DSA PR 08-03

PROCEDURE: SEISMIC MITIGATION PROGRAM

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

DISCIPLINE(S)

Structural Safety.

PURPOSE

This procedure (PR) document defines the steps and requirements to obtain DSA concurrence necessary to receive funding for seismic mitigation of eligible buildings under the Seismic Mitigation Program (SMP) for California K-12 public schools. This PR does not address requirements of the State Allocation Board (SAB) or the Office of Public School Construction (OPSC) that are also part of the funding procurement process. Applicants should follow the steps described herein in combination with direction given by OPSC. Refer to the Additional Resources Section below.

BACKGROUND

The SMP was created by the Kindergarten–University Public Education Facilities Bond Act of 2006 and was provided an initial allocation of $199.5 million of state matching funds for seismic mitigation projects and related ancillary costs meeting the eligibility requirements. Although this initial funding has been exhausted, the SMP continues using funds allocated for new construction as authorized by the SAB.

The SMP is governed by the School Facility Program regulations of Title 2, California Code of Regulations, Division 2, Chapter 3, Subchapter 4, Group 1, Subgroup 5.5, Article 9, Section 1859.82.2. For brevity, these regulations are referred to simply as “SMP regulations” in this PR. The program is administered by OPSC on behalf of the SAB.

OVERVIEW

Refer to the following table and the flow chart in Appendix A below for a procedural overview.

	Phase	**Registration Form** (separate form for each building)	**Submission Documents** (*when applicable)	**DSA Fee**
1	Eligibility Verification	DSA 1-REG DSA 4	Eligibility Evaluation Report (EER), Geohazard Report*	$1,000 per building.
2	Replacement Mitigation Path	DSA 1-REG	Replacement Assessment Report (RAR).	$2,000 per building plus hourly cost of DSA review.
	Rehabilitation Mitigation Path	DSA 1-REG DSA 1-REH	Evaluation and Design Criteria Report (EDCR)	
3	Project Approval	DSA 1-REG DSA 1	Construction documents and others required by form DSA 3	Plan review fee per project cost
4	Funding	As required by OPSC. Refer to the OPSC website link in the Additional Resources Section below for applicable requirements, including program regulations, forms, and frequently asked questions.		None

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1. PHASE 1: ELIGIBILITY VERIFICATION

To receive funding from the SMP, a school district must first identify and demonstrate the eligibility of one or more candidate buildings. In accordance with the SMP regulations, buildings meeting the criteria given in Sections 1.1 and 1.2 below are eligible to receive funds under this program. The school district must submit an Eligibility Evaluation Report (EER) to demonstrate the proposed building meets these criteria, which requires DSA concurrence obtained per Sections 1.3 and 1.4 below. The EER shall be prepared from the template provided by DSA. See Appendix E for instructions on the use of the EER template.

1.1 Building Type and Occupancy

1.1.1 The eligible building must have been designed for occupancy by students and school staff. This can be demonstrated by citing in the EER the DSA application number for the original construction. For buildings constructed prior to the Field Act, the district must demonstrate compliance with California Education Code (EDC), Section 17367.

1.1.2 The existing structural system of the eligible building must be categorized as one of the types listed below. These common building types are defined by the American Society of Civil Engineers Standard 41: Seismic Evaluation and Retrofit of Existing Buildings (ASCE 41), except for C1B and S1B below, which are Category 2 building types as defined in the 2002 Assembly Bill (AB) 300 Seismic Safety Inventory of California Public Schools report. See Appendix D below for definitions of building types C1B and S1B.

- C1 – Concrete Moment Frames
- C1B – Reinforced Concrete Cantilever Columns with Wood Roof Diaphragm
- C2a – Concrete Shear Walls, Flexible Diaphragm
- C3a – Concrete Frame with Infill Masonry Shear Walls, Flexible Diaphragm
- PC1 – Precast/Tilt-up Concrete Shear Walls, Flexible Diaphragm
- PC1a – Precast/Tilt-up Concrete Shear Walls, Rigid Diaphragm
- PC2 – Precast Concrete Frames with Shear Walls, Rigid Diaphragm
- PC2a – Precast Concrete Frames without Shear Walls, Rigid Diaphragm
- RM1 – Reinforced Masonry Bearing Walls, Flexible Diaphragm
- S1B – Steel Cantilever Columns with Wood Roof Diaphragm
- S3 – Metal Building Frames
- URM – Unreinforced Masonry Bearing Walls, Flexible Diaphragm
- URMa – Unreinforced Masonry Bearing Walls, Rigid Diaphragm
- M – Mixed Systems: Building with at least one seismic force-resisting system listed above in at least one orthogonal direction.

1.2 Collapse Potential

The eligible building must have a demonstrated collapse potential posing an unacceptable risk of injury to its occupants. The source of the collapse potential may be ground shaking in combination with the characteristics of the existing building per Section 1.2.1 below or a geological hazard per Section 1.2.2 below.

For the purpose of establishing phase 1 eligibility, the applicant need only demonstrate one potential collapse hazard posing unacceptable risk. It is not necessary to define or quantify the severity of all seismic deficiencies present in the existing building, provided that at least one collapse hazard is substantiated to the satisfaction of DSA.

1.2.1 When the building's collapse potential is due to ground shaking in combination with its existing characteristics the EER shall demonstrate the collapse hazard in accordance with ASCE 41.

1.2.1.1 The specific building deficiencies shall be described in detail and the rationale supporting the potential collapse conclusion shall be established for at least one scenario.

1.2.1.2 The building performance shall be evaluated per ASCE 41 as amended by the EER template.

1.2.1.3 If collapse potential is established based on ground shaking in combination with the characteristics of the existing building, a geohazard report is not required in phase 1 of this procedure.

1.2.2 When the building's collapse potential is due to a geologic hazard, the hazard must be confirmed by the California Geological Survey (CGS). For the purpose of establishing building collapse potential and SMP eligibility, a geologic hazard is defined as fault rupture, liquefaction (including lateral spreading), or earthquake induced landslide. A geologic hazard report complying with California Building Code (CBC) Section 1803A.6 and in accordance with *IR A-4: Geohazard Report Requirements* must be prepared and submitted to CGS.

1.2.2.1 Refer to Appendix B below for additional information on the determination of geologic hazards.

1.2.2.2 Applicants are encouraged to consult with CGS prior to submitting a geohazard report to ensure its completeness. Refer also to the Additional Resources Section below.

1.2.2.3 Upon review of the geohazard report, CGS will issue a letter to the school superintendent with a copy sent to DSA. The letter will indicate if CGS concurs with or takes exception to the characterization of the geologic hazard and expected magnitude of displacements.

1.2.2.4 The EER shall include a structural analysis demonstrating a high potential for local or global collapse resulting from the displacements imposed on the structure due to the geologic hazard, as indicated in the CGS approved geohazard report.

1.2.2.5 The structural analysis shall comply with CBC Section 1604A.4.

1.2.2.6 Where a fault rupture hazard is confirmed by CGS, see the Exception of Section 2.1.1 below.

1.2.3 The evaluation criteria for collapse potential were originally developed on the basis of ASCE 31: Seismic Evaluation of Existing Buildings. ASCE 31 is no longer in publication, as its content has been incorporated into ASCE 41, which now serves as the basis of the evaluation.

1.2.3.1 ASCE 31 evaluations provided for consideration of either a Life Safety (LS) or Immediate Occupancy (IO) performance objective. The original criteria for this evaluation were based on LS performance objective.

1.2.3.2 ASCE 41 provides Tier 1 evaluation checklists for both the Collapse Prevention (CP) and IO performance objectives. The current criteria for this evaluation are based on the CP performance objective, which are similar to the original criteria per Section 1.2.3.1 above.

1.2.3.3 ASCE 41 includes three levels of progressively more complex evaluation termed “tiers”. As set forth in Section 4 of the EER template, this collapse potential assessment is primarily based on a Tier 1 evaluation. A Tier 2 evaluation is required of any critical item found noncompliant by the Tier 1 evaluation. A Tier 3 evaluation is not required at this phase.

1.2.3.4 Tier 1 “Quick Checks” per ASCE 41 Section 4.4 shall be based on the CP performance objective under the BSE-2N (Basic Safety Earthquake-2 for new buildings and the Risk-Targeted Maximum Considered Earthquake) as defined in ASCE 41 Section 2.4.1.1.

1.2.3.5 Where required per Section 1.2.3.3 above, Tier 2 evaluations shall be in accordance with ASCE 41 Chapter 5 based on the acceptance criteria determined as follows:

1.2.3.5.1 CP performance objective under the BSE-2N.

1.2.3.5.2 LS performance objective under the BSE-1N (Basic Safety Earthquake-1 for new buildings) as defined in ASCE 41 Section 2.4.1.2.

1.2.3.6 Because the focus of this evaluation is SMP funding eligibility (as opposed to a comprehensive catalog of deficiencies), the evaluation may be terminated once a critical deficiency is demonstrated.

1.2.3.7 Critical deficiencies are listed in Section 1 of the EER template; they are annotated in the checklists in Section 4 of the EER template. These deficiencies have been determined by DSA based in part on precedent set by the Office of Statewide Hospital Planning and Development. Refer to the 2007 California Administrative Code, Chapter 6, Section 1.4.5.1.2.

1.3 Registration and Submission

The applicant must register and submit the EER to the DSA regional office responsible for overseeing construction at the school site in accordance with established procedures.

1.3.1 The application shall be registered in accordance with *PR 17-03: Project Submittal Appointment Process*, Section 1 with the following modifications:

1.3.1.1 Registration forms must be submitted a minimum of two weeks prior to the intended submittal date.

1.3.1.2 Form *DSA 4: Application for Review of Eligibility Evaluation Report for the Seismic Mitigation Program* must be submitted.

1.3.1.3 A separate set of registration forms must be submitted for each building even if the buildings are similar or identical in design and construction. A separate email must be sent for each building and the subject line should state the following information: DSA Registration – SMP Phase 1 – *[School District and School Name] – [Building Name]*.

1.3.2 In accordance with PR 17-03, DSA will assign an application number, confirm the submission date, and invite the applicant to the DSAbox folder for the SMP phase 1 project.

1.3.3 The application fee must be paid no later than the registered submission date. The fee may be paid electronically per *PR 20-02: Online Payments for Plan Review Filing Fees, Plan/Field Review Fee Invoices and Project Certification Re-Examination Fees* or by mailing a check to the regional office and the attention of the cashier. Physical checks must include the application number.

1.3.4 The EER and all required supporting documents must be uploaded by the registered submission date. All documents shall be submitted electronically to DSAbox as required per *PR 18-04: Electronic Plan Review for Design Professionals,* Section 2.1.

1.3.5 The submitted documents shall comply with the following:

1.3.5.1 The EER must be stamped (i.e., sealed) and signed by a California registered structural engineer.

1.3.5.2 The EER file must be prepared in accordance with PR 18-04 Section 1.7.

1.3.5.3 When available, the construction drawings for the original construction of the building (and those of any subsequent alterations, additions, reconstruction, etc.) must be submitted as supporting documents per PR 18-04 Section 1.6.

1.3.5.4 When the original construction drawings cannot be obtained, the EER should include schematic structural framing plans and other drawings as appropriate to illustrate the general layout of the existing building and its seismic force-resisting system.

1.3.5.5 All supporting calculations and/or documentation used to evaluate the building must clearly define both the performance objective and seismic hazard level.

1.4 DSA Review and Acceptance

DSA review of the EER will be completed within 30 calendar days of its receipt. If eligibility is based on collapse potential due to a geologic hazard per Section 1.2.2 above, additional review time may be required in coordination with CGS, whose concurrence is required prior to confirmation of the building's eligibility for SMP funding.

1.4.1 If DSA finds the existing building is not eligible for SMP funding or otherwise has questions about the EER, the justification given, or the conclusions reached, these will be documented in a format similar to plan review comments. The applicant will be given access to these review comments and provided the opportunity to respond to and address DSA findings with supplemental information and justification in accordance with PR 18-04 Sections 3 and 4.

1.4.2 If DSA concurs that the existing building is eligible for SMP funding in accordance with the criteria defined in Sections 1.1 and 1.2 above, the regional office will issue a confirmation letter to the applicant, with copies sent to the school district superintendent, school district facilities director, and OPSC. DSA will not apply its identification or approval stamp to the EER.

1.4.3 Calculations and other documents submitted in support of the EER are reviewed at a cursory level. DSA concurrence does not imply a thorough review and approval of the calculations and other supporting documents.

1.4.4 Upon confirmation of eligibility, the applicant may proceed to phase 2 and determining the appropriate mitigation strategy: rehabilitation, replacement on the same school site, or replacement on a new site.

1.4.5 If DSA concludes that the building is not eligible for SMP funding in accordance with the criteria defined in Sections 1.1 and 1.2 above, the regional office will issue a letter indicating this finding to the applicant, with copies sent to the school district superintendent, school district facilities director, and OPSC. DSA will void the application number assigned to the EER.

2. PHASE 2: MITIGATION PATH

The second phase in the process of procuring SMP funding, requires the school district to define and justify the mitigation methodology. The mitigation project will either replace the vulnerable building per Section 2.1 below or rehabilitate the building per Section 2.2 below.

Prior to proceeding with a mitigation path, the school district and its design professionals are advised to review OPSC requirements for funding of SMP projects. These requirements include, among other items, a justification by the district of the unmet pupil housing need and a cost benefit analysis that determines the building's qualifications for rehabilitation or replacement funding. The extent of SMP funding a project qualifies for may not match the school district's expectation and desired project outcome. Refer to the Additional Resources section below.

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Refer to the Additional Resources section below for OPSC contact information.

2.1 Building Replacement Path

In accordance with SMP regulations, funding for the replacement of an eligible building, is contingent upon the school district demonstrating that the estimated cost of rehabilitation exceeds 50 percent of the building's Current Replacement Cost as defined annually by the SAB. Any potential grant funding is determined by OPSC based on the size and type of the facility justified by student enrollment at the site. To this end, SMP regulations require DSA concurrence with the minimum scope of work required to rehabilitate an eligible building.

2.1.1 To obtain DSA concurrence, the school district must submit a Replacement Analysis Report (RAR) for review and approval. The RAR shall contain all of the elements listed below compiled into a single electronic file. The RAR shall be stamped (sealed) and signed by the design professional in general responsible charge and the structural engineer of record.

2.1.1.1 Description of the existing building's seismic deficiencies. While demonstration of only a single collapse hazard is needed to determine phase 1 eligibility per Section 1.2 above, all seismic deficiencies of the existing building should be included in the RAR, so their associated rehabilitation cost are captured in the cost estimate described in Section 2.1.1.7 below.

2.1.1.2 Description of the minimum work required to mitigate the seismic deficiencies. Refer to the Exception below where a fault rupture geological hazard exists. Refer to Section 2.1.4 below where a liquefaction or landslide geologic hazard exists. Removal and restoration of finishes and other building systems in the immediate vicinity of and necessary to complete the seismic rehabilitation work may be included.

2.1.1.3 Description of access compliance upgrades required by California Existing Building Code (CEBC), Chapter 3. Refer to Appendix C below for additional information.

2.1.1.4 Description of fire and life safety upgrades required by CEBC Chapter 3 as adopted by the State Fire Marshall. Refer to Appendix C below for additional information.

2.1.1.5 Project tracking number listed on the form DSA 4 submitted in phase 1.

2.1.1.6 Schematic drawings (i.e., plans) illustrating the scope of work described above. The schematic drawings shall prominently denote "NOT FOR CONSTRUCTION" in the title block and with a watermark across the width of each sheet and should be separated into an appendix of the RAR.

2.1.1.7 Cost estimate prepared by a qualified professional for the work described above.

2.1.1.7.1 Other proposed work such as modernization, repair, repurposing, and alterations not required for seismic mitigation nor associated access compliance or fire and life safety requirements shall not be included in the cost estimate.

2.1.1.7.2 The cost estimate should be separated into an appendix of the RAR.

2.1.1.7.3 To facilitate an efficient review and reduce duplication of work, it is recommended that the cost estimate be presented on Form SAB 58-01: Facility Hardship Cost Estimate, which is available on the OPSC website linked in the Additional Resources section below.

2.1.1.7.4 In lieu of itemizing associated access compliance work required by the rehabilitation, the applicant may elect to use the 20 percent allowance for access compliance work permitted by OPSC on Form SAB 58-01. The schematic drawings described in Section 2.1.1.6 above shall clearly denote if the applicant elects to use this allowance.

Exception: When the building collapse potential is based upon a fault rupture hazard confirmed by CGS, the items listed in Sections 2.1.1.2 through 2.1.1.7 above need not be included in the

RAR. This hazard type cannot be mitigated by rehabilitation; the building must be replaced in a different location.

2.1.2 Structural calculations may be prepared and submitted to DSA in support of the conclusions of the RAR, but they shall not be included in the report. Structural calculations and any other supporting documents shall be submitted as separate electronic files per PR 18-04.

2.1.3 Registration and submission of the required documents shall be per Section 1.3 above with the following modifications:

2.1.3.1 Form DSA 4 is not applicable and should not be submitted.

2.1.3.2 Subject line of the email referred to in Section 1.3.1.3 above should indicate “Phase 2” rather than “Phase 1”.

2.1.3.3 DSA will assign a different application number and DSAbox folder separate from the those assigned for the EER.

2.1.4 When the building collapse potential is based on a liquefaction or landslide geologic hazard, the proposed mitigation method and performance criteria is subject to the review and acceptance of CGS. If the geohazard report submitted to and accepted by CGS in phase 1 per Section 1.2.2 above did not include the proposed mitigation measure, a revised geohazard report must be submitted and reviewed by CGS.

2.1.5 DSA will review the SMP phase 2 application in accordance with the electronic plan review procedure set forth in PR 18-04.

2.1.5.1 The RAR will be reviewed to verify the scope of work complies with the SMP regulations as described in Section 2.1.1 above. If DSA finds the scope concluded by the RAR exceeds these limits, it will be documented in a format similar to plan review comments. The applicant will be given access to these review comments and provided the opportunity to revise the RAR to comply in accordance with PR 18-04 Sections 3 and 4.

2.1.5.2 The cost estimate will be reviewed only to confirm the scope of work captured by the cost is generally consistent with Section 2.1.5.1 above. DSA will not review the cost estimate for unit cost values, quantities, construction cost totals, or other technical accuracy.

2.1.5.3 When DSA concurs with the scope of work, the cover sheet of the RAR will be stamped and posted in accordance with PR 18-04 Section 4.5. The applicant will use the stamped RAR to demonstrate DSA concurrence to OPSC.

2.1.6 Should the school district seek conceptual approval through OPSC, the approved RAR constitutes DSA concurrence for the conceptual approval process. Refer to OPSC Seismic Mitigation Program Handbook linked in the Additional Resources Section below for more information on the conceptual approval process.

2.2 Building Rehabilitation Path

An eligible building whose estimated cost of rehabilitation is less than 50 percent of its replacement value qualifies only for rehabilitation funding under the provisions of the SMP. School districts are advised to contact OPSC for more information prior to proceeding with the building rehabilitation mitigation path. Refer to the Additional Resources section below.

2.2.1 California Administrative Code (CAC) Section 4-314 defines rehabilitation as bringing “*the building, or portion thereof, into conformance with the safety standards of the currently effective regulations*”. *IR EB-1: Existing Building Regulations Overview*, Section 3 further discusses and defines the rehabilitation concept. For purposes of the SMP, “seismic rehabilitation” is specific to the aspects of the evaluation and retrofit that address the building and its components resistance to seismic forces.

2.2.2 The applicant must prepare and submit to DSA an Evaluation and Design Criteria Report (EDCR) in accordance with *IR EB-3: Evaluation and Design Criteria Report*. The submission must include a form *DSA 1-REH: Pre-Application for Approval of a Rehabilitation Project Evaluation & Design Criteria Report*.

2.2.3 While the SMP applies to seismic rehabilitation work, the applicant should be aware that proposed alteration, addition, or reconstruction work exceeding the thresholds of CAC Section 4-309(c) will require a complete rehabilitation. Refer to *IR EB-4: Rehabilitation Required by Cost* and *IR EB-5: Rehabilitation required by Scope* for additional information.

2.2.4 See Appendix C for applicable access compliance and fire and life safety requirements.

2.2.5 Voluntary modifications of the seismic force-resisting system per CAC Section 4-309(d) and *IR EB-6: Voluntary Seismic Upgrade* are not eligible for SMP funding. Only a seismic rehabilitation per Section 2.2.1 above is eligible for SMP funding.

2.2.6 DSA will review the EDCR in accordance with the electronic plan review procedure set forth in PR 18-04 and IR EB-3. When approved, the EDCR will be stamped and posted in accordance with PR 18-04 Section 4.5.

2.2.7 The school district may request conceptual approval and/or design funding approval through OPSC when it has obtained DSA approval of the EDCR. Refer to the OPSC Seismic Mitigation Program Handbook linked in the Additional Resources Section below for more information on the conceptual approval process.

2.2.7.1 For the purpose of conceptual approval, the school district must submit a cost estimate to DSA for the seismic rehabilitation work described in the approved EDCR.

2.2.7.2 Upon agreement that the cost estimate includes only the minimum scope of work required for the seismic rehabilitation, DSA will issue a letter to the school district documenting concurrence, which the school district will include when submitting its request for conceptual approval to OPSC.

2.2.7.3 DSA may invoice the school district on an hourly basis for review of the cost estimate and preparation of the concurrence letter.

3. PHASE 3: PROJECT APPLICATION

The third phase consists of obtaining DSA approval of construction documents for a project whose scope includes the work corresponding to the mitigation path determined in phase 2.

3.1 Registration and Submission

The applicant must register and submit the project to the DSA regional office in accordance with established procedures.

3.1.1 If not already conducted in phase 1 or 2, the applicant is encouraged to schedule a pre-application meeting with DSA to facilitate the preparation of a complete project application. For rehabilitation projects, the meeting should include verification of DSA certification of prior construction projects involving the eligible building, and the scope of included fire and life safety and access compliance upgrades.

3.1.2 The applicant must register the project, and DSA will assign an application number in accordance with PR 17-03 Section 1.

3.1.3 The applicant must submit all documents required by form *DSA 3: Project Submittal Checklist* in accordance with PR 17-03 Section 2.

3.2 DSA Review and Approval

DSA will review the construction documents and project application in accordance with PR 18-04. Upon project approval DSA will stamp the construction documents and issue an approval of plans letter in accordance with PR 18-04 Section 4.5.

3.3 Scope Verification for Funding

For the rehabilitation mitigation path described in Section 2.2 above, SMP regulations limit funding to the minimum work required for the seismic rehabilitation and related fire and life safety and access compliance upgrades required by the current building code. To verify compliance, OPSC requires the school district obtain a letter of concurrence from DSA when applying for SMP funding. The concurrence letter is not required for projects using the replacement mitigation path described in Section 2.1 above because DSA concurrence of the scope of work was provided in phase 2.

3.3.1 The applicant must request the letter of concurrence from DSA after project approval is granted. The request may be submitted by email to the DSA structural safety plan review engineer who approved the project.

3.3.2 When the scope of the approved project includes only work that qualifies for SMP funding, no further supporting documentation is required with the request.

3.3.3 When the scope of the approved project includes work that does not qualify for SMP funding, the request must be accompanied by a copy of the approved construction drawings that is annotated (e.g., with clouds or a similar demarcation methodology) to identify that portion of the approved work required for the seismic rehabilitation and its associated access compliance and fire and life safety upgrades. Removal and restoration of finishes and other building systems in the immediate vicinity of and necessary to complete the seismic rehabilitation work may be included.

3.3.4 If DSA disagrees with the scope identified on the annotated drawings described in Section 3.3.3 above, revisions to the annotations will be required until agreement is reached.

3.3.5 When concurrence is reached, DSA will issue to the school district a letter confirming the scope, which will cite the annotated drawings described in Section 3.3.3 above when applicable.

4. PHASE 4: FUNDING

Upon completion of phases 1, 2, and 3, a school district can proceed with submitting an application for SMP funding (i.e., Form SAB 50-04) to OPSC. The application should include a copy of the approval of plans letter per Section 3.2 above and the scope confirmation letter described in Section 3.3 above if applicable.

OPSC accepts applications and may award SMP funds for eligible projects after their construction, provided that the contract for the work was executed on or after May 20, 2006. The steps and requirements to obtain the DSA concurrence necessary to receive SMP funding in these cases may vary in some respects from the procedures described in Sections 1 through 3 above. Applicants pursuing SMP funding after construction should request a meeting with the DSA regional office with jurisdiction over the project to understand any modifications to these procedures for obtaining DSA concurrence.

Any questions related to available funding for the SMP, including eligibility for various grants and allowances should be directed to OPSC. Refer to the Additional Resources section below.

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ADDITIONAL RESOURCES:

Office of Public School Construction (OPSC) Resources:

- Phone Contact: (916) 376-1771.
- Website: Homepage
  - Handbooks Guides and Brochures
  - Seismic Mitigation Program Handbook
  - Laws and Regulations

California Geological Survey (CGS) Resources:

- Phone Contact: Jennifer Thornburg, (916) 639 - 6899
- Website: Homepage
  - School Project Review Frequently Asked Questions
- Geohazard Report Submission: File Upload Link
- Publications and Technical Documents:
  - California Geological Survey Note 48: Checklist for the Review of Engineering Geology and Seismology Reports for California Public Schools, Hospitals, and Essential Services Buildings.
  - California Geological Survey, 2008, Guidelines for Evaluating and Mitigating Seismic Hazards in California, CGS Special Publication 117A.
  - Martin, G.R. and Lew, M., 1999, Recommended Procedures for Implementation of DMG Special Publication 117: Guidelines for Analyzing and Mitigating Liquefaction in California; Southern California Earthquake Center.
  - Blake, T.F. Hollingsworth, R.A., and Stewart, J.P., 2002, Recommended Procedures for Implementation of DMG Special Publication 117: Guidelines for Analyzing and Mitigating Landslide Hazards in California, Southern California Earthquake Center.
  - California Geological Survey Note 49, 2002, Guidelines for Evaluating the Hazard of Surface Fault Rupture.

REFERENCES:

2022 California Code of Regulations (CCR) Title 24
Part 1: California Administrative Code (CAC), Sections 4-309, 4-314
Part 2: California Building Code (CBC), Sections 1604A.4, 1803A.6

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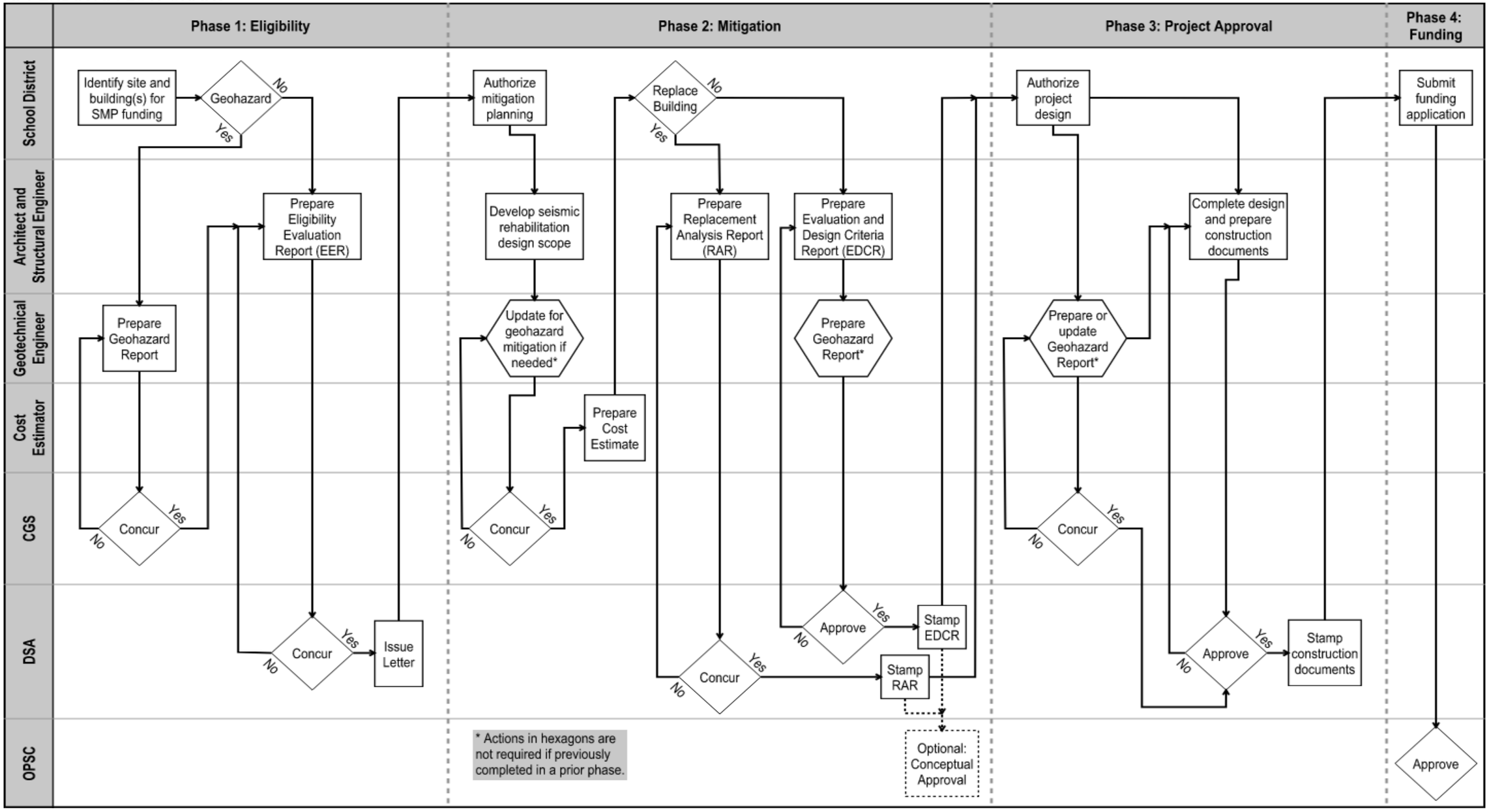
APPENDIX A: FLOW CHART



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APPENDIX B: DOCUMENTING GEOLOGICAL HAZARDS

For each building whose eligibility is based upon collapse potential caused by a geologic hazard, evidence of the geologic hazard shall be provided by the applicant and submitted to the California Geological Survey (CGS) for review. The evidence provided must define the anticipated magnitude of ground displacement(s) in accordance with an analysis agreed to by CGS. Displacement results must be sufficiently detailed for structural engineers to implement in analysis of building response. Analyses of this type may not be typical geotechnical engineering or engineering geology practice, and the merit of each will be reviewed on a project-specific basis for scientific credibility. Supporting site data must be presented and shown to be directly relevant to the structure being evaluated. Adequate scientific justification for all interpretations must be presented. Overly “conservative” approaches may result in unreasonably large estimates of displacement which, for this program, will be questioned by CGS.

APPENDIX C: GUIDELINES FOR DETERMINING FIRE AND LIFE SAFETY AND ACCESSIBILITY REQUIREMENTS

C1 Fire & Life Safety Requirements

C1.1 Fire and Life Safety provisions shall apply to area(s) of rehabilitation work within the scope of proposed improvements.

C1.2 When portions of the building are demolished, new construction will be reviewed under the provisions of the CBC in effect at the time of project submittal.

C1.3 Project plans are to include the following information:

C1.3.1 Identification of the building type of construction as approved at the time of original construction.

C1.3.2 Identification of all work that affects the means of egress. Demolition and construction that impacts the means of egress may generate additional requirements.

C1.3.3 Identify location and type of existing fire-resistance-rated construction associated with the structural frame, rated walls, rated horizontal assemblies, and vertical openings. Through- and membrane-penetrations of fire-resistance-rated building elements will require installation of an approved and listed fire and or smoke stop system with the same or greater hourly rating as the violated rated construction. Penetration protective systems shall be identified on the plans, inclusive of installation details, and be installed in accordance with the manufacturer's listed instructions.

C1.3.4 Existing fire rated components that require asbestos abatement within the scope of work, shall be reconstructed with listed and approved equivalent materials as needed to maintain the hourly fire-resistance-rating.

C1.3.5 Where a fire protection or life safety system, or portion thereof, is temporarily removed to allow seismic upgrades, a reacceptance test in accordance with applicable National Fire Protection Association (NFPA standards will be required of the system to verify correct operation after it has been re-installed. In the event that the system or components of the system are found not operable, repairs or replacements will be required.

C2 Access Compliance Requirements

The seismic repair of an existing facility is governed by Chapter 11B, Section 11B-202 of the CBC. In addition, in Legal Opinion No. 94-1109, dated May 10, 1995, the Attorney General for the State of California concluded that seismic strengthening work in an existing building constitutes a "building alteration, structural repair or addition" for purposes of providing access to the building for persons with disabilities.

In existing buildings or facilities, when the primary use or function of the building or facility and/or design of specific rooms or spaces are altered due to the seismic strengthening or upgrade work, the altered area(s) must comply with all applicable accessibility regulations for new construction. In addition, the obligation to provide an accessible primary entrance to the building or facility, and an accessible route to the specific area of alteration, including sanitary facilities, drinking fountains, signs, and public telephones serving the area must be met.

If seismic strengthening or upgrade work of an existing building or facility does not alter the primary use or function of the building or facility and/or does not alter the design of specific rooms or spaces, then the requirement for an accessible route to the area of specific alteration does not apply. However, the requirement to provide an accessible primary entrance, sanitary facilities, drinking fountains, signs, and public telephones, with an accessible route connecting these elements, still applies.

APPENDIX D: STRUCTURAL SYSTEMS DEFINED BY ASSEMBLY BILL (AB) 300

Label	Structural System	System Description
C1B	Reinforced Concrete Cantilever Columns with Wood Roof Diaphragm	These buildings consist of a frame assembly of wood or steel beams, reinforced concrete columns, and a wood-frame roof. The wood roof assembly typically consists of wood or steel primary framing members, wood secondary framing members, and plywood or wood roof sheathing. One typical seismic load-resisting system utilizes infill concrete walls between adjacent columns. The infill concrete walls transfer seismic forces between the top of the wall and the foundation. The concrete columns may extend vertically above the top of the infill concrete walls, to accommodate clerestory windows. These columns transfer seismic forces between the roof and the top of the infill concrete walls, which imposes concentrated stresses in the columns. The other typical seismic load-resisting system utilizes concrete columns that transfer seismic forces between the foundation and the roof-level diaphragm. These columns are typically fixed at (rigidly connected to) a concrete grade beam at the foundation. These columns act as an “inverted pendulum” and are subject to special design requirements only incorporated in the most recent building code.
S1B	Steel Cantilever Columns with Wood Roof Diaphragm	These buildings consist of a frame assembly of wood or steel beams, steel columns, and a wood frame roof. The wood roof assembly typically consists of wood or steel primary members, wood secondary members, and plywood or wood roof sheathing. The seismic load-resisting system utilizes steel columns that transfer seismic forces between the foundation and roof-level diaphragm. These columns are typically fixed at (rigidly connected to) a concrete grade beam at the foundation. These columns act as an “inverted pendulum” and are subject to special design requirements only incorporated in the most recent building code.

APPENDIX E: ELIGIBILITY EVALUATION REPORT (EER) TEMPLATE INSTRUCTIONS

The EER template provided by DSA must be used to create the report; it promotes consistency in format for the sake of efficient DSA review and approval. The template is provided in Microsoft Word file format that is available for download from the DSA Publications webpage at the same location where this PR document is posted.

E1 General Instructions

The following instructions and guidelines apply throughout the EER template document.

E1.1 Input required in the header and footer sections is to be completed by the author.

E1.2 Some required input is indicated by underlined regions. The author should type over (rather than inserting text) these underline regions when writing the report. The underline should be removed when content is entered.

E1.3 To place an “X” into a check box, the author should right-click on the box and changes its property from “Not Checked” to “Checked” in the resulting dialog box.

E2 Section Specific Instructions

Within the template file itself, additional instructions are provided as comments. When viewing the template file in the Microsoft Word application, the author should ensure that the “Show Comments” option is selected in the “Comments” section of the “Review” ribbon to see these instructions. Comments should be hidden or deleted when printing or creating the PDF file of the EER for submission to DSA.

E3 Checklist (Section 5) Instructions

The author must complete the evaluation statements in the tables given in Section 5 of the EER. For each evaluation statement, the author will indicate C for compliant, NC for noncompliant, U for unknown (or not investigated), or NA for not applicable.

E3.1 The status column for indicating C, NC, U, or NA is formatted as drop-down menu from which the author should select the appropriate entry.

E3.2 Evaluation statement tables that are specific to a building type (e.g., Tables 5C, 5D, 5E, and 5F) that does not apply to the subject building should be deleted.

E3.3 Certain evaluation statements are designated “critical items”.

E3.3.1 For any critical item found to be noncompliant by Tier 1, a Tier 2 evaluation is required, unless the Tier 2 reference is listed as “None”.

E3.3.2 If a critical item is found to be noncompliant by Tier 1 and confirmed as noncompliant by Tier 2 evaluation, the balance of the evaluation statements need not be completed. In this case, it is acceptable to indicate U for the remainder of the evaluation statements not investigated.

E3.4 For each evaluation statement designated NC or U, the author should add a brief note below the statement citing the source of justification or providing further explanation. The explanation should refer to the Set ID listed in Section 2.3 of the EER, the sheet number, and the detail number (if applicable). Where needed the author should provide additional discussion, Quick Check calculation, etc. When necessary, lengthy explanations, calculations, photos, etc. should be contained in an appendix cited by the explanatory note.