DSA IR EB-1

EXISTING BUILDING REGULATIONS OVERVIEW: 2025 CAC

Disciplines: Structural

History: Revised 06/20/25 under 2025 CAC
Issued 03/22/23 under 2022 CAC

Division of the State Architect (DSA) documents referenced within this publication are available on the DSA Forms or DSA Publications webpages.

PURPOSE

This Interpretation of Regulations (IR) clarifies and summarizes regulatory requirements for proposed construction work in existing buildings under DSA jurisdiction. Regulations pertaining to existing buildings under DSA jurisdiction are located in the California Administrative Code (CAC), the California Building Code (CBC), and the California Existing Building Code (CEBC). This summation intends to provide the reader an organized overview of the different project types that occur in existing buildings and an explanation of the relationships between the regulations in these various codes.

SCOPE

This IR is applicable to the design and construction of work proposed in existing buildings subject to DSA jurisdiction, including existing school buildings and existing nonconforming buildings being converted to use as school buildings.

This IR is not applicable to the design and construction of new school buildings.

BACKGROUND

Regulations in Chapter 4 of the CAC serve as a road map for proposed work in existing buildings under DSA jurisdiction. This includes requirements for rehabilitations and additions in CAC Section 4-306, conversion of existing nonconforming buildings to use as school buildings in CAC Section 4-307, and reconstruction and alteration projects in CAC Section 4-309. The CAC refers to the CEBC Sections 317 through 323 for the evaluation and retrofit of existing buildings for seismic force effects. The provisions contained in these CEBC sections originated in Chapter 34 of the 2013 CBC (and earlier editions); they migrated to the CEBC starting with the 2016 edition. The current CEBC adopts the American Society of Civil Engineers (ASCE) Standard 41: Seismic Evaluation and Retrofit of Existing Buildings (ASCE 41) for performance-based seismic design requirements.

1. GENERAL

1.1 Project Types

Projects in existing buildings under DSA jurisdiction are generally categorized into one of five categories as defined by CAC Section 4-314. These five categories are correspondingly reflected on the form *DSA 1: Application for Approval of Plans and Specifications*. In accordance with the DSA 1, the project type is assigned as a building specific designation; multiple project types may occur in a single application. The categories of work in existing buildings are as follows:

1.1.1 Addition: Refer to Section 4 below.

1.1.2 Alteration: Refer to Section 2 below.

1.1.3 Reconstruction: Refer to Section 5 below.

1.1.4 Rehabilitation: Refer to Section 3 below.

1.1.5 Relocation: Refer to *IR 16-1: Relocatable Buildings and Modular Elevator Towers*, and *IR A-1: Approval for Temporary School Use of DSA Approved Relocatable Buildings, and* Policy (*PL) 07-02: Over-the-Counter Review of Projects*.

1.2 Construction Cost

Work proposed in existing buildings varies broadly in scope. The CAC regulations establish construction cost thresholds below which alteration and reconstruction projects do not require DSA review and approval. As defined by the regulations, these cost thresholds are adjusted annually. Refer to *IR A-22: Construction Projects and Items Exempt from DSA Review* for additional information, including requirements for exempt projects and the most current cost threshold values. Construction cost thresholds are established by the CAC as follows:

1.2.1 The baseline cost threshold for alteration and reconstruction projects is defined in CAC Section 4-308.

1.2.2 A conditional cost threshold for alteration and reconstruction projects is defined in CAC Section 4-309(a). To invoke this second (and higher) threshold the regulation requires documentation submitted to DSA by the design professional in general responsible charge, a California licensed structural engineer, and a DSA certified project inspector.

Note: Regulations exempting DSA review and approval based on construction cost do not apply to addition, rehabilitation, or relocation projects. All projects of these type shall be submitted to DSA for review and approval, regardless of construction cost. Refer to Section 4.1 below for common project types categorized as additions.

1.3 Other Structures

As described in CAC Section 4-310, school districts may own and operate existing buildings or structures that are not governed by the Field Act.

1.3.1 Buildings of this type are required to be identified with appropriate signage.

1.3.2 The school district retains responsibility for code compliance, which includes employing appropriate design professionals when performing work in these existing buildings. However, Field Act regulations are not applicable to these existing buildings, except when Section 1.3.3 below applies.

1.3.3 Should the school district propose repurposing an exempt building per CAC Section 4-310 for use as a school building, a rehabilitation is required per Section 3.2.1 below. Refer to *IR EB-2: Conversion of Nonconforming Building* for additional information.

1.4 Maintenance

In accordance with CAC Section 4-315(a), maintenance work does not require DSA review and approval. Refer to CAC Section 4-314 for the definition of maintenance and see IR A-22 for additional information.

1.5 Demolition

The razing or destruction of a school building falls into one of two cases: complete demolition or partial demolition. Both cases are addressed in CAC Section 4-312.

1.5.1 Complete demolition of an existing school building need not be submitted to DSA unless it is performed as part of a broader project. The school district shall inform DSA when it demolishes an existing school building.

1.5.2 Partial demolition of an existing school building requires DSA approval. Refer to *IR A-32: Partial Demolition* for additional information.

1.6 Examination

An existing building may be examined by DSA or a qualified design professional.

1.6.1 In accordance with CAC Section 4-345(a), when requested DSA will examine and report on the structural condition of any existing school building. This examination may be requested by the school district's governing board or 10 percent of the parents of students enrolled in the district who submit a form *DSA 2: Application for Evaluation of Existing School Building*.

1.6.2 If a school district retains a structural engineer to examine and report on an existing school building per CAC Section 4-345(b), the structural engineer shall consult DSA for guidance concerning the criteria by which the building's structural condition is measured.

1.7 Certification Status

New work in an existing school building subject to a past uncertified project will not be approved until the certification issue is resolved. Refer to *IR A-20: New Projects Associated with Existing Uncertified Projects* for additional information.

1.8 Flood Hazard

Proposed work in an existing building located in a flood hazard zone shall comply with *Procedure* (*PR) 14-01: Flood Design and Project Submittal Requirements*.

2. ALTERATIONS

Projects in existing school buildings are categorized as alterations based on the definition found in CAC Section 4-314. Alterations thus defined are effectively any project in an existing building that is not otherwise defined as an addition, reconstruction, rehabilitation, or relocation. If any of the threshold conditions contained in CAC Section 4-309(c) are exceeded; however, the project is categorized as a rehabilitation and not an alteration. Refer to *IR EB-4: Rehabilitation Required by Cost* and *IR EB-5: Rehabilitation Required by Scope* for additional information on the rehabilitation triggering thresholds of CAC Section 4-309(c).

2.1 Local Evaluation and Strengthening

When a rehabilitation is not required of an existing school building by CAC Section 4-309(c), the impact of the proposed alteration work is considered locally. This local approach requires the evaluation and associated strengthening of those existing elements or components impacted by the work as defined by the regulations in CAC Section 4-309(a). When an element or component is determined to be affected by the alteration work, it shall be evaluated (and strengthened when required) for all applicable actions (i.e., axial, moment, shear, etc.), including its connections to the broader structural system.

2.2 Gravity Load Carrying Elements

For structural elements carrying gravity load, CAC Section 4-309(a) requires compliance with CEBC Section 503.3. When the alteration causes an increase in any gravity load case (not load combination) of more than five percent or a decrease in structural capacity, compliance with the CBC is required. Compliance can be achieved by demonstrating the adequacy of the existing element, strengthening the existing element, or replacing the existing element. Refer to Section 6.1 below for the capacity of existing wood elements. Section 503.3 is the only portion of CEBC Chapter 5 adopted by DSA, and Exception #2 is not permitted in this adoption.

2.3 Lateral Force Resisting System

For structural components of the lateral force resisting system, CAC Section 4-309(a) directly defines the conditions requiring evaluation and strengthening. When the alteration increases the seismic or wind force to the component by more than 10 percent or reduces the strength or

stiffness of the component by more than five percent, the component shall be made to comply with currently effective regulations.

2.3.1 When considering the seismic or wind force to a given component, the determination of increased force is limited to that resulting from the proposed alteration work itself. Revisions to the regulations since the time of the existing building's design and construction are likely to have changed the code-prescribed seismic and wind forces; however, this provision does not intend to quantify those changes. The force comparison should be made with and without the proposed alteration work using the same seismic base shear and wind pressures.

2.3.2 When considering the seismic and wind forces to a given component, the determination of increased force shall account for the combined effect of all changes made since the original construction. This evaluation of cumulative change requires the increase in force resulting from the proposed alteration be added to any increase in force resulting from all past work in the existing building.

2.3.3 When considering the capacity of a given component, the determination of decreased strength or stiffness shall account for the combined effect of all changes made since the original construction. This evaluation of cumulative change requires the decrease in strength (or stiffness) resulting from the proposed alteration be added to any decrease in strength (or stiffness) resulting from all past work in the existing building. Past increases in the component strength or stiffness can be considered as part of the original construction for this comparison.

2.3.4 When considering components for which the alteration work results in both an increase in seismic or wind force and a decrease in strength or stiffness, the combined effect shall be accounted for. When the combined effect of the force increase and capacity decrease exceeds 10 percent, the component shall demonstrate compliance with the CBC. For example, when the seismic force to a component is increased by eight percent and its strength (or stiffness) is decreased by four percent, the combined effect (1.080 / 0.960 = 1.125) of 12.5 percent exceeds 10 percent and thus warrants demonstration of compliance. A decrease in the seismic or wind force to the component shall be neglected in consideration of the combined effect.

2.4 Example: Alteration Affecting a Shear Wall Line

Figures 2.1 and 2.2 illustrate an existing line of lateral resistance that is impacted by the introduction of a new opening into a shear wall. In this case, the opening (in combination with all other cumulative changes) does not reduce the strength or stiffness of the story by more than 10 percent and, therefore, does not require a rehabilitation in accordance with CAC Section 4-309(c), Item 2B. However, the local impacts of the alteration must be addressed in accordance with CAC 4-309(a) as described in this section. Figure 2.1 represents the existing geometry of the line, while Figure 2.2 represents the wall line with the proposed door opening.

2.4.1 The new door opening reduces the strength (and stiffness) of the shear wall between grid lines C-D by more than 5 percent; therefore, this shear wall must demonstrate compliance or be strengthened to comply with the CBC and CEBC.

2.4.2 The new door opening causes the seismic (and wind) forces to the shear walls between grid lines A-B and E-F to increase more than 10 percent; therefore, the shear walls must demonstrate compliance or be strengthened to comply with the CBC and CEBC.

2.4.3 The new door opening causes changes in the collector force demand along the line. In some locations, the force is increased; in other locations it is reduced. Because the force increase exceeds 10 percent in some locations, the collector must be evaluated and demonstrate compliance or be strengthened to comply with the CBC and CEBC.

2.4.4 The new door opening causes changes in the bending moment and shear force demand in the footing along the line. In some locations, these actions are increased; in other locations

they are reduced; and in some locations they have changed direction: i.e., change from negative moment to positive bending moments and vice versa. Because the force increase exceeds 10 percent in some locations, the footing must be evaluated and demonstrate compliance or be strengthened to comply with the CBC and CEBC.

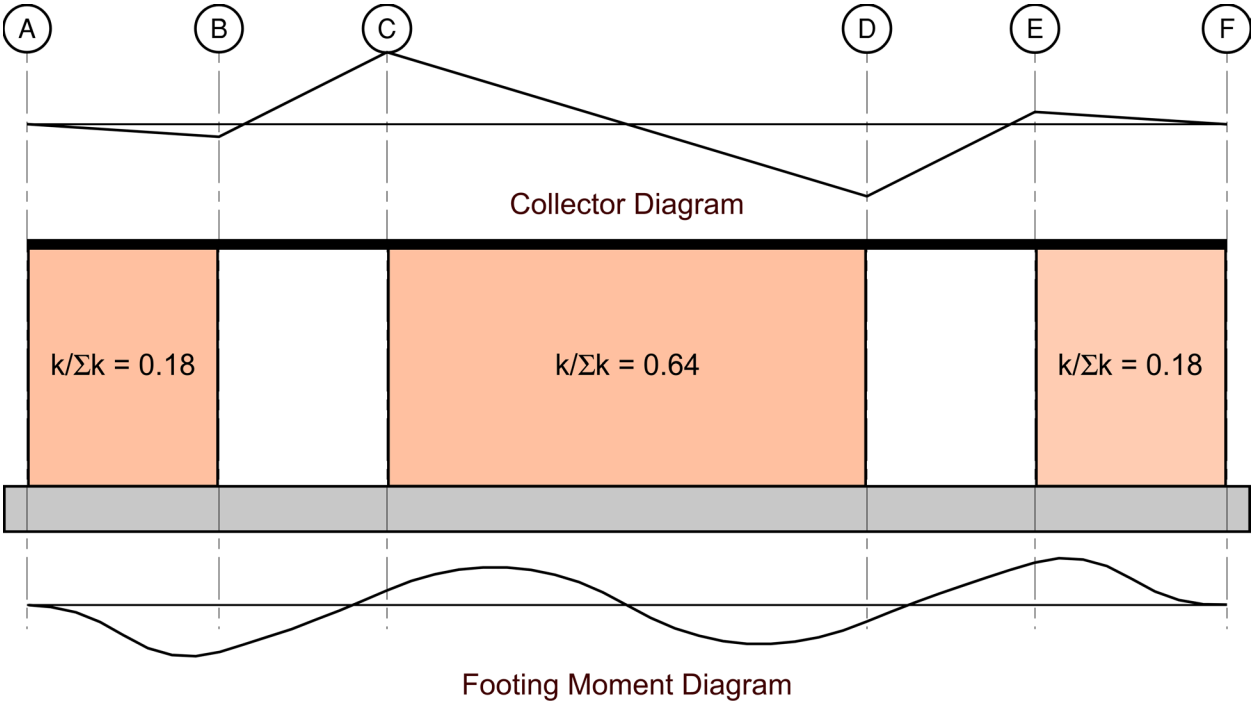

Figure 2.1: Original Shear Wall Elevation

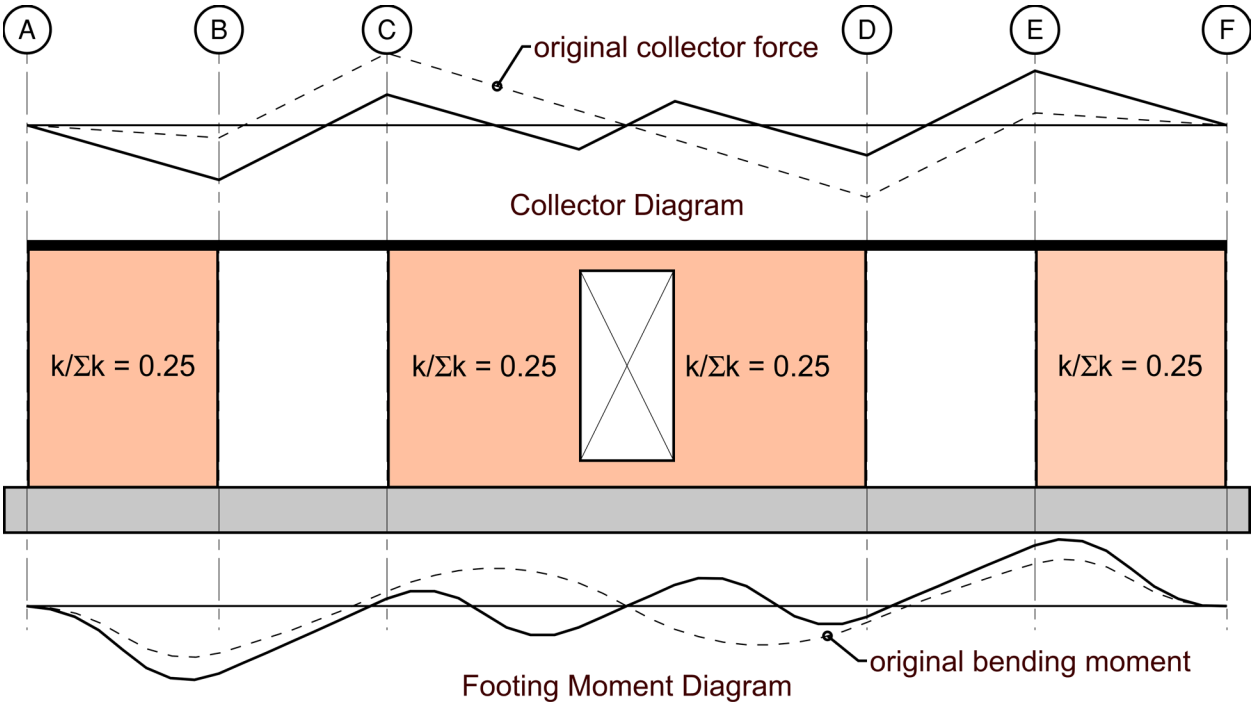

Figure 2.2: Shear Wall Elevation after Alteration

2.4.5 Local strengthening of the shear walls as a result of the evaluation described above could change the relative wall stiffness, and as a result, the distribution of lateral forces

including collector and footing actions. Compliance of the retrofit must, of course, be based on the force distribution of the final proposed design.

2.5 Nonstructural Components

In accordance with CAC Section 4-309(b), nonstructural components affected by the proposed alteration work shall comply with (or be retrofitted to comply with) the anchorage and bracing requirements of the CBC.

2.6 Voluntary Seismic Strengthening

In accordance with CAC Section 4-309(d), an alteration project may propose work designed to voluntarily improve the seismic performance of the existing building when not mandated by the regulations. Voluntary modification to the lateral force resisting system shall comply with CEBC Section 319.12. Refer to *IR EB-6: Voluntary Seismic Upgrade* for additional information.

3. REHABILITATION

Projects are categorized as rehabilitations when required by the CAC regulations described in Section 3.2 below. As defined by CAC Section 4-314, a rehabilitation brings the existing building "into conformance with the safety standards of the currently effective regulations, Parts 2, 3, 4, 5, 6, 8, 9, 10, 11 and 12, Title 24, C.C.R." Prior to submission of a rehabilitation project, the applicant shall schedule and participate in a preapplication meeting with the DSA regional office having jurisdiction over the subject campus. Refer to IR EB-2 Section 1.5 for a list of preapplication meeting request forms.

3.1 Global Evaluation and Strengthening

When a rehabilitation is required of an existing building by CAC Section 4-307 or 4-309(c) or is undertaken at the discretion of the school district, the building systems shall be considered globally. The global approach requires consideration of all aspects of the building's structural systems and load paths regardless of whether the existing elements or components are directly impacted by the proposed work.

3.1.1 A rehabilitation does not exclude the gravity force resisting system from compliance with current safety standards. However, in many cases a rehabilitation project does not require strengthening of the gravity force resisting system due to the constancy of the current safety standards with those in place at the time of the original construction. Refer to *IR EB-3: Evaluation and Design Criteria Report,* Section 2 for additional information.

3.1.2 A rehabilitation requires the evaluation and associated strengthening of the entire lateral force resisting system. All elements, components, and connections of the system shall be evaluated (and strengthened when required) for all applicable actions (i.e., axial, moment, shear, etc.) at a level of detail and completeness equivalent to that provided for the design of a new building. Refer to Section 3.4 below concerning the seismic design criteria and IR EB-3 Sections 3 and 4 for additional information.

3.2 Rehabilitation Types

The CAC requires the rehabilitation of an existing building in either of the two cases described in this section.

3.2.1 When an existing nonconforming building is converted to use as a school building, CAC Section 4-307 requires a rehabilitation. A nonconforming building in this context refers to any existing building whose design was not approved and whose construction was not overseen by DSA under the authority of the Field Act or the alternative community college provisions. Refer to IR EB-2 for additional information.

3.2.2 When work proposed to an existing school building exceeds the threshold conditions defined in CAC Section 4-309(c), that regulation requires a rehabilitation. Refer to IR EB-4 and IR EB-5 for additional information.

3.3 Evaluation and Design Criteria Report

When a rehabilitation is required by the regulations, CAC Sections 4-306 and 4-307 require an Evaluation and Design Criteria Report (EDCR) be prepared by the school district (i.e., the design team retained by the district) and approved by DSA. Refer to IR EB-3 for additional information on the EDCR. In cases where a school district elects to perform a rehabilitation to an existing building when it is not mandated by the regulations, the school district may contact the DSA regional office with jurisdiction over the campus to determine if an EDCR will be required.

3.4 Seismic Design Criteria

CAC Sections 4-306 and 4-307 require that the seismic evaluation and retrofit design portion of a rehabilitation project comply with CEBC Sections 317 through 323. In these sections, the CEBC provides the option between two sets of seismic design criteria for compliance, as described in Sections 3.4.1 and 3.4.2 below. In rare instances when the conditions described therein are met, the seismic design criteria may be in accordance with Section 3.4.3 below.

3.4.1 In accordance with CEBC Section 317.7 and Table 317.5 (footnote 2) the seismic evaluation and retrofit design portion of a rehabilitation may be based on the prescriptive seismic design methodology as would be required of a new building. This seismic design criteria requires compliance with the CBC and its adoption of ASCE Standard 7: Minimum Design Loads and Associated Criteria for Buildings and Other Structures (ASCE 7).

3.4.1.1 If the existing construction utilizes a seismic force resisting system that is prohibited by the CBC, selection of the prescriptive criteria will require the rehabilitation to provide a new, compliant seismic force resisting system.

Exception: The diagonally sheathed shear wall prohibition of CBC Section 2301.1.5, Item 7 does not apply to existing buildings. Existing diagonally sheathed shear walls are permitted per CEBC Section 319.1.5. When the prescriptive seismic design methodology is used, the rehabilitation shall comply with all provisions in the reference standards, including utilizing the R-factor associated with “Light-frame walls with shear panels of all other materials” and the limitation of Seismic Design Category D with a height limit of 35-feet in accordance with ASCE 7 Table 12.2-1. Detailing requirements are given in American Wood Council (AWC) Special Design Provisions for Wind and Seismic (SDPWS), Sections 4.3.7.7 and 4.3.7.8.

3.4.1.2 Where details of the existing construction do not comply with the prescriptive requirements of the CBC and its adopted standards, selection of the prescriptive criteria will require the rehabilitation to bring such details into compliance.

Exception: The prohibition of the anchor bolt plate washer exception in CBC Section 2301.1.5, Item 3 does not apply to existing buildings. When the prescriptive seismic design methodology is used, all conditions in the Exception of SDPWS Section 4.3.6.4.3 shall be met to permit the use of standard cut washers in lieu of plate washers. These conditions include limits on wall design methodology, anchor bolt design, overturning resistance, aspect ratio, and shear capacity.

3.4.2 In accordance with CEBC Section 317.5 and Table 317.5 the seismic evaluation and retrofit design portion of a rehabilitation may be based on a performance-based seismic design methodology. This seismic design criteria requires compliance with the provisions of a Tier 3 systematic evaluation and retrofit in accordance with ASCE 41.

3.4.3 When the following conditions are met, CEBC Section 319.1, Exception #2 permits the seismic evaluation and retrofit design portion of a rehabilitation to be based on the CBC edition under which it was originally designed. The rehabilitation design shall comply with Seismic Design Category D or higher and Chapters 16A, 17A, 18A, 19A, 21A, and 22A of the CBC used in the original design.

3.4.3.1 Rehabilitation is performed for the purpose described in Section 3.2.1 above.

3.4.3.2 Existing building was designed and constructed under the 2019 CBC or 2022 CBC.

3.5 Data Collection Program

In accordance with CEBC Section 319.2, rehabilitation projects require data collection as defined by ASCE 41. Data collection consists of both a material testing program and a condition assessment program. Refer to IR EB-3 Sections 6 and 7 for additional information on the material testing and condition assessment programs, respectively.

4. ADDITIONS

Projects are categorized as additions based on the definition found in CAC Section 4-314. Additions may be “structurally attached” or “structurally detached” to the existing building to which they are added. In accordance with CAC Section 4-306, all “new construction work that is part of an addition project shall comply with currently effective regulations”. If any of the threshold conditions contained in CAC Section 4-309(c) are exceeded, a rehabilitation of the existing building associated with the addition is required. Refer to IR EB-4 and IR EB-5 for additional information on the rehabilitation triggering thresholds of CAC Section 4-309(c).

4.1 Common Project Types

The following project types common to existing school buildings are categorized as additions for the purposes of submission to DSA and application of the regulations.

4.1.1 Installation of new photovoltaic (PV) solar panels on the roof of an existing building as described in IR A-22 Section 4.4.1.

4.1.2 Installation of new cellular equipment (including antenna) on poles or towers 35-feet tall or taller as described in IR A-22 Section 4.4.2.

4.2 Structurally Attached Additions

When a proposed addition is structurally attached, the existing building and the addition shall be analyzed as a single, combined structure for the purposes of the evaluation and design.

4.2.1 A rehabilitation will often be required by the scope threshold requirement of CAC Section 4-309(c), Item 2A. The added seismic weight or wind load surface area of even a modest-sized addition commonly exceeds the threshold set by the regulation.

4.2.2 A rehabilitation may also be required by CAC Section 4-309(c), Item 3 as described in Section 4.3.1 below.

4.3 Structurally Detached Additions

When a proposed addition is structurally detached, the existing and addition portions of the building shall be analyzed as separate structures for the purposes of the evaluation and design.

4.3.1 Depending on the egress paths and life safety systems, a rehabilitation may be required by the threshold requirement of CAC Section 4-309(c), Item 3, which requires a rehabilitation when the addition affects the occupancy in a way that increases the Risk Category of the existing building. Refer to IR EB-5 Section 5 for the determination of the Risk Category of an existing building and examples of cases where a detached addition may require a rehabilitation.

4.3.2 Structural separation of an addition does not exempt it from the threshold requirement of CAC Section 4-309(c), Item 1. Refer to IR EB-4 Section 1.4.1 for additional information.

5. RECONSTRUCTION

Projects in existing school buildings are categorized as reconstruction based on the definition found in CAC Section 4-314. Reconstruction thus defined constitutes the repair of damage. Except for the case described in Section 5.1 below, if any of the threshold conditions contained in CAC Section 4-309(c) are exceeded, the project is categorized as a rehabilitation and not reconstruction. Refer to IR EB-4 and IR EB-5 for additional information on the rehabilitation requirements of CAC Section 4-309(c).

5.1 Damage Caused by Fire

As permitted by the Exception of CAC Section 4-309(a) and Education Code Section 17280(b), reconstruction for the purpose of repairing damage caused by fire may be completed in accordance with the original approved construction documents of the existing building. The regulations in effect at the time of the original design govern the construction; however, testing and inspection requirements of the current regulations apply to the quality assurance program.

5.2 Damage Caused by Earthquake or Wind

In accordance with CAC Section 4-309(e), when a building is damaged by an earthquake (including aftershocks) or wind event, all portions of the building associated with the damage shall be retrofitted to comply with the current regulations. Additionally, the rehabilitation requirements of CAC Section 4-309(c) apply.

5.2.1 In accordance with CAC Section 4-309(c), Item 1, the cost of a reconstruction project relative to the replacement building value shall include all required repairs. The reconstruction cost includes demolition, temporary shoring, repair of structural systems, repair of nonstructural systems, repair of finishes, and any additional removal and replacement of existing components required to access the damage or integrate the repair work with undamaged construction to remain. As described in IR EB-4 Section 1.2, reconstruction projects shall not be subdivided to avoid a rehabilitation required by cost.

5.2.2 The threshold defined by CAC Section 4-309(c), Item 2A considers the net change in effective seismic weight and wind load surface area. As such, reconstruction that matches the size, shape, and materials of the original building will generally not exceed this threshold.

5.2.3 The threshold defined by CAC Section 4-309(c), Item 2B explicitly excludes an accounting of new strengthening (i.e., repair in this case). The removal of lateral force resisting elements and connections that have been damaged by earthquake or wind are considered part of the reconstruction project. Therefore, while neglecting new repair work, the removal of damaged elements and connections will typically result in reduced story strength and stiffness. As such, when the extent of damage constitutes more than 10 percent of the strength or stiffness of the lateral force resisting system a rehabilitation will be required.

Exception: Because seismic events occur in a broad range of magnitudes and the code-based design of seismic force-resisting systems presumes some damage in a severe event, DSA may adjust the rehabilitation requirement based on an assessment of a given earthquake's magnitude and proximity and the corresponding building performance. For example, after a large magnitude earthquake with regional impact, DSA may elect to waive the EDCR or rehabilitation requirements for some buildings of a given age that performed in accordance with code-based design expectations in order to facilitate functional recovery. In no case will the requirement of CAC Section 4-309(e) be waived.

5.2.4 The threshold defined by CAC Section 4-309(c), Item 2C considers the combined effect of the proposed work. As such, reconstruction that matches the size, shape, materials, strength,

and stiffness of the original building and lateral force resisting system is typically not expected to trigger a rehabilitation by this provision. However, because the new repair work is required to comply with the current code requirements, it may not be possible for the repairs of the lateral force resisting system to match exactly the strength and stiffness of the original design. For example, compliance with the current seismic code force demands may require larger member sizes that result in repaired frames (or shear walls) with increased stiffness relative to the existing, undamaged frames (or shear walls) that are to remain. If these changes in strength or stiffness result in a prohibited structural irregularity, then a rehabilitation is required.

5.2.5 The threshold defined by CAC Section 4-309(c), Item 3, addresses occupancy changes that effect the Risk Category of the reconstructed building. As such, reconstruction that matches the size, use, and occupancy of the original building is typically not expected to trigger a rehabilitation by this provision. Refer to IR EB-5 Section 5.1 for existing building Risk Category.

5.3 Damage Caused by Snow or Flood

In accordance with CAC Section 4-309(a), when a building is damaged by snow or flood all new construction work to repair the damage shall comply with the current regulations. Additionally, the rehabilitation requirements of CAC Section 4-309(c) apply, as discussed in detail in Section 5.2 above.

5.4 Damage Caused by Exposure

In accordance with CAC Section 4-309(a), when a building is damaged by exposure to water (i.e., from sources other than a flood), moisture, or other elements all new construction work to repair the damage shall comply with the current regulations. Additionally, the rehabilitation requirements of CAC Section 4-309(c) apply, as discussed in detail in Section 5.2 above.

Exception: When light-frame wood shear walls require local repair of damage caused by water or moisture, DSA may allow sheathing replacement solely in accordance with the local structural component assessment requirements of CAC Section 4-309(a). In such cases the district should provide a full inventory of the extent of known water damage and the design team should meet with the DSA regional office with jurisdiction over the project to review this information and establish the evaluation criteria. The rehabilitation requirements of CAC Section 4-309(c), Item 1 will not be waived.

5.5 Damage Caused by Settlement

Building damage resulting from liquefaction, lateral spreading, soil densification, or other soil movement caused by an earthquake shall be treated as damage caused by the earthquake in accordance with Section 5.2 above. In accordance with CAC Section 4-309(a), when a building is damaged by subgrade settlement in the absence of an earthquake all new construction work to repair the damage shall comply with the current regulations. Additionally, the rehabilitation requirements of CAC Section 4-309(c) apply, as discussed in detail in Section 5.2 above.

5.6 Damage Caused by Unknown Sources

When damage is observed to an existing building without a clear and obvious cause, the school district is advised to retain the services of qualified design professionals to perform a forensic study and determine the root cause of the damage. Understanding the cause is important to determine the full extent of damage, inform the required repair, and assure damage does not persist after the repair. In accordance with CAC Section 4-309(a), all new construction work to repair the damage shall comply with the current regulations. Additionally, the rehabilitation requirements of CAC Section 4-309(c) apply, as discussed in detail in Section 5.2 above.

5.7 Voluntary Seismic Strengthening

In accordance with CAC Section 4-309(d), a reconstruction project may propose work designed

to voluntarily improve the seismic performance of the existing building when not mandated by the regulations. Voluntary modification to the lateral force resisting system shall comply with CEBC Section 319.12. Refer to IR EB-6 for additional information.

6. SPECIFIC CONDITIONS

6.1 Existing Wood Construction

As documented in the Structural Engineers Association of California (SEAOC) publication Gravity Design for Rooftop Solar Photovoltaic Arrays (SEAOC PV3-2019), Section 7.3 the allowable stresses of wood members published prior to the 1994 Uniform Building Code (UBC), are not sufficiently conservative and should not be used.

6.1.1 Existing wood members constructed under the 1991 and earlier editions of the UBC shall be evaluated based on allowable stresses published in the current edition of the AWC National Design Specification (NDS) Supplement.

6.1.2 Existing glue-laminated beams fabricated prior to 1970 shall be evaluated based on reduced allowable stresses in accordance with American Institute of Timber Construction (AITC) Technical Note 26.

6.2 Light-Framed Shear Walls

When work of any type (e.g., local strengthening for an alteration project, rehabilitation, voluntary seismic strengthening, etc.) results in lateral loads being shared on a common line between light-framed shear walls of different sheathing types (e.g., new structural panel sheathing and existing diagonal sheathing), forces shall be distributed in accordance with the principles of deformation compatibility.

6.2.1 Shear wall deflections shall be calculated, and forces distributed such that the deflection of each wall on the line is the same. The Exception of SDPWS Section 4.3.5.5.1 is not permitted due to the different sheathing types.

6.2.2 Collectors and foundation elements shall be evaluated and designed for the lateral force distribution determined by deformation compatibility, which will often result in a change to the original force demands. Refer to the example presented in Section 2.4 above.

6.2.2.1 In the case of alteration and reconstruction projects, the provisions of CAC Section 4-309(a) as described in Section 2.3 above apply to the collectors and foundation.

6.2.2.2 In the case of voluntary seismic strengthening, the provisions of CEBC Section 319.12 apply to the collectors and foundation.

REFERENCES:

2025 California Code of Regulations (CCR) Title 24
- Part 1: California Administrative Code (CAC), Sections 3-306, 4-307, 4-309, 4-310, 4-312, 4-314, 4-315, 4-345.
- Part 2: California Building Code (CBC), Section 2301.1.5.
- Part 10: California Existing Building Code (CEBC), Sections 317–323, 317.5, 317.7, 319.1, 319.2, 319.12, 503.3.

This IR is intended for use by DSA staff and by design professionals to promote statewide consistency for review and approval of plans and specifications as well as construction oversight of projects within the jurisdiction of DSA, which includes State of California public schools (K–12), community colleges and state-owned or state-leased essential services buildings. This IR indicates an acceptable method for achieving compliance with applicable codes and regulations, although other methods proposed by design professionals may be considered by DSA.

This IR is subject to revision at any time. Please check DSA's website for currently effective IRs. Only IRs listed on the webpage at www.dgs.ca.gov/dsa/publications at the time of project application submittal to DSA are considered applicable.