

**INITIAL STATEMENT OF REASONS
FOR
PROPOSED BUILDING STANDARDS
OF THE
DIVISION OF THE STATE ARCHITECT - STRUCTURAL SAFETY**

**REGARDING THE CALIFORNIA BUILDING CODE,
CALIFORNIA CODE OF REGULATIONS, TITLE 24, PART 2**

The Administrative Procedure Act (APA) requires that an Initial Statement of Reasons be available to the public upon request when rulemaking action is being undertaken. The following information required by the APA pertains to this particular rulemaking action:

STATEMENT OF SPECIFIC PURPOSE AND RATIONALE.

The Division of the State Architect – Structural Safety (DSA-SS) proposes to make amendments to Division VI-R of Chapter 16A, Title 24, Part 2 (California Building Code, or CBC). Division VI-R contains structural design, inspection and testing provisions for seismic safety evaluation and retrofit of state-owned buildings (promulgated by BSC, DSA), and hospitals (promulgated by the Office of Statewide Health Planning, or OSHPD).

The proposed amendments to these regulations will provide requirements for seismic safety evaluation and retrofit of existing non-conforming buildings proposed for use as public school buildings, in compliance with Education Code Section 17280.5. Proposed amendments also specify requirements for inspection and testing of existing construction.

Specific purpose and rationale for necessity to the amendments to Division VI-R of Chapter 16A, Title 24, Part 2 (2001 CBC) follows:

SECTION 1640A - GENERAL

Section 1640A.1 Purpose.

Purpose is to require the rehabilitation of any existing building for use as a public school building to be designed and retrofitted for compliance with Division VI-R of Chapter 16A, CBC; and to amend current provisions to clarify the difference between “rehabilitation to a new school” and “modification, alterations and/or repairs to existing structures.”

An existing building that is rehabilitated for use as a public school building is considered to be a new school building, and shall meet all requirements of the CBC, including verification and qualification of all existing construction through analysis, inspection and testing. Modification, alterations and/or repairs pertain only to work constructed for a subject project and does not imply complete verification and qualification of all existing construction.

Section 1640A.1.1 Minimum seismic design.

Purpose is to define the performance objective for rehabilitation to public schools to comply with Section 17280(a)(1) of the Education Code. Section 17280(a)(1) requires that the Department of General Services (DGS) shall supervise the design and construction of any school building to ensure that the work of construction has been performed in accordance with the approved plans and specifications, for the protection of life and property.

Section 1640A.2 Applicability.

Purpose is to define that the requirements of Division VI-R apply to any existing building being rehabilitated for use as a public school, as required per Part 1 of Title 24.

Section 17280(a)(1) requires that DGS shall supervise the design and construction of any school building to ensure that plans and specifications comply with the rules and regulations published in Title 24, and that the work of construction has been performed in accordance with the approved plans and specifications. Amendments are proposed in Title 24, Part 1 to define the term “rehabilitation”, as applies to buildings that are rehabilitated for public school use.

Section 1640A.2.2 Evaluation Required.

DSA chose not to adopt current provisions applicable to seismic rehabilitation of state-owned buildings or hospitals. DSA proposes Section 1640A.2.4 for specific requirements applicable to public schools.

Section 1640A.2.4 Required evaluation and retrofit.

Purpose is to require evaluation for any building being rehabilitated for public school use, and to specify that any building, or portion thereof, not meeting the requirements of this section, be retrofitted in accordance with the methodology used in the evaluation. Section further requires that any required retrofit work comply with the structural detailing required for new construction.

All buildings being rehabilitated shall be evaluated to meet the purpose of Sections 1640A.1 and 1640A.1.1. Since these provisions allow multiple choices as to the evaluation methodology, any retrofit must follow the same methodology for the design as was used for the evaluation. Any retrofit or repair work to existing construction shall meet the detailing required per current (model) code.

Sections 1640A.3 and 1640A.3.1.

Section 1640A.3 has not been adopted by DSA. Purpose of Section 1640A.3.1 is to allow use of current Part 2, Title 24 (CBC) provisions as an acceptable basis for the evaluation and design methodology.

While compliance with CBC is recognized and accepted in the current provisions of Sec. 1640A.3, the proposed DSA amendments provide greater clarity as to its application for public schools.

Section 1640A.5.1.

Purpose is to require observation, testing and inspection during the construction of the rehabilitation project to be the same as required for new construction.

Section 17280(a)(1) requires that DGS shall supervise the design and construction of any school building to ensure that plans and specifications comply with the rules and regulations published in Title 24, and that the work of construction has been performed in accordance with the approved plans and specifications.

Sections 1640A.6 and 1640A.7.

Purpose is to allow use of current Division VI-R Methods A and B as acceptable evaluation and design methodologies, and to direct their use in accordance with the DSA procedures.

While Method A and B are accepted in the current provisions of Sec. 1640A.6 and 1640A.7, the proposed amendments provide greater clarity as to their application for public schools.

Section 1640A.8. Procedures for DSA Approval of the Evaluation and Retrofit Design.

Purpose is to establish a process for DSA review and approval of the design professional's evaluation findings and retrofit design criteria. The proposed amendments establish a procedure in which the evaluation and design criteria of an existing building is proposed by the design professionals, and reviewed and agreed upon by DSA prior to design development of the rehabilitation project to a public school. The procedure establishes a credible inspection and material testing program to obtain documentation of the existing construction, such that equivalent pupil safety with the Title 24 standards for new construction can be substantiated.

The procedure is intended to establish design criteria before extensive design work has been undertaken, and to establish an approved basis for the structural design to facilitate effective and efficient plan review and approval. DSA shall review the design proposals and the proposed inspection and testing program for assessment of the existing structure.

The frequency and location of the inspections and material tests have been based on the FEMA 356 *Prestandard and Commentary for Seismic Rehabilitation of Buildings* provisions for "comprehensive" data collection. The comprehensive data collection provisions of FEMA 356 are adopted based on the recommendations of various California-licensed structural engineers experienced in building rehabilitation and OSHPD.

Section 1640A.8.2. Evaluation and Design Criteria Report.

Purpose is to establish requirement of an Evaluation and Design Criteria Report and define the critical elements of the design to be addressed in the Report.

Defined parameters in the Report provide for comprehensive review of the critical elements of the building evaluation and design by both the design team and DSA.

Section 1640A.8.3. Requirements for Method B.

Purpose is to establish requirements for the use of Method B for the evaluation and design of an existing building, which include a consultation with DSA prior to development of the Report and Owner's Peer Reviewer requirements.

Method B requires the use of a Peer Review consultant hired by the owner to provide expertise and objective assistance to the design team throughout the project development. Use of a Peer Reviewer is based on methodologies described in FEMA 356.

Section 1640A.9.

Purpose is to define building separation requirements and protection from falling hazards, when only a portion of a building is being rehabilitated for public school use.

Since any type and size of facility may be considered for rehabilitation, it is possible that only portions of an existing building will be proposed for public school use, while the remainder of the structure may contain other uses or occupancies.

SECTION 1641A. DEFINITIONS.

Definitions for "Protection of Life and Property", "Rehabilitation" and "Retrofit" have been added

for application of the DSA requirements in these regulations. Other definitions in Sec. 1641A have been amended to correspond with Method A provisions as amended by DSA-SS.

SECTION 1643A. CRITERIA SELECTION

Section 1643A.1. Basis for Evaluation and Design.

Purpose is to define the technical approach to be used for the seismic evaluation and design for rehabilitation of public schools; Method A, Method B, or CBC as defined in other sections.

DSA only recognizes the methodologies identified in this section. This represents a change from current provisions, and eliminates the use of other codes or methodologies (e.g. Uniform Code for Building Conservation, or UCBC). The UCBC methods are based on a reduced design force level inconsistent with the statutory performance objective for public schools.

Section 1643A.1.1. Special procedures.

Section not adopted by DSA for the same rationale identified in 1643A.1 eliminating the use of the UCBC.

Section 1643A.3. Site Geology and Soil Characteristics.

Purpose is to clarify use of Section 1629A.3 provisions for Method A, and for the CBC. Soil profile characteristics for Method B are contained in the appropriate sections of Div. VI-R.

Section 1643A.6. Selection of the Design Method.

Purpose is to clarify that Method B or CBC may be used for the rehabilitation of any building. Method A has conditions for use as defined in Section 1643A.7.

Section 1643A.7.

Purpose is to clarify conditions for use of Method A for rehabilitation of public schools.

Section 1643A.7.3.

Section not adopted by DSA. School buildings include occupancies which require an Importance Factor greater than 1.0.

Sections 1643A.7.4 and 1643A.7.5.

Purpose is to require use of Method B for the analysis of certain types of structural systems. These structural systems require a complete understanding of the building's performance when subjected to seismic ground motions.

Sections 1643A.7.6 and 1643A.7.6.1.

Section 1643A.7.6 is not adopted by DSA. Section 1643A.7.6.1 defines the height restrictions for use of Method A.

Method A is intended for buildings for which the multi-mode effects induced by seismic ground motions will not be significant with regard to the seismic response of the structure. Limiting the structure to three stories will limit the impact of multi-mode effects for most buildings.

Section 1643A.7.7.

Purpose is to require Method B or CBC methodologies for existing buildings in which the gravity and lateral force resisting systems are constructed of unreinforced masonry.

Method A requires elements to have the capacity to resist actual seismic forces (for an R approximating 1.0 to 1.5) through the application of an elemental force factor, β , to account for the ductility, or lack thereof, of the existing elements. This method does not replicate actual building response to the seismic event, and its use is therefore restricted.

Use of the CBC, in coordination with Section 1643A.14, requires a complete new gravity and lateral structural system for compliance. The techniques in Method B are based on building response when subjected to seismic ground motion, and are likewise subject to the requirements of section 1643A.14.

Sections 1643A.8.1,1643A.8.2 and 1643A.8.3.

Sections 1643A.8.1 and 1643A.8.2 are not adopted by DSA. Section 1643A.8.3 added to define the Seismic Hazard Factor, H, for application of Method A for the rehabilitation of public schools in coordination with Section 1643A.7.3 above.

Seismic Hazard Factor, H, has been defined by DSA as 1.2, to establish force levels appropriate for protection of life and property. H has been selected as 1.2, rather than 1.0, to account for variability in determination of β factors through interpolation of values listed in the regulations.

Section 1643A.9 Capacity Requirements.

Purpose is to require retrofit for any element that lacks capacity to resist the structural demand due to any reason, and amends exceptions as appropriate for public schools. Exception 2 has been amended to clarify application to Method A and CBC; Method B provisions account for capacity requirements. Exception 3 has not been adopted by DSA.

The amendment prescribes requirements for repair of damaged or deteriorated elements, in addition to prescribing required retrofit of elements with deficient strength or ductility. Exception 3 has been eliminated since all elements of a rehabilitated school building shall meet the capacity requirements applicable to new school construction.

Sections 1643A.10 and 1643A.10.1.

Section 1643A.10 not adopted by DSA. Section 1643A.10.1 added to define detailing and capacity requirements for new or retrofitted elements for rehabilitation of public schools.

Current provisions are clarified with regard to requirements for retrofit of existing elements. The exceptions further define DSA acceptance of alternative standards in lieu of CBC provisions.

Section 1643A.11 Deformation Compatibility.

Purpose is to clarify that all elements activated in response to seismic ground motion shall be evaluated and designed for combined gravity and lateral loads and the associated lateral drifts. Current provisions lack specificity for combined effects.

Section 1643A.12 Structural Observation.

Section and all subsections not adopted by DSA. Requirements for structural observation of public schools have been defined in Section 1640A.5.1 as they apply to rehabilitation of public schools.

Section 1644A.9.2.3.1

Editorial amendment. Reference for DSA/SS in this Section is incorrect, as the provision is promulgated by BSC, DSA (for state-owned buildings, not public schools).

Section 1643A.14 Unreinforced Masonry.

Purpose is to define, for all evaluation and design methods applicable to rehabilitation of public schools, that unreinforced masonry shall not be used to resist in-plane or out-of-plane seismic forces or superimposed gravity loads.

Rationale is same as presented in Section 1643A.7.7.

Section 1643A.15 Wood Frame Buildings.

Purpose is to define acceptable materials for lateral force-resisting diaphragm and shear wall elements.

Various existing building materials, previously accepted under past model codes, have been shown in recent testing programs to exhibit non-predictable or non-ductile behavior, including straight lumber sheathing, plaster, gypsum wallboard, etc. DSA shall restrict lateral force resisting elements to diagonal lumber and structural panel sheathing in which seismic performance can be best predicted.

SECTION 1644. METHOD A

Sections 1644A.3.1 and 1644A.3.1.1.

Purpose is to clarify R-values for existing structural systems for which the R-values in the existing provisions are lower than the R-values indicated in the existing Section language.

R-values for public schools should be representative of the actual structural system and not be capped.

Section 1644A.9.2.3.1

Editorial amendment. Reference for DSA/SS in this Section is incorrect, and should be to BSA, DSA (for state-owned buildings, not public schools).

Section 1644A.9.2.3.3.

Purpose is to add a section applicable to Method A for rehabilitation of public schools to define qualification of β equal to 1.0 for columns.

Proposed amendment references the most current nationally-recognized publications, incorporating latest knowledge relating to system and material performance, strength and ductility.

Section 1644A.10.4 Story drift limits.

DSA does not adopt the Exception. Protection of life and property requires that limits to story drift be established. Current model code drift limitations have been determined to be appropriate for a structure subjected to maximum credible seismic ground motions.

Section 1644A.13.1.1.

Section not adopted by DSA. Section 1644A.13.1.2.1 added to coordinate provisions with DSA β -value requirements. Editorial amendment - reference for DSA/SS in this Section applies to BSA, DSA (for state-owned buildings, not public schools).

SECTION 1645. PROCEDURES FOR THE CLASSIFICATION OF ELEMENTS INTO THE DUCTILE, LIMITED-DUCTILE AND NONDUCTILE CATEGORIES

Section 1645A.3 Reinforced Concrete.

Sections 1645A.3.1.1 and 1645A.3.1.1.1.

Section 1645A.3.1.1 not adopted by DSA. Section 1645A.3.1.1.1 added to amend current language of Section 1645A.3.1.1 to 1985 or later edition of UBC for reinforced concrete frame elements.

The 1985 edition introduces the ductile detailing provisions consistent with current model code requirements.

Section 1645A.3.1.2.

Purpose is to amend current language to reference the UBC provisions, rather than the CBC provisions for rehabilitation of public schools.

DSA does not adopt Section 1921A.8 in the CBC for new construction. Section 1921.8 in the UBC contains detailing requirements appropriate for establishment of β -values of existing elements.

Section 1645A.3.2.1 and 1645A.3.2.1.1.

Section 1645A.3.2.1 not adopted by DSA. Section 1645A.3.2.1.1 added to amend current language to 1985 or later edition of UBC for concrete shear walls and diaphragms.

The 1985 edition introduces the design and detailing provisions consistent with current model code requirements.

Section 1645 Masonry.

Section 1645A.4.1.

Purpose is to provide reference to Section 2107A.1.3 for "ductile" classification of masonry.

Section 2107A.1.3 contains minimum dimensional requirements for masonry elements which are appropriate to meet the performance objectives for public school construction.

Sections 1645A.4.4, 1645A.4.5 and 1645A.4.6.

Sections not adopted by DSA.

Sections 1645A.4.4 and 1645A.4.5 refer to UCBC provisions which have not been adopted by DSA. Section 1645A.4.6 refers to inspection requirements which have been defined in Section 1650A for data collection for rehabilitation of public schools.

Section 1645A.5 Structural Steel.

Section 1645A.5.1.

Section amended to include references to most current publications incorporating latest knowledge of welded steel moment frame system and material performance.

Sections 1645A.5.1.1 and 1645A.5.1.1.1.

Section 1645A.5.1.1 not adopted by DSA. Section 1645A.5.1.1.1 added to require compliance with current CBC provisions to be classified as ductile.

Current CBC provisions represent the most current knowledge relating to system and material detailing to ensure performance, strength and ductility of frame elements.

Sections 1645A.5.1.2 and 1645A.5.1.2.1.

Section 1645A.5.1.2 not adopted by DSA. Section 1645A.5.1.2.1 added to include reference to FEMA 352 procedures for inspection and evaluation of existing welded connections. Subsection 3 amends current language to potentially increase the maximum β -value from 2 to 3.

The proposed amendment updates current language from FEMA 267 to FEMA 352. Raising the β -value from 2 to 3 is more consistent with limited-ductile systems throughout Method A provisions, and is appropriate to achieve the maximum seismic force ($R = 1.0$ to 1.5) associated with the design earthquake.

Section 1645A.6. Wood and Other Sheathing Materials.

Section 1645A.6.1.

DSA does not adopt the Exception to remain consistent with DSA Section 1643A.15 for wood framed buildings.

Section 1645A.8 Nonstructural Components and Systems.

Purpose is to provide provisions for establishing β -values for nonstructural components and systems for application of Method A to rehabilitation of public schools.

The current provisions for state-owned buildings are insufficient, and the OSHPD provisions are specific for hospital and acute care facilities. The proposed amendment is required for application to public schools.

SECTION 1646A – Detailed Systems Design Requirements

Sections 1646A.1.3.1, 1646A.1.3.1.1, 1646A.1.3.2, and 1646A.1.3.2.1

Sections 1646A.1.3.1 and 1646A.1.3.2 are not adopted by DSA. Sections 1646A.1.3.1.1 and 1646A.1.3.2.1 have been added to amend current terminology in 1646A.1.3.1 and 1646A.1.3.2, respectively, to terminology consistent with DSA requirements for limited ductile and non-ductile elements.

The terminology “semi-ductile” and “brittle” have not been defined in current provisions, and their application is consistent respectively with the definition of “limited-ductile” and “non-ductile” used elsewhere in Division VI-R.

Section 1646A.1.4.

Subsections 1 and 2 are amended for editorial correction to CBC provisions.

Section 1646A.2.10 Framing below the base.

Purpose is to require retrofit to comply with current CBC provisions.

Intermediate Moment Resisting Frames (IMRF) have not been accepted by DSA for new school construction, and the reference has been removed in the CBC section. This section is applicable to rehabilitation of existing buildings for public school use.

Sections 1646A.2.11 and 1646A.2.11.1 Building separations.

Section 1646A.2.11 not adopted by DSA. Section 1646A.2.11.1 has been added to amend current provisions to require calculation of the clearance (seismic separation) between adjacent buildings in accordance with current CBC requirements, and to define when seismic separation must be considered in the analysis of the rehabilitation design.

Calculation of the required seismic separation of rehabilitated buildings (for school use) with adjacent buildings shall be consistent with current model code requirements for new buildings.

SECTION 1647A – NONBUILDING STRUCTURES

Sections 1647A.1 and 1647A.1.1 General.

Section 1647A.1 is not adopted by DSA. Section 1647A.1.1 has been added to require the design and retrofit of non-building structures to comply with the provisions of these regulations for rehabilitation of buildings for school use, in accordance with Part 1 of Title 24.

Part 1, Title 24, CCR requires non-building structures on public school sites to comply with Title 24 requirements when the non-building structure may be hazardous to students and teachers performing school functions.

SECTION 1648A – METHOD B

Sections 1648A.1 and 1648A.1.1.

Section 1648A.1 is not adopted by DSA. Section 1648A.1.1 is added to define the statutory performance objective of protection of life and property for public schools.

The existing provision was based on a performance objective of life-safety, which is below that required for new or rehabilitated public schools.

Section 1648A.1.2.

Purpose is to define the evaluation and design methodologies for Method B using performance based design engineering. FEMA 356 shall be used as the reference document, and provides four basic methodologies. Other nationally recognized methodologies may be used, based on applicability to the structure when accepted by DSA. For application of the procedures of FEMA 356, the acceptance criteria for structural and nonstructural elements have been defined as a

factor to the tabulated values published in the document for the various methods.

FEMA 356 is the most current document available providing the latest in performance based design technologies for evaluation and design of existing buildings. The performance objective for public schools can be achieved through criteria selected within the methodologies. Other methodologies may become available that are appropriate for specific applications, and DSA will consider their appropriateness upon request.

In selecting FEMA 356 as the reference document, DSA consulted several structural engineers experienced with using FEMA 356 and other recognized publications in building rehabilitation projects. In FEMA 356 procedures, protection of life and property as a performance objective lies in the damage control range between life safety and immediate occupancy.

Sections 1648A.2 and 1648A.2a.

Section 1648A.2 is not adopted by DSA. Section 1648A.2a has been added to be consistent with other proposed amendments within Division VI-R for public schools.

Section 1648A.2b.

Purpose of this section is to establish restrictions for wood frame and light-metal frame buildings when utilizing Method B methodologies.

Non-linear procedures are not adequately developed within FEMA 356 to provide greater accuracy than linear procedures. The restrictions in Section 1643A.15 shall also apply to FEMA 356 evaluation and design procedures.

Section 1648A.2.1 and Section 1648A.2.1a.

Section 1648A.2.1 not adopted by DSA. Section 1648A.2.1a added to incorporate the following subsections for DSA/SS.

Provisions of Section 1648A.2.1 are provided in Sections 1648A.1.2, 1649A and 1640A.8. Section 1648A.2.1a reinstates the last sentence of Section 1648A.2.1 for application to public schools.

Section 1648A.2.2.1.1.

Purpose of this section is to establish the ground motion characterization to be used for the rehabilitation design, based on FEMA 356 provisions.

Section 1648A.2.2.2.1.

Purpose of this section is to establish the acceleration response spectra to be used in the general procedure for the rehabilitation design of public schools, based on FEMA 356 provisions.

Section 1648A.2.2.3.1.

Purpose of this section is to establish acceleration response spectra to be used in the site-specific procedure for the rehabilitation design, based on FEMA 356 provisions.

Section 1648A.2.3.

Purpose of this section is to amend current language for DSA requirements to eliminate the reference to the exception in Section 1648A.1, as this is not intended to be adopted by DSA.

Section 1648A.3.

Section is not adopted by DSA. The methods of analysis listed in this section are essentially the methods incorporated into FEMA 356 methodologies, and would be duplicative with FEMA 356 references elsewhere in the proposed amendments.

SECTION 1649A – PEER REVIEW REQUIREMENTS

Section 1649A.1 General.

Purpose is to specify when the owner must employ more than one peer reviewer on a specific project. On complex projects, a peer review team with multiple specialized and demonstrated expertises may be required.

Sections 1649A.2 and 1649A.2.1 Timing of Independent Review

Section 1649A.2 is not adopted by DSA. Section 1649A.2.1 has been added to correlate the requirements of this section with Section 1640A.8.

Requirements for the owner's peer reviewer have been defined in the Procedures of Section 1640A.8.

Sections 1649A.4 and 1649A.4.1 Scope of Review.

Section 1649A.4 is not adopted by DSA. Section 1649A.4.1 has been added to amend existing language of Section 1649A.4 to correlate the scope of the peer review with the DSA requirements and procedures defined in these regulations for rehabilitation of public school buildings.

Sections 1649A.5 and 1649A.5.1 Reports.

Section 1649A.5 is not adopted by DSA. Section 1649A.5.1 has been added to amend existing language of Section 1649A.5 to correlate the written reports with the DSA requirements and procedures defined in these regulations for rehabilitation of public school buildings.

Sections 1649A.6 and 1649A.6.1 Responses and Corrective Actions.

Section 1649A.6 is not adopted by DSA. Section 1649A.6.1 has been added to require the project structural engineer to respond to items identified in the peer reviewer's report(s), and prepare corrective actions as appropriate.

The requirement for response and corrective action must be defined in the regulations in order to be enforceable.

Section 1649A.7 Resolution of Conflicts.

Purpose of this section is to define a process for resolution of conflicts between the owner's peer reviewer and the project design professionals.

DSA has the jurisdictional authority for ensuring compliance with the CBC, therefore, resolution of conflicts shall be supervised by DSA. DSA may retain peer review consultants to provide additional expertise as appropriate to assist in issue resolution.

SECTION 1650A - DATA COLLECTION.

Purpose of this section and associated subsections is to provide requirements for data collection of the existing construction for rehabilitation of existing non-conforming buildings to public school buildings. The procedures provide for collection of available building and site data, including preparation of as-built drawings; condition assessment of the existing elements and materials; and establishment of a program for material testing.

Data collection requirements for a specific project shall be approved by DSA and shall follow the FEMA 356 provisions for a “comprehensive” data collection program, defining the minimum frequency, location and number of testing samples to be performed. The data collection program shall be directed and implementation observed by the project structural engineer or the design professional in general responsible charge of design.

TECHNICAL, THEORETICAL, AND EMPIRICAL STUDY, REPORT, OR SIMILAR DOCUMENTS.

The following documents were utilized in the development of the proposed regulations, and certain documents are referenced within the proposed amendments.

- FEMA 356 Prestandard and Commentary for the Seismic Rehabilitation of Buildings
- FEMA 357 Global Topics Report on the Prestandard and Commentary for the Seismic Rehabilitation of Buildings
- FEMA 273 NEHRP Guidelines for the Seismic Rehabilitation of Buildings
- FEMA 274 NEHRP Commentary on the Guidelines for the Seismic Rehabilitation of Buildings
- ASCE 31-02 Seismic Evaluation of Existing Buildings
- Guidelines for Seismic Retrofit of Existing Buildings
- FEMA 350 Steel Moment Frame Buildings: Design Criteria for New Buildings
- FEMA 351 Steel Moment Frame Buildings: Evaluation and Upgrade Criteria for Existing Buildings
- FEMA 352 Steel Moment Frame Buildings: Post-Earthquake Evaluation and Repair Criteria
- FEMA 353 Steel Moment Frame Buildings: Specifications and Quality Assurance Guidelines
- ATC 40 Seismic Evaluation and Retrofit of Concrete Buildings
- SEI/ASCE 11-99 ASCE Standard, Guideline for Structural Condition Assessment of Existing Buildings
- 1999 SEAOC Recommended Lateral Force Requirements and Commentary

CONSIDERATION OF REASONABLE ALTERNATIVES.

DSA could not identify nor determine any reasonable alternatives to the proposed regulations.

REASONABLE ALTERNATIVES THE AGENCY HAS IDENTIFIED THAT WOULD LESSEN ANY ADVERSE IMPACT ON SMALL BUSINESS.

The Division of the State Architect could not identify any reasonable alternatives to the proposed regulations that would lessen any adverse impact on small business, and has not identified any adverse impact to small business.

FACTS, EVIDENCE, DOCUMENTS, TESTIMONY, OR OTHER EVIDENCE OF NO SIGNIFICANT ADVERSE ECONOMIC IMPACT ON BUSINESS.

The proposed regulations pertain to voluntary rehabilitation of existing buildings, so no adverse effect on business (including economic impact) has been identified, at this time, to occur as a result of these regulations.

DUPLICATION OR CONFLICTS WITH FEDERAL REGULATIONS.

DSA is not aware of any duplication or conflict with federal regulations. The proposed regulations utilize, in part, nationally-recognized standards such as FEMA 356 - *Pre-Standard and Commentary for Seismic Rehabilitation of Buildings*.