

# Project Specific Peer Review Guidelines

By D. Matthew Stuart P.E., S.E., FASCE, SECB

The author has posted an Appendix and several tables referenced in this article on a password protected site.

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The practice of structural engineering in the U.S. today for many licensed professionals includes involvement with reviews, by others, of projects they have designed, as well as the review of designs developed by other engineers. These project reviews take many forms and can occur at any phase of the project preplanning, design, construction or completion.

Reviews are sometimes conducted for internal purposes only, while others occur as a result of requirements outside of the individual's company. External project peer reviews can include those mandated by state and local codes and statutes, or voluntary reviews conducted independently at the request of a client, owner or other interested party.

Anecdotal experiences of many design professionals indicates that most of the mandatory project reviews are conducted in a professional manner, and involve specific guidelines and check lists to assure a thorough and orderly review process. On the other hand, it appears that voluntary reviews and reviews conducted by non-licensed individuals are very often conducted in a haphazard and unprofessional manner. In order to bring some uniformity and control to all peer reviews conducted in the U.S., particularly voluntary reviews, it is recommended that a guideline be developed to establish an industry standard for the structural engineering community.

## Author's Experience

In most states, there are no legislated or mandatory peer reviews that must be performed for new project designs. Peer and plan reviews of structural designs are performed, just the same on a regular basis for various municipalities, private owners/developers and other interested parties all across the country. The level and thoroughness of these reviews varies a

great deal; they are typically performed by either personnel (licensed and non-licensed) employed by the local authority or by independent licensed consultants retained by the governing agency or owner/developer.

Projects that the author has designed in cities located in Washington, California, Connecticut and Massachusetts, in which mandatory peer and or plan reviews were required have all resulted in very thorough and professional reviews of all of the contract documents and calculations. In some cases, the quality of the mandated review was driven by well established guidelines and check lists. In other cases, the quality of the mandatory review appeared to be related to the experience and knowledge of the selected reviewer, whether that person was an in house employee of the governing body or an independent consultant.



The author's exposure to peer reviews conducted on a voluntary basis has been significantly more unpleasant than that experienced with mandatory peer reviews. Similarly, mandatory plan reviews in which the reviewer was a non-licensed individual have also resulted in very unpleasant experiences. Examples of the author's experience with voluntary peer reviews, as well as plan reviews conducted by non-licensed individuals, can be found in *Table 1 (on-line)*.

Many structural engineers have probably had similar bad peer review experiences. However, experience on both sides of the fence, as the reviewed and

the reviewer for both counterproductive as well as productive peer reviews, suggests that there is usually something to be learned from each and every such activity. Therefore, peer reviews provide value to the structural engineering profession and clients as well as enhance the safety of the public.

## ASCE/SEI/BPAD Committee

The quality of voluntary peer reviews would be improved by the development of a guideline that could be referenced by both the reviewer and reviewed as the industry standard. This is one of the current objectives of the Business and Professional Activities Division (BPAD) of SEI.

The first steps by the BPAD involved researching the status of peer reviews in the U.S., including a review of a number of papers published on the subject over the past several years. A summary of the most pertinent documents that were available can be found in *Tables 2A, 2B and 2C (on-line)*. Excluded from this list of publications, due to lack of space, is an article published in the November 1988 issue of *Civil Engineering* entitled *Reviewing Peer Review*.

The results of this research, in conjunction with feedback obtained from the BPAD Executive Committee (EXCOM), indicated that the term "peer review" can mean a number of different things to different design professionals. Therefore it became evident that the first hurdle to be cleared before an effective industry standard guideline could be developed was to define exactly what is meant by the term "peer review".

It was determined that peer reviews could occur in three primary formats: 1) as a part of the risk management of a firm's practice, 2) as a pre-construction review effort during or after completion of the project design, and 3) as an investigation related to either a construction or post-construction event.

The above categories were further subdivided into more specific reviews. A list of the categories of peer reviews and the definitions of each applicable review are

provided in *Table 3*. The BPAD EXCOM is in agreement with these definitions, as are NCSEA and CASE through their representation within SEI/BPAD.

Additional research included a survey of all of the U.S. professional engineering licensing boards to determine the status of licensing requirements for plan reviewers. This survey was conducted in response to a recent provision of the California Act that essentially mandated that all persons (including employees and agents of municipal authorities) involved in the act of reviewing plans for approval, and issuance of permits, must be licensed professional engineers. The results of this survey, as well as a copy of the SEAONC Position Statement on structural plan checks (March 2004), can be found in the *Appendix (on-line)*.

## Guidelines

Research into the development of a peer review guideline began with a review of existing guidelines and checklists. Examples of the most pertinent references are provided in *Tables 4A and 4B (on-line)*. It should be noted that the information provided in these tables relative to Massachusetts is not affected by a construction reform law enacted in July of

2004 that addresses review requirements for municipal program and/or feasibility studies. Separately it should be noted that the SEC-ACEC/CT is involved with the enhancement of the peer review process in Connecticut through the refinement of their published guidelines. The revised document currently exists in a draft form only, however.

The *Appendix (on-line)* provides additional information that is not listed in these tables including a peer review questionnaire, Policy Statements (PS) and Project Peer Review Guidelines (never published) that were developed by an ACEC/ASCE joint task committee in the late 1980's. In addition, a copy of the 2004 ASCE PS 351, USACE ITR Guidelines, SEAONC Guidelines for Project Design Peer Review, RediCheck Book link and the City of Chicago Structural Peer Review Program are also provided in the *Appendix (on-line)*.

Clearly there has been a lot of discussion over the past several years concerning peer reviews. However, most of the work developed to date in the industry has targeted organizational peer reviews (OPR) and technical peer

reviews (TPR). Using the newly established definitions (and existing guidelines) as a springboard, guidelines for voluntary project specific peer reviews (PSPR) should be developed, because they are currently the most unregulated. An independent committee within SEI should be established to start the process. This same committee could also ultimately take the lead in the development of guidelines for all of the different types of peer reviews recently defined. ■

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*Matthew Stuart P.E., S.E., FASCE, SECB is licensed in 19 states and has 30 years of experience as a structural consulting engineer. Mr. Stuart is a member of the NCSEA Education Committee, Chairman of the proposed new SEI Standards Committee on Independent Structural Project Reviews and works as a Senior Project Manager at the main office of Schoor DePalma Engineers and Consultants located in New Jersey. This paper was previously presented at the 2006 SEI Structures Congress, and was published in the Congress Proceedings. Mr. Stuart can be reached via email at [mstuart@schoordepalma.com](mailto:mstuart@schoordepalma.com).*

Table 3: Professional Practice Peer Review Definitions

<b>RMPR</b> Risk Management Peer Reviews	<b>OPR: Organizational Peer Review;</b> A confidential review of general, project process, human resource, financial management, professional and business development programs of a firm by qualified, objective and experienced colleagues.		<b>CASE Risk Management Program (RMP).</b>
	<b>TPR: Technical Peer Review;</b> A review of a number of representative Contract Documents designed and developed by a firm to determine how projects are produced in order to enhance the extent of the OPR.		
	<b>QAPR: Quality Assurance Peer Review;</b> A review of the Contract Documents for a project by a member of the same firm (with a similar background and extent of experience to that of the project engineer) not involved with the original design development of the same project.		<b>In-House Program.</b>
<b>PCPR</b> Pre-Construction Peer Reviews	<b>PSPR: Project Specific Peer Review;</b> A review of the Contract Documents of a specific project. Review may be of the complete set of drawings, specifications and calculations or just specific components.	<b>Voluntary:</b> Review conducted at the request of an Owner, Client or other interested party. Review is typically conducted by an independent licensed engineer with a level of experience consistent with the project being reviewed.	
		<b>Mandatory:</b> Review conducted as required by local or State ordinances, rules or laws. Review can be performed by an independent licensed engineer or a licensed employee of the reviewing authority with a level of experience consistent with the project being reviewed. Plan Reviews conducted as a part of the permitting process for a project in which the Plan Reviewer is required to be a licensed engineer also falls into this category.	
	<b>PCR: Project Coordination Review;</b> Review conducted to confirm appropriate interface and coordination has occurred between the different professional disciplines for a specific project. Although coordination reviews can be performed by any member of the design team, a PCR can also be provided by individuals or firms not involved with the original design and development of the same project.		
	<b>CR: Constructability Review;</b> Review conducted as a continuation of the PCR to assess the economics and fit up of a specific project. A CR can also include a Value Engineering effort.		
<b>IPR</b> Investigative Peer Reviews	<b>CCR: Construction Claims Review;</b> Review conducted to assess claims made against the design professional concerning change order requests. Review typically conducted at the request of the project Contractor.		
	<b>EOCR: Errors and Omissions Claim Review;</b> Review conducted to evaluate claims made against design professional concerning incomplete or incorrect Contract Documents. Review typically conducted at the request of the Owner.		
	<b>FR: Failure Review;</b> Review of Contract Documents as they relate to construction or in service failures or collapses		