CALIFORNIA BUILDING STANDARDS COMMISSION
BUILDING CODE and EXISTING BUILDING CODE WORKSHOP
November 6, 2014 - Agenda Item 4d

DRAFT EXPRESS TERMS for the 2016 CALIFORNIA EXISTING BUILDING CODE, PART 10, CALIFORNIA BUILDING STANDARDS CODE, TITLE 24, CALIFORNIA CODE OF REGULATIONS

LEGEND FOR DRAFT EXPRESS TERMS

1. Existing California amendments or code language being modified are in italics when they appear in the model code text: All such language appears in *italics*, modified language is underlined.
2. New California amendments: All such language appears *underlined and in italics*.
3. Repealed text: All such language appears in ~~strikeout~~.
4. *[Information for the reader: All such language is bracketed and in red italics]*

WORKSHOP DRAFT EXPRESS TERMS

Statement of specific purpose, problem, rationale and benefits:
Chapter 34 Existing Structures of the 2015 International Building Code (IBC) was deleted in its entirety and the Existing Structure provisions are now located in the 2015 International Existing Building Code (IEBC). CBSC proposes to adopt and amend specific provisions of the IEBC for inclusion in the 2016 California Existing Building Code, Part 10. The following California amendments from the 2013 CBC require new sections and locations in the 2016 CEBC. Coordinate the new section locations with the Division of the State Architect –Structural Safety (DSA-SS) and the Office of the State Fire Marshal (SFM).

Renumber the 2013 California Building Code Chapter 34 Existing Structures amendments accordingly for application to the 2016 California Existing Building Code, Part 10.

CBC SECTION 3417
EARTHQUAKE EVALUATION AND DESIGN
FOR RETROFIT OF EXISTING BUILDINGS

3417.1 Purpose.

3417.1.1 Existing state-owned structures. *The provisions of Sections 3417 through 3423 establish minimum standards for earthquake evaluation and design for retrofit of existing state-owned structures, including buildings owned by the University of California and the California State University.*

The provisions of Sections 3417 through 3423 may be adopted by a local jurisdiction for earthquake evaluation and design for retrofit of existing buildings.

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3417.2 Scope. *All modifications, structurally connected additions and/or repairs to existing structures or portions thereof shall, at a minimum, be designed and constructed to resist the effects of seismic ground motions as provided in this section. The structural system shall be evaluated by a registered design professional and, if not meeting or exceeding the minimum seismic design performance requirements of this section, shall be retrofitted in compliance with these requirements.*

Exception: *Those structures for which Section 3417.3 determines that assessment is not required, or for which Section 3417.4 determines that retrofit is not needed, then only the requirements of Section 3417.11 apply.*

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3417.3 Applicability.

3417.3.1 Existing state-owned buildings. *For existing state-owned structures including all buildings owned by the University of California and the California State University, the requirements of Section 3417 apply whenever the structure is to be retrofitted, repaired or modified and any of the following apply:*

1. *Total construction cost, not including cost of furnishings, fixtures and equipment, or normal maintenance, for the building exceeds 25 percent of the construction cost for the replacement of the existing building. The changes are cumulative for past modifications to the building that occurred after adoption of the 1995 California Building Code and did not require seismic retrofit.*
2. *There are changes in risk category.*
3. *The modification to the structural components increases the seismic forces in or strength requirements of any structural component of the existing structure by more than 10 percent cumulative since the original construction, unless the component has the capacity to resist the increased forces determined in accordance with Section 3419. If the building's seismic base shear capacity has been increased since the original construction, the percent change in base shear may be calculated relative to the increased value.*
4. *Structural elements need repair where the damage has reduced the lateral-load-resisting capacity of the structural system by more than 10 percent.*
5. *Changes in live or dead load increase story shear by more than 10 percent.*

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3417.4 Evaluation required. *If the criteria in Section 3417.3 apply to the project under consideration, the design professional of record shall provide an evaluation in accordance with Section 3417 to determine the seismic performance of the building in its current configuration and condition. If the structure's seismic performance as required by Section 3417.5 is evaluated as satisfactory and the peer reviewer(s), when Method B of Section 3421 is used, concur, then no structural retrofit is required.*

3417.5 Minimum seismic design performance levels for structural and nonstructural components. *Following the notations of ASCE 41, the seismic requirements for design and assessment are based upon a prescribed Earthquake Hazard Level (BSE-1, BSE-2, BSE-R or BSE-C), a specified structural performance level (S-1 through S-5) and a non-structural performance level (N-A through N-E). The minimum seismic performance criteria are given in Table 3417.5 according to the Building Regulatory Authority and the Risk Category as determined in Chapter 16 or by the regulatory authority. The building shall be evaluated at both the Level 1 and Level 2 performance levels, and the more restrictive requirements shall apply.*

Basic Safety Earthquake 2 (BSE-2) in ASCE 41 shall be same as Risk-Targeted Maximum Considered Earthquake (MCER) in ASCE 7. Probabilistic response spectra defining other Earthquake Hazard Levels shall be developed using site-specific ground motions in accordance with ASCE 7 Section 21.2 utilizing the Next Generation Attenuation (NGA) relations used for the 2008 USGS seismic hazards maps for Western United States (WUS). When supported by data and analysis, other NGA relations, that were not used for the 2008 USGS maps, shall be permitted as additions or substitutions. No fewer than three NGA relations shall be utilized. Response spectra shall incorporate the risk coefficient C_R per ASCE 7 Section 21.2.1.1

Ground-motion response history analysis shall be as set forth in ASCE 7 Chapter 16, Section 17.3 or Section 18.2.3.
Exception: *If the floor area of an addition is greater than the larger of 50 per cent of the floor area of the original building or 1,000 square feet (93 m^2), then the Table 3417.5 entries for BSE-R and BSE-C are replaced by BSE-1 and BSE-2, respectively.*

3417.6 Retrofit required. *Where the evaluation indicates the building does not meet the required performance objectives of this section, the owner shall take appropriate steps to ensure that the building's structural system is retrofitted in accordance with the provisions of Section 3417. Appropriate steps are either: 1) undertake the seismic retrofit as part of the additions, modifications and/or repairs of the structure; or 2) provide a plan, acceptable to the building official, to complete the seismic retrofit in a timely manner. The relocation or moving of an existing building is considered to be an alteration requiring filing of the plans and specifications approved by the building official.*

3417.7 *The additions, modification or repair to any existing building are permitted to be prepared in accordance with the requirements for a new building, Chapter 16, Part 2, Title 24, C.C.R., 2007 edition, applied to the entire building.*

3417.8 *The requirements of ASCE 41 Chapter 9 are to apply to the use of seismic isolation or passive energy systems for the repair, modification or retrofit of an existing structure. When seismic isolation or passive energy dissipation is used, the project must have project peer review as prescribed in Section 3422.*

3417.9 *Any construction required by this chapter shall include structural observation by the registered design professional who is responsible for the structural design in accordance with Section 3419.10.*

3417.10 *Where Method B of Section 3421 is used or is required by Section 3419.7, the proposed method of building evaluation and design procedures must be accepted by the building official prior to the commencement of the work.*

3417.11 Voluntary lateral-force-resisting system modifications. *Where the exception of Section 3417.2 applies, modifications of existing structural components and additions of new structural components that are initiated for the purpose of improving the seismic performance of an existing structure and that are not required by other portions of this chapter are permitted under the requirements of Section 3419.12.*

SECTION 3418
DEFINITIONS

3418.1. *In addition to the definitions given in Section 3402, for the purposes of Sections 3417 through 3423, certain terms are defined as follows:*

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ADDITION *means any work that increases the floor or roof area or the volume of enclosed space of an existing building, and is structurally attached to the existing building by connections that are required for transmitting vertical or horizontal loads between the addition and the existing structure.*

ALTERATION *means any change within or to an existing building, which does not increase and may decrease the floor or roof area or the volume of enclosed space.*

BSE-C RESPONSE ACCELERATION PARAMETERS *are the parameters (S_{XS} and S_{X1} taken from 5-percent /50-year maximum direction spectral response acceleration curves or by a Site Specific Response Spectrum developed in accordance with Section 3417.5. Values for BSE-C need not be greater than those for BSE-2.*

BSE-R RESPONSE ACCELERATION PARAMETERS *are the parameters (S_{XS} and S_{X1}) taken from 20- percent /50-year maximum direction spectral response acceleration curves or by a Site Specific Response Spectrum developed in accordance with Section 3417.5. Values for BSE-R need not be greater than those for BSE-1.*

BUILDING OFFICIAL *is that individual within the agency or organization charged with responsibility for compliance with the requirements of this code. For some agencies this person is termed the "enforcement agent."*

DESIGN *is the procedure that includes both the evaluation and retrofit design of an existing component, element or structural system, and design of a new component, element or structural system.*

ENFORCEMENT AGENCY (Authority Having Jurisdiction in ASCE 41) *is the agency or organization charged with responsibility for agency or organization compliance with the requirements of this code.*

METHOD A *refers to the procedures prescribed in Section 3420.*

METHOD B *refers to the procedures allowed in Section 3421.*

MODIFICATIONS. *For this chapter, modification is taken to include repairs to structures that have been damaged.*

N-A, N-B, N-C, N-D, N-E *are seismic nonstructural component performance measures as defined in ASCE 41. N-A corresponds to the highest performance level, and N-D the lowest, while N-E is not considered.*

PEER REVIEW *refers to the procedures contained in Section 3422.*

REPAIR *as used in this chapter means the design and construction work undertaken to restore or enhance the structural and nonstructural load-resisting system participating in the lateral response and stability of a structure that has experienced damage from earthquakes or other destructive events.*

S-1, S-2, S-3, S-4, S-5, S-6 *are seismic structural performance measures as defined in ASCE 41. S-1 corresponds to the*

highest performance level, and S-5 the lowest, while S-6 is not considered.

***SPECIFIC PROCEDURES** are the procedures listed in Section 3419.1.1.*

***STRUCTURAL REPAIRS** are any changes affecting existing or requiring new structural components primarily intended to correct the effects of damage, deterioration or impending or actual failure, regardless of cause.*

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TABLE 3417.5 SEISMIC PERFORMANCE REQUIREMENTS BY BUILDING REGULATORY AUTHORITY AND RISK CATEGORY. ALL BUILDINGS NOT REGULATED BY DSA ARE ASSIGNED AS "STATE-OWNED."

		PERFORMANCE CRITERIA	
Building Regulatory Authority	**Risk Category**	**Level 1**	**Level 2**
State-Owned	I, II, III	BSE-R, S-3, N-D	BSE-C, S-5, N-E
State-Owned	IV	BSE-R, S-2, N-B	BSE-C, S-4, N-C
Division of the State Architect - Public schools	I	BSE-1,S-3,N-C	BSE-2,S-5, N-E
Division of the State Architect - Public schools	II, III	BSE-1, S-2, N-C	BSE-2, S-4, N-D
Division of the State Architect - Public schools	IV	BSE-1, S-2, N-C	BSE-2, S-4,N-C
Division of the State Architect - Community college	I, II, III	BSE-R, S-3, N-D	BSE-2, S-5, N-E
Division of the State Architect - Community college	IV	BSE-R, S-2, N-B	BSE-2, S-4, N-C

1. *ASCE 41 provides acceptance criteria (e.g. m, rotation) for Immediate Occupancy (S1), Life Safety (S3), and Collapse Prevention (S5), and specifies that values for S-2 and S-4 are to be determined by interpolation between the adjacent performance level values.*

   The required method of interpolation is as follows:

   For level S-2, the acceptance value is $^1/_3$ of the sum of the tabulated value for Immediate Occupancy (IO level) and twice the tabulated value for the Life Safety (LS level).

   For level S-4, the acceptance value is one-half the sum of the value for the LS level and the value for the Collapse Prevention (CP) level.

   For nonstructural components, N-A corresponds to the IO level, N-C to the LS level, and N-D to the Hazards Reduced (HR level).

   For evaluation procedures, N-B shall be the same as for N-A. Where numerical values are used, the values for N-B are one half the sum of the appropriate IO and LS values. Where IO or CP values are not given by ASCE 41, then the LS values are permitted to be substituted.

2. *Buildings evaluated and retrofitted to meet the requirements for a new building, Chapter 16, Part 2, Title 24, in accordance with the exception in Section 3419.1, are deemed to meet the seismic performance requirements of this section.*

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SECTION 3419
SEISMIC CRITERIA SELECTION FOR EXISTING BUILDINGS

***3419.1 Basis for evaluation and design.** This section determines what technical approach is to be used for the seismic evaluation and design for existing buildings. For those buildings or portions of buildings for which Section 3417 requires action, the procedures and limitations for the evaluation of existing buildings and design of retrofit systems and/or repair thereof shall be implemented in accordance with this section.*

One of the following approaches must be used:

1. Method A of Section 3420;

2. Method B of Section 3421, with independent review of a peer reviewer as required in Section 3422; or

3. For state-owned buildings only, the use of one of the specific procedures listed in Section 3419.1.1.

When Method B is chosen it must be approved by the building official, and, where applicable, by the peer reviewer. All referenced standards in ASCE 41 shall be replaced by referenced standards listed in Chapter 35 of this code.

Exceptions:

1. ***[BSC]*** *For buildings constructed to the requirements of California Building Code, 1998 or later edition as adopted by the governing jurisdiction, that code is permitted to be used in place of those specified in Section 3419.1.*
2. *[Reserved for DSA]*

3419.1.1 Specific procedures. *For state-owned buildings, the following specific procedures taken from the International Existing Building Code (IEBC) Appendix A may be used, without peer review, for their respective types of construction to comply with the seismic performance requirements for Risk Category I, II or III buildings:*

1. *Seismic Strengthening Provisions for Unreinforced Masonry Bearing Wall Buildings (Chapter A1 of the IEBC).*
2. *Prescriptive Provisions for Seismic Strengthening of Cripple Walls and Sill Plate Anchorage of Light Wood-Frame, Residential Buildings (Chapter A3 of the IEBC).*
3. *Earthquake Hazard Reduction in Existing Reinforced Concrete and Reinforced Masonry Wall Buildings with Flexible Diaphragms (Chapter A2 of the IEBC).*

3419.1.2 *When a design project is begun under Method B the selection of the peer reviewer is subject to the approval of the building official. Following approval by the peer reviewer, the seismic criteria for the project and the planned evaluation provisions must be approved by the building official. The approved seismic criteria and evaluation provisions shall apply. Upon approval of the building official these are permitted to be modified.*

3419.1.3 *For state-owned and community college buildings, where unreinforced masonry is not bearing, it may be used only to resist applied lateral loads. Where unreinforced masonry walls are part of the structure they must be assessed for stability under the applicable nonstructural evaluation procedure.*

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3419.2 Existing conditions. *The existing condition and properties of the entire structure must be determined and documented by thorough inspection of the structure and site, review of all available related construction documents, review of geotechnical and engineering geologic reports, and performance of necessary testing and investigation. Where samples from the existing structure are taken or in situ tests are performed, they shall be selected and interpreted in a statistically appropriate manner to ensure that the properties determined and used in the evaluation or design are representative of the conditions and structural circumstances likely to be encountered in the structure as a whole. Adjacent structures or site features that may affect the retrofit design shall be identified.*

The entire load path of the seismic-force-resisting system shall be determined, documented and evaluated. The load path includes all the horizontal and vertical elements participating in the structural response: such as diaphragms, diaphragm chords, diaphragm collectors, vertical elements such as walls frames, braces; foundations and the connections between the components and elements of the load path. Repaired or retrofitted elements and the standards under which the work was constructed shall be identified.

Data collection in accordance with ASCE 41 Section 2.2 shall meet the following minimum levels:

1. *For state-owned buildings, the requirements shall be met following the data collection requirements of ASCE 41 Section 2.2.*

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Qualified test data from the original construction may be accepted, in part or in whole, by the enforcement agency to fulfill the data collection requirements.

Exceptions:

1. *The number of samples for data collection may be adjusted with approval of the enforcement agency when it has been determined that adequate information has been obtained or additional information is required.*

2. Welded steel moment frame connections of buildings that may have experienced potentially damaging ground motions shall be inspected in accordance with Chapters 3 and 4, FEMA 352, Recommended Post Earthquake Evaluation and Repair Criteria for Welded Moment-Frame Construction for Seismic Applications (July 2000).

Where original building plans and specifications are not available, "as-built" plans shall be prepared that depict the existing vertical and lateral structural systems, exterior elements, foundations and nonstructural systems in sufficient detail to complete the design.

Data collection shall be directed and observed by the project structural engineer or design professional in charge of the design.

3419.3 Site geology and soil characteristics. *Soil profile shall be assigned in accordance with the requirements of Chapter 18.*

3419.4 Risk categories. *For purposes of earthquake-resistant design, each structure shall be placed in one of the risk categories in accordance with the requirements of this code.*

3419.5 Configuration requirements. *Each structure shall be designated structurally regular or irregular in accordance with the requirements of ASCE 41, Sections 2.4.1.1.1. to 2.4.1.1.4.*

3419.6 General selection of the design method. *The requirements of Method B (Section 3421) may be used for any existing building.*

3419.7 Prescriptive selection of the design method. *The requirements of Method A (Section 3420) or the specific procedures for applicable building types given in Section 3419.1.1 are permitted to be used except under the following conditions, where the requirements of Method B (Section 3421) must be used.*

3419.7.1 *When the building contains prestressed or post- tensioned structural components (beams, columns, walls or slabs) or contains precast structural components (beams, columns, walls or flooring systems).*

3419.7.2 *When the building is classified as irregular in vertical or horizontal plan by application of ASCE/SEI 7 Section 12.3 and/or ASCE 41, Sections 2.4.1.1.1 to 2.4.1.1.4, unless the irregularity is demonstrated not to affect the seismic performance of the building.*

Exception: *If the retrofit design removes the configurational attributes that caused the building to be classified as irregular, then Section 3419.7.2 does not apply and Method A may be used.*

3419.7.3 *For any building that is assigned to Risk Category IV.*

3419.7.4 *For any building using undefined or hybrid structural systems.*

3419.7.5 *When seismic isolation or energy dissipation systems are used in the retrofit or repair, either as part of the existing structure or as part of the modifications.*

3419.7.6 *When the height of the structure exceeds 240 feet (73 152 mm).*

3419.8 Strength requirements. *All components of the lateral-force-resisting system must have the strength to meet the acceptance criteria prescribed in ASCE 41, Chapter 3, or as prescribed in the applicable Appendix A chapter of the IEBC if a specific procedure in Section 3419.1.1 is used. Any component not having this strength shall have its capacity increased by modifying or supplementing its strength so that it exceeds the demand, or the demand is reduced to less than the existing strength by making other modifications to the structural system.*

Exception: *A component's strength is permitted to be less than that required by the specified seismic load combinations if it can be demonstrated that the associated reduction in seismic performance of the component or its removal due to the failure does not result in a structural system that does not comply with the required performance objectives of Section 3417. If this exception is taken for a component, then it cannot be considered part of the primary lateral-load- resisting system.*

3419.9 Nonstructural component requirements. *Where the nonstructural performance levels required by Section 3417, Table 3417.5 are N-D or higher, mechanical, electrical and plumbing components shall comply with the provisions of ASCE 41, Chapter 11, Section 11.2.*

Exception: *Modifications to the procedures and criteria may be made subject to approval by the building official, and concurrence of the peer reviewer if applicable. All reports and correspondence shall also be forwarded to the building official.*

3419.10 Structural observation, testing and inspection. *Structural, geotechnical and construction observation, testing and inspection as used in this section shall mean meeting the requirements of Chapter 17, with a minimum allowable level of investigation corresponding to seismic design category (SDC) D. At a minimum the project site will be visited by the responsible design professional to observe existing conditions and to review the construction work for general compliance with approved plans, specifications and applicable structural regulations. Such visits shall occur at significant construction stages and at the completion of the structural retrofit. Structural observation shall be provided for all structures. The plan for testing and inspection shall be submitted to the building official for review and approval with the application for permit.*

Additional requirements: *For public schools and community colleges, construction material testing, inspection and observation during construction shall also comply with Section 4-333, Part 1, Title 24.*

3419.10.1 *The registered design professional, or their designee, responsible for the structural design shall be retained to perform structural observation and independently report to the owner of observations and findings as they relate to adherence to the permitted plans and good workmanship.*

3419.10.2 *At the conclusion of construction, the structural observer shall submit to the enforcement agency and the owner a final written statement that the required site visits have been made, that the work, to the best of the structural observers knowledge and belief, is or is not in general conformity to the approved plans and that the observed structural deficiencies have been resolved and/or listing those that, to the best of the structural observers knowledge and belief, have not been satisfactorily corrected.*

3419.10.2.1 *The requirement for structural observation shall be noted and prominently displayed on the front sheet of the approved plans and incorporated into the general notes on the approved plans.*

3419.10.2.2 Preconstruction meeting. *A preconstruction meeting is mandatory for all projects which require structural observation. The meeting shall include, but is not limited to, the registered design professional, structural observer, general constructor, affected subcontractors, the project inspector and a representative of the enforcement agency (designated alternates may attend if approved by the structural observer). The structural observer shall schedule and coordinate this meeting. The purpose of the meeting is to identify and clarify all essential structural components and connections that affect the lateral and vertical load systems and to review scheduling of the required observations for the project's structural system retrofit.*

3419.11 Temporary actions. *When compatible with the building use, and the time phasing for both use and the retrofit program, temporary shoring or other structural support is permitted to be considered. Temporary bracing, shoring and prevention of falling hazards are permitted to be used to qualify for Exception 1 in Section 3419.12 that allows inadequate capability in some existing components, as long as the required performance levels given in Section 3417 can be provided by the permanent structure. The consideration for such temporary actions shall be noted in the design documents.*

3419.12 Voluntary modifications to the lateral-force resisting system. *Where modifications of existing structural components and additions of new structural components are initiated for the purpose of improving the lateral-force resisting strength or stiffness of an existing structure and they are not required by other sections of this code, then they are permitted to be designed to meet an approved seismic performance criteria provided that an engineering analysis is submitted that follows:*

1. *The capacity of existing structural components required to resist forces is not reduced, unless it can be demonstrated that reduced capacity meets the requirements of Section 3419.8.*
2. *The lateral loading to or strength requirement of existing structural components is not increased beyond their capacity.*
3. *New structural components are detailed and connected to the existing structural components as required by this code for new construction.*
4. *New or relocated nonstructural components are detailed and connected to existing or new structural components as required by this code for new construction.*
5. *A dangerous condition is not created.*

3419.12.1 State-owned buildings. *Voluntary modifications to lateral-force-resisting systems conducted in accordance with Appendix A of the IEBC and the referenced standards of this code shall be permitted.*

3419.12.1.1 Design documents. *When Section 3419.12 is the basis for structural modifications, the approved design documents must clearly state the scope of the seismic modifications and the accepted criteria for the design. The approved design documents must clearly have the phrase "The seismic requirements of Chapter 34 for existing buildings have not been checked to determine if these structural modifications meet CBC requirements: the modifications proposed are to a different seismic performance standard than would be required in Section 3419 if they were not voluntary as allowed in Section 3419.12."*

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SECTION 3420
METHOD A

3420.1 General. *The retrofit design shall employ the Linear Static or Linear Dynamic Procedures of ASCE 41, Section 3.3.1 or 3.3.2, and comply with the applicable general requirements of ASCE 41, Chapters 2 and 3. The earthquake hazard level and performance level given specified in Section 3417.5 for the building's risk category shall be used. Structures shall be designed for seismic forces coming from any horizontal direction.*

> ***Exception:*** *The ASCE 41 Simplified Rehabilitation Method of Chapter 10 may be used if the Level 1 seismic performance level is S-3 or lower, the building's structural system is one of the primary building types described in ASCE 41, Table 10-2, and ASCE 41, Table 10-1 permits it use for the building height.*

SECTION 3421
METHOD B

3421.1 *The existing or retrofitted structure shall be demonstrated to have the capability to sustain the deformation response due to the specified earthquake ground motions and meet the seismic performance requirements of Section 3417. The registered design professional shall provide an evaluation of the response of the existing structure in its modified configuration and condition to the ground motions specified. If the building's seismic performance is evaluated as satisfactory and the peer reviewer(s,) and the enforcement agency concurs, then no further structural modifications of the lateral-load-resisting system are required.*

When the evaluation indicates the building does not meet the required performance levels given in Table 3417.5 for the risk category, then a retrofit and/or repair design shall be prepared that provides a structure that meets these performance objectives and reflects the appropriate consideration of existing conditions. Any approach to analysis and design is permitted to be used, provided that the approach shall be rational, shall be consistent with the established principals of mechanics and shall use the known performance characteristics of materials and assemblages under reversing loads typical of severe earthquake ground motions.

> ***Exception:*** *Further consideration of the structure's seismic performance may be waived by the enforcement agency if both the registered design professional and peer reviewer(s) conclude that the structural system can be expected to perform at least as well as required by the provisions of this section without completing an analysis of the structure's compliance with these requirements. A detailed report shall be submitted to the responsible building official that presents the reasons and basis for this conclusion. This report shall be prepared by the registered design professional. The peer reviewer(s) shall concur in this conclusion and affirm to it in writing. The building official shall either approve this decision or require completion of the indicated work specified in this section prior to approval.*

3421.2 *The approach, models, analysis procedures, assumptions on material and system behavior and conclusions shall be peer reviewed in accordance with the requirements of Section 3422 and accepted by the peer reviewer(s).*

> ***Exceptions:***
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> 1. *The enforcement agency may perform the work of peer review when qualified staff is available within the jurisdiction.*
> 2. *The enforcement agency may modify or waive the requirements for peer review when appropriate.*

3421.2.1 *The approach used in the development of the design shall be acceptable to the peer reviewer and the enforcement agency and shall be the same method as used in the evaluation of the building. Approaches that are specifically tailored to the type of building, construction materials and specific building characteristics may be used, if they are acceptable to the independent peer reviewer. The use of Method A allowed procedures may also be used under Method B.*

3421.2.2 *Any method of analysis may be used, subject to acceptance by the peer reviewer(s) and the building official. The general requirements given in ASCE 41, Chapter 2, shall be complied with unless exceptions are accepted by the peer reviewer(s) and building official. Use of other than ASCE 41 procedures in Method B requires building official concurrence before implementation.*

3421.2.3 *Prior to implementation, the procedures, methods, material assumptions and acceptance/rejection criteria proposed by the registered design professional will be peer reviewed as provided in Section 3422. Where nonlinear*

procedures are used, prior to any analysis, the representation of the seismic ground motion shall be reviewed and approved by the peer reviewer(s) and the building official.

3421.2.4 *The conclusions and design decisions shall be reviewed and accepted by the peer reviewer(s) and the building official.*

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SECTION 3422
PEER REVIEW REQUIREMENTS

3422.1 General. *Independent peer review is an objective, technical review by knowledgeable reviewer(s) experienced in the structural design, analysis and performance issues involved. The reviewer(s) shall examine the available information on the condition of the building, the basic engineering concepts employed and the recommendations for action.*

3422.3 Qualifications and terms of employment. *The reviewer(s) shall be independent from the design and construction team.*

3422.3.1 *The reviewer(s) shall have no other involvement in the project before, during or after the review, except in a review capacity.*

3422.3.2 *The reviewer(s) shall be selected and paid by the owner and shall have technical expertise in the evaluation and retrofit of buildings similar to the one being reviewed, as determined by the enforcement agency.*

3422.3.3 *The reviewer (or in the case of review teams, the chair) shall be a California-licensed structural engineer who is familiar with the technical issues and regulations governing the work to be reviewed.*

Exception: *Other individuals with acceptable qualifications and experience may be a peer reviewer(s) with the approval of the building official.*

3422.3.4 *The reviewer shall serve through completion of the project and shall not be terminated except for failure to perform the duties specified herein. Such termination shall be in writing with copies to the enforcement agency, owner and the registered design professional. When a reviewer is terminated or resigns, a qualified replacement shall be appointed within 10 working days, and the reviewer shall submit copies of all reports, notes and correspondence to the responsible building official, the owner and the registered design professional within 10 working days of such termination.*

3422.3.5 *The peer reviewer shall have access in a timely manner to all documents, materials and information deemed necessary by the peer reviewer to complete the peer review.*

3422.4 Scope of review. *Review activities shall include, where appropriate, available construction documents, design criteria and representative observations of the condition of the structure, all inspection and testing reports, including methods of sampling, analytical models and analyses prepared by the registered design professional and consultants, and the retrofit or repair design. Review shall include consideration of the proposed design approach, methods, materials, details and constructability. Changes observed during construction that affect the seismic-resisting system shall be reported to the reviewer in writing for review and recommendation.*

3422.5 Reports. *The reviewer(s) shall prepare a written report to the owner and building official that covers all aspects of the review performed, including conclusions reached by the reviewer(s). Reports shall be issued after the schematic phase, during design development, and at the completion of construction documents but prior to submittal of the project plans to the enforcement agency for plan review. When acceptable to the building official, the requirement for a report during a specific phase of the project development may be waived.*

Such reports should include, at the minimum, statements of the following:

1. Scope of engineering design peer review with limitations defined.

2. The status of the project documents at each review stage.

3. Ability of selected materials and framing systems to meet performance criteria with given loads and configuration.

4. Degree of structural system redundancy and the deformation compatibility among structural and nonstructural components.

5. Basic constructability of the retrofit or repair system.

6. Other recommendations that would be appropriate to the specific project.

7. Presentation of the conclusions of the reviewer identifying any areas that need further review, investigation and/or clarification.

8. Recommendations.

The last report prepared prior to submittal of permit documents to the enforcement agency shall include a statement indicating that the design is in conformance with the approved evaluation and design criteria

3422.6 Response and resolutions. *The registered design professional shall review the report from the reviewer(s) and shall develop corrective actions and responses as appropriate. Changes observed during construction that affect the seismic-resisting system shall be reported to the reviewer in writing for review and recommendations. All reports, responses and resolutions prepared pursuant to this section shall be submitted to the responsible enforcement agency and the owner along with other plans, specifications and calculations required. If the reviewer resigns or is terminated prior to completion of the project, then the reviewer shall submit copies of all reports, notes and correspondence to the responsible building official, the owner and the registered design professional within 10 working days of such termination.*

3422.7 Resolution of conflicts. *When the conclusions and recommendations of the peer reviewer conflict with the registered design professional's proposed design, the enforcement agency shall make the final determination of the requirement for the design.*

Notation
Authority: Health and Safety Code §18928 & 18934.5
References: Health and Safety Code §§18928, 18928.1, & 18934.5