



Structural Design Services & Structural Condition Assessments PEO Practice Guidelines

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Background

- *Arenas Structural Adequacy (1981)*
- *Professional Engineers Providing Structural Engineering Services of Buildings (1995) Practice Guideline*
 - Mentioned surveys of existing structures
 - Covered design and general review of construction
- *Structural Engineering Assessments of Existing Buildings (2012) Practice Bulletin*
 - Developed to address several queries on professional obligations



Summary Guidelines / Standards / Bulletins

- ✓ Practice guidelines and standards focus on professional obligations i.e. PSC does not develop technical standards.
- ✓ Practice guidelines are considered soft law and are used in court as evidence of best engineering practice.
- ✓ Performance standards are Regulations and are considered hard law.
- ✓ Practice bulletins are similar to guidelines, but are usually developed to address urgent issues.

Summary



Agenda

Presentation is done in Q & A format and addresses:

- Structural Design Services Practice Guideline
 - Terms of Reference (problem definition)
 - Primary Structural Engineer and other definitions
- Structural Condition Assessments Practice Guideline
 - Terms of Reference (problem definition)
 - Disclosures
 - Structural Adequate and other definitions
 - Performance Standard status
- PEO and the Elliot Lake Commission of Inquiry
- Recent Decisions and Reasons



Structural Design Services

➤ Terms of Reference:

b) identify difficulties associated with the division of structural engineering design for a single building between multiple practitioners providing services for different clients and suggest procedures for mitigating risks of non-coordination, incomplete design and responsibility gaps;





Structural Design Services

➤ Terms of Reference:

c) define the term “structural integrity of the building” and relate this to the services provided by the various contributors to the overall structural design of building;





Primary Structural Engineer

- The person or organization responsible for the structural integrity of the primary structural system, and for general conformance and coordination of secondary structural elements and specialty structural elements with the primary structural system.



Specialty Structural Engineer

- A member who designs and supervises the preparation of documents for a specialty structural element while acting as a supporting engineer providing supplementary supporting structural engineering services to the PSE.



Structural Integrity

- Structural integrity is defined in the Structural Commentary L of the 2010 edition of the National Building Code (Part 4 of Division B) to mean the ability of a structure to absorb local failure without widespread collapse.



Structural Condition Assessments

➤ Terms of Reference:

Engineers conducting structural engineering assessments of existing structures, such as buildings, may face such challenges in the course of their work as the building codes and design standards generally focus on new structures rather than existing ones. Original design and construction documents of existing structures are not always available...



Structural Condition Assessments

- Disclosures:
 1. the specific purpose and defined scope of the structural condition assessment, as well as any limitations or exclusions imposed on the work by the practitioner or the client.
 2. the specific statutes, regulations, codes and technical standards applied to the assessment.
 3. a summary of the engineer(s) relevant work experience



Structural Condition Assessments

- **Structurally Adequate:**
Buildings are deemed to be structurally adequate provided they satisfy the evaluation criteria prescribed by Commentary L of the User's Guide–NBC of the Structural Commentaries (Part 4 Division B).



Structural Condition Assessments

➤ Preliminary Assessment

The preliminary assessment results in a written report of a condition survey of the building that is qualitative rather than quantitative in nature... The principles of Structural Commentary L from National Building Code (NBC) Structural Commentaries (Part 4 of Division B) should guide the engineer.



Structural Condition Assessments

➤ Detailed Assessment

The main task of the detailed assessment is to determine if the building or part being investigated is structurally adequate. The analysis should be done in general accordance with the National Building Code (NBC) Structural Commentary L.



Performance Standard Status

- Ontario Government may implement mandatory Structural Condition Assessments of certain types of buildings.
- If so, PEO will develop an accompanying Performance Standard in the spirit of a co-regulatory regime.



Jurisdictions with Mandatory Structural Assessments

- Quebec for certain types of parking structures.
- UK recently improved parking maintenance standards.
- New York State for certain types of parking structures.



Case Law on Structural Assessments

- Where there is a higher risk the professional is held to a higher standard of care. ~ Lawlor Rochester, *Construction Reports*
- Engineering firms are “only liable for defects that should have been detected using knowledge and standards reasonably expected of the engineering community at the time of the assessment.” ~ *Hilton Canada Inc. v. S.N.C. Lavalin Inc.*



Case Law on Structural Assessments

- ... in the absence of suspicious circumstances a surveyor is not required "to cause carpets and linoleum to be lifted and to go underneath floors to make detailed examination of every hidden corner of the building"... If the facts are such as would raise suspicions in the mind of a reasonably competent surveyor, a duty to investigate or advise the client of the need for this will arise. ... The fact that the report has been produced for a low fee or as a "rush job" will not affect the standard of care required unless it can be shown the client had also agreed to the survey producing a more limited survey than would normally be required. ~ *Dugdale, Professional Negligence*



Elliot Lake Commission of Inquiry

- October 15, 2014: Commission releases final report
 - Nine of PEO's recommendations reflected in report's recommendations; several others call for PEO action
- November 21, 2014: Council approves PEO's 2015-2017 Strategic Plan
 - Implementation of the recommendations calling for PEO action a Strategic Objective of the plan



Emerging Themes from Testimony

- Standards
- Professionalism
- Transparency
- Access to Information
- Qualifications of Practitioners





Regulatory Issues Raised

Standards

- No legislative requirement for structural review of existing buildings
- No legislative standard for how structural inspections or reviews of existing buildings are to be carried out
- No consistency in content or nomenclature of engineering reports



Regulatory Issues Raised

Professionalism

- Scope of investigations dictated by clients
- Budget limitations
- Pressure by clients to alter reports



Regulatory Issues Raised

Transparency

- Inquiry heard from many witnesses that they were unaware of discipline history of engineers involved
- Information was not readily available to the public
- Transparency of PEO's publicly available register



Regulatory Issues Raised

Access to Information

- Availability of past engineering reports
 - Previous reports not passed on
 - Reports not provided to municipality
 - Witnesses: had they known of previous findings...



Regulatory Issues Raised

Qualifications

- Competency certification
- Practising while suspended
 - Only required to have another P.Eng. sign off



Recommendation 1.4

For buildings to which these Recommendations apply, PEO should enunciate a Performance Standard for the prescribed structural inspection.

- ✓ PEO's Professional Standards Committee and its subcommittee have been working on a guideline: *Structural Condition Assessments of Existing Buildings and Designated Structures*. The final draft will be going to public consultation early fall, after which the performance standard to implement the recommendation will be developed. Regulations will be required to place the new standard into Regulation 260/08.



Recommendation 1.5

The prescribed structural inspection should be conducted in accordance with the Performance Standard by a structural engineering specialist who has met the PEO qualifications and requirements to be so certified.

- ✓ Survey of PEO members indicated members are not interested in obtaining specialist designations with exclusive area of practice.
- ✓ Ipsos Reid's poll of employers and clients found they rely on past experience. Designations and certifications are not as important.
- ✓ Legal opinion confirmed that although PEO can establish specialist designation within its current regulations, it appears to have no authority under PEAct to provide exclusive scope of practice for specialists.



Recommendation 1.6

After conducting a structural inspection in accordance with the PEO Performance Standard, the structural engineering specialist should complete a Structural Adequacy Report to determine whether the building meets the Minimum Structural Maintenance Standard and, if it does not, to describe what repairs and maintenance are required in order for the building to meet that standard.

- ✓ The performance standard called for under recommendation 1.4 would include this requirement.



Recommendation 1.21

Professional engineers and architects should be required, on request, to make available any records in their possession or control related to the structural integrity of a building to: (a) any professional engineer or architect conducting an inspection or assessment on behalf of the owner or with the owner's permission; (b) a prospective purchaser of the building or a professional engineer or architect conducting an inspection or assessment of the building on the prospective purchaser's behalf; (c) a chief building official or an inspector under the *Building Code Act*, and (d) an inspector under the *Occupational Health and Safety Act* in respect of a building that is a place of work to which the Act applies.

- ✓ PEO's legal opinion indicates only a request for information from the potential purchaser of a building is a problem. PEO can create the necessary requirements in regulations for the other three scenarios.



Recommendation 1.23

PEO should issue a clear direction to its members that the contents of an engineering report, or draft report, including a Structural Adequacy Report, should not be altered simply because the client requests that it be changed. Rather, any alteration of an engineering report, or draft report, should be based on sound engineering principles or changed facts.

- ✓ The Professional Standards Committee determined that a practice article would best address the issue, i.e. provide clear direction to members on the practice of revising reports. The practice article was published in the September/October 2015 issue of *Engineering Dimensions*.



Recommendation 1.24

PEO should establish a system of mandatory continuing professional education for its members as soon as possible, and in any event no later than 18 months from the release of the Report.

- ✓ The Continuing Professional Development, Competence and Quality Assurance Task Force has met for a year. It has established guiding principles for a CPD program, a model of the risk assessment procedure, and a list of technical activities that might count towards an individual's CPD requirements. Ipsos Reid conducted focus groups and an on-line membership survey to determine PEO membership perceptions of CPD programs generally and attitudes towards the proposed program. PEAK program was subsequently approved by Council.



Recommendation 1.25

PEO Members should directly and promptly advise clients (past and present) of any suspensions or revocations of their licences, and the reasons therefore, that arise out of disciplinary actions resulting from:

- a) errors in design;
 - b) errors in calculations;
 - c) failure to properly inspect;
 - d) failure to report an unsafe condition;
 - e) failure to comply with the requirements of the Structural Adequacy Report; and
 - f) any and all matters that had a direct or indirect effect on the structural stability of a building or put the health safety, and welfare of the public at risk.
- ✓ PEO and Ontario Government working on this issue.



Recommendation 1.26

PEO should provide, for the benefit of the public, the following information on its public website in a format readily and easily searchable by the name of the PEO member:

- a) the name of every licensee and holder of a certificate of authorization;
 - b) the terms, conditions, and limitations attached to the licence or certificate of authorization;
 - c) a note of every revocation, suspension, cancellation, or termination of a licence or certificate of authorization;
 - d) information concerning upcoming Discipline Committee hearings, where a Notice of Hearing has been issued;
 - e) information concerning any findings of professional misconduct or incompetence, for a period of 10 years from the date of the finding(s), so long as the Discipline Committee had ordered publication with names; and
 - f) such other information as the Registration Committee or Discipline Committee directs.
- ✓ PEO and Ontario Government working on this issue.



Recommendation 1.27

For the construction of any buildings requiring the services of more than one professional consultant, either a professional engineer or an architect should be designated by the owner or the owner's agent as the prime consultant to perform the roles and responsibilities of that position, as defined by one or the other or both of PEO and the Ontario Association of Architects (OAA).

- ✓ Work is progressing on a document outlining the roles and responsibilities of that position. Once agreed to by the Professional Standards Committee, the document will be discussed with OAA and Ministry of Municipal Affairs and Housing. An amendment to Regulation 941/90 is anticipated.



Recent Decisions and Reasons

- *signing a final engineering opinion dated April 30, 2012, without applying a seal contrary to section 53 of Regulation 941 of the act, amounting to professional misconduct pursuant to sections 72(2)(g) and (j) of Regulation 941 of the act.*
- *signing an engineering opinion dated April 30, 2012, confirming the structural integrity of a building without making reasonable provision to ensure the validity of the opinion, amounting to professional misconduct pursuant to sections 72(2)(a), (b), (d) and (j) of Regulation 941 of the act*



Questions

