETY CODE SECTION 18930****SECTION 18930. APPROVAL OR ADOPTION OF BUILDING STANDARDS; ANALYSIS AND CRITERIA; REVIEW CONSIDERATIONS; FACTUAL DETERMINATIONS**

- (a) Any building standard adopted or proposed by state agencies shall be submitted to, and approved or adopted by, the California Building Standards Commission prior to codification. Prior to submission to the commission, building standards shall be adopted in compliance with the procedures specified in Article 5 (commencing with Section 11346) of Chapter 3.5 of Part 1 of Division 3 of Title 2 of the Government Code. Building standards adopted by state agencies and submitted to the commission for approval shall be accompanied by an analysis written by the adopting agency or state agency that proposes the building standards which shall, to the satisfaction of the commission, justify the approval thereof in terms of the following criteria:
- (1) The proposed building standards do not conflict with, overlap, or duplicate other building standards.
  - (2) The proposed building standard is within the parameters established by enabling legislation and is not expressly within the exclusive jurisdiction of another agency.
  - (3) The public interest requires the adoption of the building standards.
  - (4) The proposed building standard is not unreasonable, arbitrary, unfair, or capricious, in whole or in part.
  - (5) The cost to the public is reasonable, based on the overall benefit to be derived from the building standards.
  - (6) The proposed building standard is not unnecessarily ambiguous or vague, in whole or in part.
  - (7) The applicable national specifications, published standards, and model codes have been incorporated therein as provided in this part, where appropriate.
    - (A) If a national specification, published standard, or model code does not adequately address the goals of the state agency, a statement defining the inadequacy shall accompany the proposed building standard when submitted to the commission.
    - (B) If there is no national specification, published standard, or model code that is relevant to the proposed building standard, the state agency shall prepare a statement informing the commission and submit that statement with the proposed building standard.
  - (8) The format of the proposed building standards is consistent with that adopted by the commission.
  - (9) The proposed building standard, if it promotes fire and panic safety as determined by the State Fire Marshal, has the written approval of the State Fire Marshal.