

ECRB REVIEW PROCESS

WHAT IS THE ENGINEERING CRITERIA REVIEW BOARD?

The Engineering Criteria Review Board (ECRB) is an advisory board that assists the San Francisco Bay Conservation and Development Commission (BCDC) in evaluating the engineering aspects of projects that require BCDC's permits. Currently, the ECRB is made up of eleven eminent professionals, including structural and geotechnical engineers, geologists and one architect. The ECRB members are professionals in private practice, government service, and academia. The current ECRB roster is attached. The ECRB members volunteer their time and expertise to advise the Commission regarding seismic and other engineering issues and to assist applicants in designing projects with appropriate engineering criteria. BCDC's staff engineer serves as secretary to the ECRB.

UNDER WHAT AUTHORITY DOES THE ENGINEERING CRITERIA REVIEW BOARD OPERATE?

- **State Law and Regulations.** Section 66633(b) of the McAteer-Petris Act, the Commission's enabling law, authorizes the Commission to "appoint advisory committees from other interested public and private groups." The McAteer-Petris Act requires the Commission to review all proposed projects that involve fill¹ in San Francisco Bay, and prohibits the Commission from approving any fill project that would be unsafe. Specifically, Section 66605(e) of the Act states that the Commission can only authorize a fill project if the fill will be constructed "in accordance with sound safety standards which will afford reasonable protection to persons and property against the hazards of unstable geologic or soil conditions or of flood or storm waters." Further, Section 66605(c) of the Act states that the fill should be the "minimum necessary to achieve the purpose of the fill". In order to carry out its responsibility, the Commission adopted policies regarding the safety of fills. These policies were based on a technical report entitled *The Safety of Bay Fills*, which is available upon request. The Commission relies on the advice of the ECRB to assure that Commission-approved projects are consistent with the Bay Plan policies on the safety of Bay fills.
- **Bay Plan Policies.** The *San Francisco Bay Plan* was prepared by the Commission to refine the general policies of the McAteer-Petris Act. The California Legislature incorporated the Plan into law to make the plan policies legally enforceable. The findings and policies regarding safety of fills in the Bay are found on pages 39 to 41 of the *San Francisco Bay Plan*, which is also available upon request. The policies include the following:

Under the Safety of Fills section, Policy No. 1 the Commission has appointed the Engineering Criteria Review Board consisting of geologists, civil engineers specializing in soils engineering, structural engineers, and architects competent to and adequately empowered to: (a) establish and review safety criteria for Bay fills and structures thereon; (b) review all except minor projects for the adequacy of their specific safety provisions and make recommendations concerning these provisions; (c) prescribe an inspection system to assure placement of fill according to approved designs; and (d) with regard to inspection of marine petroleum terminals, make

¹ Fill is defined in the McAteer-Petris Act as "earth or any other substance or material, including pilings or structures placed on pilings, and structures floating at some or all times and moored for extended periods, such as houseboats and floating docks" (Section 66632(a)).

recommendation to the California State Lands Commission (CSLC) and the U.S. Coast Guard (USCG), which are responsible for regulating and inspecting these facilities; (e) coordinate with the CSLC and the USCG, which are responsible for regulating and inspecting these facilities; (e) coordinate with the CSLC on projects relating to marine petroleum terminals fills and structures to ensure compliance with other Bay Plan policies and the CSLC's rules, regulations guidelines and policies; and (f) gather, and make available, performance data developed from specific projects.

These activities would complement the functions of local building departments and local planning departments, none of which are presently staffed to provide soil inspections.

Policy No. 2 under the Safety of Fills section states that "even if the Bay Plan indicates that a fill may be permissible, no fill or building should be constructed if hazards cannot be overcome adequately for the intended use in accordance with the criteria prescribed by the ECRB."

Policy No. 3 under the Safety of Fills section states that "to provide vitally-needed information on the effects of earthquakes on all kinds of soils, installation of strong-motion seismographs should be required on all future major land fills. In addition, the Commission encourages installation of strong-motion seismographs in other developments on problem soils, and in other areas recommended by the U. S. Geological Survey, for purposes of data comparison and evaluation. "

Policy No. 4 under the Safety of Fills section has been amended since March 2012 to reflect the new Climate Change policies adopted by the Commission, and it states that " Adequate measures should be provided to prevent damage from sea level rise and storm activity that may occur on fill or near the shoreline over the expected life of a project. The Commission may approve fill that is needed to provide flood protection for existing projects and uses. New projects on fill or near the shoreline should either be set back from the edge of the shore so that the project will not be subject to dynamic wave energy, be built so the bottom floor level of structures will be above a 100-year flood elevation that takes future sea level rise into account for the expected life of the project, be specifically designed to tolerate periodic flooding, or employ other effective means of addressing the impacts of future sea level rise and storm activity. Rights-of-way for levees or other structures protecting inland areas from tidal flooding should be sufficiently wide on the upland side to allow for future levee widening to support additional levee height so that no fill for levee widening is placed in the Bay."

WHAT ROLE DOES THE ECRB PLAY IN THE COMMISSION'S PERMIT PROCESS?

The ECRB review of a specific project typically occurs prior to issuance of a permit by the Commission. The ECRB recommends that for very large or complex projects, schematic design drawings with appropriate design and acceptance criteria be presented to the Board for preliminary evaluation and consultation prior to the final design of any individual structure. The Board review normally takes place after the initial permit application review by the BCDC staff for two main reasons, to isolate engineering issues from planning issues and to avoid the applicant having to incur the expense of preparing detailed analyses, calculations, and plans before the Board has had an opportunity to review them for consistency with the Commission policies for its approval. The Commission relies on the expertise provided by the ECRB on whether a proposed project is designed based on "sound safety standards." The ECRB conclusions are included in the staff summary of major permit applications on which BCDC holds a

public hearing. In some cases, the engineering feasibility of a project is an essential factor in the Commission's decision as to whether the project should be approved.

WHICH PROJECTS ARE REVIEWED BY THE ECRB?

Normally, only major projects involving fill in the Bay are required to have ECRB review. At its discretion, the Commission or staff may have the ECRB review a smaller fill project that involves difficult or unusual engineering or geological factors. If the ECRB review is needed before the Commission acts on an application, the staff will so advise the applicant.

WHAT ARE THE BENEFITS OF ECRB REVIEW?

San Francisco Bay presents some of the most difficult conditions for development. Sites around the Bay are generally underlain by soft sediments that present a wide range of uniquely difficult engineering problems including, but not limited to, settlement, liquefaction and lateral spreading during earthquakes, slope instability and ground failure, wave action, and other coastal processes. The ECRB is composed of experts who have extensive experience with engineering projects in the San Francisco Bay Area. An interdisciplinary approach is used by the ECRB to provide a comprehensive review of a project's engineering design criteria. The review also helps assure that the risk to property and life is kept at an appropriate low level.

WHEN ARE PROJECTS REVIEWED BY THE ECRB?

The ECRB recommends that very large or complex projects be presented to the Board for preliminary evaluation or consultation prior to the final design of individual structures. This consultation allows the ECRB to give advice about the type of engineering criteria that are appropriate for a specific structure or part of the project.

Projects presented for preliminary consultations may require additional reviews by the ECRB when more detailed engineering analysis and design has been completed and a peer review conducted. This peer review approach is strongly recommended by professional engineering associations and is a requirement of the ECRB. Smaller and simpler projects may only require one review by the ECRB.

WHAT CODES OR STANDARDS DOES THE ECRB USE?

In evaluating a project, the ECRB uses the Bay Plan policies, the report entitled *The Safety of Bay Fills*, and the Board Members' expertise, experience and judgment to evaluate the engineering criteria used for a project. Although the ECRB uses compliance with the applicable codes as a starting point, the ECRB does not rely solely on a specific or standard code. Standard codes may represent the minimum requirements for typical structures; hence, standard codes may be inadequate to deal with unusual building designs or with the special geologic conditions around the Bay. In addition, standard codes are sometimes several years out-of-date. The approach used by the ECRB allows the latest and best engineering criteria to be incorporated into all projects that receive ECRB review. Commission approval of permit application depends on the type of project and appropriate permit application. For major, expensive or complex Bay fill projects, approval by the Commission is based on a public hearing, usually associated with ECRB review of the project and subsequent commission votes to issue or deny an application permit. For administrative permits, which are issued by the Executive Director, procedures for approval or denial of the applications are defined in the Commission's regulations.

WHAT INFORMATION AND EXHIBITS SHOULD BE SUBMITTED TO THE ECRB?

To allow adequate review by the ECRB, the following information should be provided:

- **Project Site.** An aerial photograph or a vicinity map and a description of the project site;
- **Project Description.** Relevant background information, including a description of the existing structure and site hazards (i.e.: liquefaction, slope instability, seismology), project purpose and scope, and project schedule;
- **Acceptance Criteria.** A description of the structural vulnerabilities and the performance objectives chosen for the project;
- **Design Criteria.** The project design requirements and the design and analysis methods employed to ensure the performance objectives;
- **Soils and Geologic Data.** A description of the existing geology and subsurface site condition, soil profile, soil investigation results and any other pertinent geologic information as well as active faults in the vicinity of the project and, if available, site specific Acceleration Response Spectra (ARS) curves; and
- **Codes and Standards.** A list of codes, standards, manuals and specifications used to develop the project.
- **Compliance with Policies for “Safety of Fills” as specified in *The San Francisco Bay Plan*.** A list of notable project efforts to comply with all policies as specified in *The San Francisco Bay Plan*, including Policy No. 3 regarding the installation of strong-motion seismographs to provide vitally needed recordings to document the response of soft soils and residing structures during strong earthquake shaking at the project site and Policy No. 4 regarding project measures to prevent damage from sea level rise and storm activity.

Calculations, plans and miscellaneous details should be provided only if relevant to the presentation. Photos and renderings may be included. Fifteen copies of all the materials should be submitted to the attention of the Commission's staff engineer at least one month prior to the scheduled ECRB meeting. All materials should be collated, folded, and prepared for distribution. The materials submitted to the ECRB should be summarized and presented in a format which will allow detailed review within a reasonable amount of time by a practicing professional. Failure to provide the necessary material by the scheduled deadlines may result in the project being deleted from the ECRB agenda.

WHEN SHOULD MATERIALS BE SUBMITTED?

Materials should be submitted at least one month prior to the scheduled ECRB meeting. During this one month period, the Commission's staff engineer will determine if all appropriate materials have been submitted, prepare a staff summary of the engineering issues, and distribute the material to the ECRB members for their review prior to its meeting.

HOW IS THE ENGINEERING CRITERIA REVIEW CONDUCTED?

The engineering criteria review is conducted at a public meeting. Permit applicants and/or their engineering consultants are invited to make presentations to the ECRB summarizing the engineering criteria, analyses, calculations, designs, strong-motion instrumentation plans, and any outstanding issues. Following the presentation, the ECRB members may ask questions or offer recommendations regarding the engineering criteria used in the analyses and design of structures. The project representatives are

then given an opportunity to respond to the ECRB's questions and to comment on the Board's recommendations. The Board's chair states the ECRB's findings and conclusions and polls the ECRB for any changes to its conclusions before forwarding them to the Commission through permit conditions. The presentation and engineering review of each project takes about two hours. Typically, no more than two projects are reviewed at a meeting. BCDC's staff engineer prepares a summary of the meeting minutes to be available after their approval by the Board at its next meeting.

WHAT ACTION DOES THE ECRB TAKE ON THE ENGINEERING ASPECTS OF A PROJECT?

The ECRB typically acts on the engineering aspects of a project by resolution. A typical resolution of acceptable engineering criteria used by an applicant is as follows:

The Engineering Criteria Review Board finds that, in its opinion and subject to the conditions listed below, it is reasonable to conclude that the proposed project, as presented by the permit applicant, can be designed and constructed to a level of safety consistent with and appropriate to the nature of its intended use:

- **Condition 1:** Written evidence that the design complies with all applicable state, federal and local codes and standards, including but not limited to the California Building Code, as adopted and/or modified by the local building department;
- **Condition 2:** Written evidence that an independent peer review panel has reviewed the project according to accepted standards of professional practice consistent with California and local Building codes, unless evidence, provided by the applicant indicating that peer review is not necessary, is approved by the staff, upon consultation with the ECRB; and/or
- **Condition 3:** Evidence that a thorough and independent review of the design details, calculations, and construction drawings have been made by a professional on behalf of the applicant.

These conditions may be included in the resolution because the ECRB focuses on the engineering criteria, not on a detailed check of the analyses, calculations, and designs. Other requirements related to the project being considered may be recommended by the ECRB.

If the ECRB finds that the engineering criteria are not appropriate, it will so advise the Commission.

WHEN AND WHERE DOES THE ECRB MEET?

The ECRB typically meets at the Commission's offices at 50 California Street, 26th Floor, in San Francisco about once a month or whenever a major project consisting on a complex engineering design is brought to the Board by the staff. Ten days prior to the scheduled ECRB meeting, a meeting notice/agenda is mailed to the ECRB members, interested parties, and members of the public. The meeting notice provides a description of the proposed project that will be evaluated and the issues to be discussed at the ECRB meeting.

IS THE ECRB THE ONLY REVIEW OF ENGINEERING PLANS?

In addition to the ECRB review, the Commission's staff engineer reviews engineering plans and project specifications to determine whether these documents comply with the conditions of the permit. This review may occur before or after the ECRB review, depending on the completeness of the plans and the complexity of the project.

ARE OTHER TYPES OF REVIEWS NEEDED?

Most projects reviewed by the ECRB and the Commission's staff engineer are of scope and size such that the Design Review Board (DRB) will review the design, appearance, and public access aspects of the project. A pamphlet entitled *BCDC's Design Review Board: What It Is. How It Works* is available upon request.

Both Boards are advisory to the Commission and neither may approve a project. However, in their advising role to the Commission, both boards may place contingencies of acceptance on a project based on their review as expert panels. In the end, only the Commission may decide whether a permit should be issued. Further, other permits may be needed from a local government or a federal agency. Meeting those requirements is the responsibility of the project sponsor.

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