

**GUIDELINES
FOR
PROFESSIONAL
EXCELLENCE**

The Association of
Professional Engineers and Geoscientists of British Columbia
January, 1994

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1

Introduction

The Association of Professional Engineers and Geoscientists of B.C. is comprised of 16,000 Professional Engineers and Geoscientists registered in British Columbia. The principal function of the Association is to register and license its membership, as appropriate, to ensure the protection of the public interest.

The Association of Professional Engineers of British Columbia was constituted by the Engineers Act of 1921 on the primary principle that the formation of a self-regulating profession¹ would protect the public of British Columbia from unqualified and non-licensed practitioners. Seven decades of quality engineering serve as testimony to the wisdom of that legislation. The Association is continued in the present day as the Association of Professional Engineers and Geoscientists of the Province of British Columbia under the Engineers and Geoscientists Act.

There is a public expectation that the professional conduct of its Members will be managed by the Association. To meet this expectation, the Association has established a “Code of Ethics”² which outlines the principles of honourable conduct and ethical standards to be followed by all Members.

This is consistent with the position of trust and accountability afforded the Engineer and Geoscientist as honoured and respected members of society. At the same time, the Association is cognizant of public scrutiny of professions. Such scrutiny has been increased by Canada’s Charter of Rights and Freedoms in its recognition of individual freedoms and the accountability of public institutions.

Professional Engineers and Geoscientists make a significant and essential contribution to the socioeconomic life of British Columbia by working in key areas impacting the present and future development of our province. Their fields of professional practice broaden as disciplines diversify and become more specialized.

Pride in our profession is a long-standing tradition. It is based on a commitment to professional competence and quality practice. It is sustained by the fundamental values adopted over many generations by the best Engineers and Geoscientists, and is given public expression in the increasing number of significant works affecting society.

The “**Guidelines For Professional Excellence**” is the Association’s blueprint for its ongoing quest for excellence. It describes, for the benefit of Members, clients, employers, new members, members in training, educators and the public:

- the objective that each Member strives to maintain;
- the fundamental values of professional practice;
- the environment within which Members practise;
- the documentation and programs available to assist Members in achieving excellence in professional practice.

In publishing the *Guidelines*, the Association relies on the self-discipline of its Members to ensure their effective implementation. Achievement of excellence will benefit the profession as a whole, enhance its reputation and improve its social standing and influence. A better professional practice inevitably brings a Member recognition, higher status, career advances, the opportunity to work on important projects, and personal, intellectual and material enrichment.

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Statement of Objective

It is the objective of each Member to provide to society professional service of the highest quality and to foster continuing personal competence and professional development of all APEGBC Members.

The objective provides focus to Members on their individual responsibility to **maintain excellence** in the practice of engineering and geoscience with due regard to:

- The health, safety and well-being of the public;
- The protection of the environment;
- The fair administration of the Act and the *Code of Ethics*-,
- The enhancement of the engineering and geoscience professions.

In achieving this objective, Members will maintain a position of respected prominence in society world-wide, and be recognized for their valuable contributions.

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Professional Values

“A profession is a learned calling which requires advanced intellectual knowledge, understanding and abilities gained from intensive and specialized education, training and practical experience.”³

Members of a profession practise within their areas of knowledge and experience, doing so out of commitment to serve and protect the public. Professional practitioners also ensure that their competence is maintained throughout their careers. They are committed to higher education, objective analysis and reasoned judgement based on scientific principles.

The Association has identified four values fundamental to professional practice:

competence

Competence includes knowledge of the field, well-developed skills and experience.

Competent Engineers and Geoscientists are dedicated to mastering the knowledge and skills necessary for their professional practice.

Competence is the ability to apply scientific principles and proven concepts. It demands the strict and constant application of high standards of practice.

Competence is also a question of art. It demands practical judgement and the wisdom to use knowledge effectively. It involves respect for the human and environmental elements at every stage of professional practice.

Ethical conduct

The interests of clients, employers and society as a whole are key considerations.

Ethical conduct requires a Member to place the highest priority on the safety, health and welfare of the public followed by protection of the environment, the interests of clients or employers, and personal interests.

Ethical conduct requires dedication to the principles set out in the *Code of Ethics*.⁴ In the search for technical and scientific success, within the limits of legislation, regulations and good practice, Members' actions are guided by their professional conscience.

Individual Accountability and Responsibility

Members are personally accountable and responsible for their work and their professional opinions.

Responsible Members accept only those assignments for which they have the necessary competence.

The Association grants individual Members professional status and an exclusive right to practise. Professional status entails obligations towards clients and employers who engage the services of a Member.

Members must assume total responsibility and accountability for the consequences of their professional actions. Members are personally accountable to society as a whole, their clients and their employers for the work they do.

Members must act with integrity in their activities and must balance the demands of society for scientific development with the obligation to protect society from significantly adverse effects of those demands.

Throughout their working careers Members are responsible to assign the time and energy necessary to ensure individual scientific, professional and personal growth. The Association promotes excellence in professional practice by encouraging continuing education and other self-improvement programs for its Members. In this regard, the Association will provide Members with information about educational services, resources or tools available to assist them.

commitment to Society

Helping society make the best choices for today and the future.

Members should demonstrate their commitment to society by maintaining and promoting a high level of professionalism and excellence in their activities.

Through their many professional and private activities, Members guide society in making choices. Given that these choices can have far-reaching consequences for society, Members must explore and promote economic, social, political and environmental solutions and directions that promote a broad concept of “sustainability”.

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The Nature of Professional Practice

Engineers and Geoscientists must consider the consequences of their work on the safety and health of the public, the environment and property in today's changing world.

The *Code of Ethics* requires Members to consider the consequences of their work on the safety, health and welfare of the public and protection of the environment.

Indisputably, the human element is a primary concern of the profession. It is beneficial for Members to be able to identify, understand and evaluate the social, political, economic and environmental issues dominant in their societies. These issues affect the organizations in which Members work, their daily tasks and the projects for which they are responsible. Some examples of such issues include: our aging population, multiculturalism, sharing of the job market by men and women, the aspirations of native peoples and protection of the environment.

To understand the many concurrent influences on the organizations for which Members work and the projects they undertake, Members must be aware of the setting in which their professional activities are conducted.

The Province of British Columbia has undergone many significant changes during the last two decades.

Many profound changes have engendered new social issues. The information age has provided tools that make available to Engineers and Geoscientists relevant and current knowledge of all aspects of their endeavours.

The political environment has changed significantly at the international, national and provincial levels. The role of governments and people's expectations of government in our complex society have increased dramatically, influencing the day-to-day lives of all citizens to an extent never before contemplated.

National and international forces, which are moving the country to a world economy, have a momentum of their own, and are so powerful as to challenge the ability of provincial and local governments to manage their destinies.

Members must understand the significance of a rapidly changing world on their profession, the environment and the economy, and take those steps necessary to continually and progressively adapt to these changes as they have done so successfully in the past.

In recent years, the environment has become a significant public issue which is reflected by the sentiment that environmental degradation should be minimized. Public concerns for the environment tend to promote a greater emphasis on pollution control and abatement programs and reclamation. Members must be aware of, and adapt to, the resulting shift of emphasis from growth-related industry and commerce to regulatory and environmentally focused reclamation activities.

A Member's role is determined by a wide variety of interacting parties.

Engineering and geoscience activities can be very diverse, given the wide variety of parties that may interact in planning and executing a project. These might include: elected officials, public servants, community organizations, pressure groups, the media, employers' associations, trade unions and the public. Work is not the only project dimension to be considered. The social, political, economic and environmental setting within which participants interact can also influence the success or failure of a project.

Evolving Technology

Technology is rapidly changing and all Members must continue to strive vigorously to stay current in their field of expertise. In addition to formal continuing education instruction, Members should update themselves in all the informal ways available, particularly by reading technical journals and magazines and by discussion with experts and peers. Members have a duty to advance knowledge and to transfer knowledge to other Members and the appropriate scientific community.

Social Trends

Members must have a strong awareness of the social, environmental, political and fiscal settings in which their professional decisions are made. They must have an understanding of social trends and be sure that their decisions take into consideration the aspirations of appropriate elements of society. There has been much social change in the past three decades and it appears likely to continue at an ever-increasing rate.

Engineers and Geoscientists must not only focus on the technical competence of their endeavour but, at the same time, must be sure that exemplary business practices will promote and inspire confidence in those with whom they do business.

Relationships

Members should promote good relationships with the public, employers and employees, clients and colleagues. They must hold the public interest in priority over their clients' and employers' interests, and both interests in priority over their own.

Excellence

The people of British Columbia have, through the *Engineers and Geoscientists Act*, vested Members with certain responsibilities and privileges. In return, they have a right to expect competence and ethical behaviour from Engineers and Geoscientists. Members must strive for more than adequate or sufficient technical skills. Their goal must be professional excellence.

Professional Review

Members must seek review of their work as a basic element of quality management. Association Bylaw 14(b), entitled "Quality Management", requires that all designs undergo an "in-house" check. The extent of the check will depend on the circumstances; for example, a complex design may necessitate a full formal, detailed review of project methodology, calculations and recommendations, whereas a design utilizing basic, well-established principles could be a simple review of the documents and/or discussion of the salient points of the work with a colleague.

However, all structural designs must undergo a concept review to determine that the structural concepts are complete, consistent and in general compliance with appropriate codes. Representative samples of the individual elements must be checked to evaluate the analysis, design and detailing procedures used by the design engineer.

Bylaw 14(b) also requires field review by Members during the construction of their projects.

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The Challenge

The challenge is to achieve excellence –meeting all objectives and applying everything learned –and to do it consistently.

The *Guidelines* present value statements for the quality service every Engineer and Geoscientist should strive to achieve. The goals of excellence are within reach of every Engineer and Geoscientist. The challenge is to achieve excellence ..meet all objectives and apply everything learned ..consistently.

The achievement of excellence is the consequence of the dedicated work of many Members working in industry, the civil service, construction and private consulting firms. It can be achieved by the application of the professional values that have been designed for all Engineers and Geoscientists to use, adopt and make their own. The challenge is **to make them work for you!**

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Governing Legislation Administration

In British Columbia, the governing legislation regulating the engineering and geoscience professions is the *Engineers and Geoscientists Act*. This Act:

- Defines the practice of professional engineering and professional geoscience;
- Creates the Association of Professional Engineers and Geoscientists of British Columbia;
- Assigns to the Association the responsibility for examining and accepting applicants for registration;
- Restricts the practice of professional engineering and professional geoscience to Members;
- Assigns to the Association the task of enforcing the Act, including the disciplining of Members in accordance with the procedures set forth in the Act;
- Empowers the Association to make bylaws for its own management and to set forth a code of ethical behaviour for its membership.

This Act is one of the fundamental building blocks supporting a Member's professional activity.

The Act is attached as Appendix A to Section 7.

Bylaws of the Association

The Council of the Association may pass bylaws pursuant to the *Engineers and Geoscientists Act*. These bylaws provide procedural guidance regarding the administration of the Act. They provide for the election of a Council, examination of applicants for membership and licensing, and a *Code of Ethics*.

The bylaws are attached as Appendix B to Section 7.

Code of Ethics

A profession assigns its highest obligation to society.

“Adherence to a code of ethics ensures an adequate standard of competence and conduct based on a relationship of responsibility and trust between the profession and the public, while maintaining respect, integrity, and

confidentiality between practitioner, employer, and client. But the highest obligation of a profession is to society, which it serves: the members of a profession shall protect the interests of society in the areas of the profession's specialized expertise. This obligation rises above all others when there are conflicting responsibilities. As part of this 'social contract', the recognized professions in Canada have been given the authority and responsibility to be self-regulating under their respective provincial or territorial legislation, and to ensure that only qualified professionals are licensed to practice."⁵

The Association's *Code of Ethics* deals with Members' relationships with the public, colleagues, employers, employees and clients. Adherence to the Code ensures a high standard of competence by placing an obligation on Members to exercise responsibility, respect, integrity and confidentiality between themselves, the public, employer and client.

The *Code of Ethics* prescribes principles of ethical behaviour for Members. These are in addition to the obligations of the ordinary citizen and thus dictate a higher level of honourable conduct. The manual to the Code provides guidelines to the application of the principles and also offers some anecdotal examples of hypothetical failures in ethical conduct.

The *Code of Ethics* and *Code of Ethics Guidelines* are attached as Appendix C to Section 7

Organization charts

The Association has organized its many functions as outlined in the charts attached as Appendix D to Section 7.

Each of the many component parts of the Association and a description of their responsibilities and functions is described.

Discipline

The publication of these *Guidelines* is part of the Association's strategy to enhance its "Excellence in Engineering and Geoscience" program, focused on supervision through self-discipline. (A number of relevant Association publications have been or will be published as noted in Section 8.)

In order to carry out the intentions of the Act, Bylaws and the *Code of Ethics*, the Association developed a structure to provide for the discipline of its membership. This structure is outlined and explained in detail in Appendix E to Section 7.

Appendix A

GUIDELINES FOR
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Engineers and Geoscientists Act

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(As amended September
1993)a--
a--RS CHAPTER
109**Interpretation**

1. In this Act

“association” means The Association of Professional Engineers and Geoscientists of the Province of British Columbia

“board” means the Board of Examiners of the association;

“certificate holder” means the corporation, partnership or other legal entity that holds a valid certificate of authorization;

“certificate of authorization” means the authorization given under the seal of the association that permits corporations, partnerships or other legal entities to practise professional engineering or professional geoscience through employees who are members or licensees;

“council” means the council of the association;

“direct supervision” means the responsibility for the control and conduct of the engineering or geoscience work of a subordinate;

“executive director” means the executive director of the association;

“former Act” means the *Engineering Profession Act, R.S.B.C.* 1948, c. 110, and amending Acts;

“licence” means the official authorization given under the seal of the association that permits a nonresident person who meets the requirements of section 10 (4) to practise professional engineering or professional geoscience;

“licensee” means a nonresident engineer or geoscientist licensed under this Act or the holder of a limited licence under this Act;

“limited licence” means the official authorization given under the seal of the association that permits a person to practise professional engineering or professional geoscience within the scope specified in the limited licence;

“member” means a registered member of the association;

“practice of professional engineering” means the carrying on of chemical, civil, electrical, forest, geological, mechanical, metallurgical, mining or structural engineering, and other disciplines of engineering that may be designated by the Council and for which university engineering programs have been accredited by the Canadian Engineering Accreditation Board or by a body which, in the opinion of the Council, is its equivalent, including the reporting on, designing, or directing the construction of any works that require for their design, or the supervision of their construction, or the supervision of their maintenance, such experience and technical knowledge as are required by or under this Act for the admission by examination to membership in the association, and, without restricting the generality of the foregoing, shall include reporting on, designing or directing the construction of public utilities, industrial works, railways, bridges, highways, canals, harbour works, river improvements, lighthouses, wet docks, dry docks, floating docks, launch ways,

marine ways, steam engines, turbines, pumps, internal combustion engines, airships and airplanes, electrical machinery and apparatus, chemical operations, machinery, and works for the development, transmission or application of power, light and heat, grain elevators, municipal works, irrigation works, sewage disposal works, drainage works, incinerators, hydraulic works, and all other engineering works, and all buildings necessary to the proper housing, installation and operation of the engineering works embraced in this paragraph; but the performance as a contractor of work designed by a professional engineer, the supervision of construction of work as foreman or superintendent or as an inspector, or as a roadmaster, trackmaster, bridge or building master, or superintendent of maintenance, shall not be deemed to be the practice of professional engineering within the meaning of this Act;

“practice of professional geoscience” means reporting, advising, acquiring, processing, evaluating, interpreting, surveying, sampling or examining related to any activity that

- (a) is directed towards the discovery or development of oil, natural gas, coal, metallic or non-metallic minerals, precious stones, other natural resources or water or the investigation of surface or sub-surface geological conditions, and
- (b) requires the professional application of the principles of geology, geophysics or geochemistry.

“president” means the president of the association;

“professional engineer” means a person who is registered or licensed as a professional engineer under this Act;

“professional geoscientist” means a person who is registered or licensed as a professional geoscientist under this Act;

“register” means the register kept by the registrar under this Act and formerly kept under the former Act;

“registrar” means the registrar of the association;

“registration” means entry in the register of the name of the person admitted to membership in the association.

RS1960-128-2; 1987-22-1, effective July 17, 1987

(B.C. Reg. 220/87); 1990-41-2.

Exemptions

2. (1) Nothing in this Act shall prevent a person registered as an architect under any Act relating to the practice of architecture from practising the profession of architecture or require him to be registered under this Act where his practice is confined to architecture. Nothing in this Act applies to a British Columbia or Canada land surveyor practising his profession, except that he shall not style himself nor hold himself out as a professional engineer unless he is registered or licensed under this Act.

(1.1) This Act does not apply to a professional forester as de-

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defined in the *Foresters Act* provided that the professional forester does not hold himself or herself out as a professional engineer or professional geoscientist.

(2) This Act does not apply to any member of Her Majesty's

Canadian forces while actually employed on duty.

(3) This Act does not affect the rights, powers or privileges of a person under the *Power Engineers and Boiler and Pressure*

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ND GEOSCIENTISTS OF BRITISH COLUMBIA

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Vessel Safety Act or the *Mines Act* under a registration, licence or certificate under those Acts.

(4) [Repealed].

(5) Nothing in this Act shall prevent a person from assisting in the performance of any professional service or work of the kind described in the definition of "practice of professional engineering" in section 1 where a professional engineer directly supervises and assumes full responsibility for such service or work.

(5.1) Nothing in this Act shall prevent a person from assisting in the performance of professional service or work described in the definition "practice of professional geoscience" in section 1 where a professional geoscientist directly supervises and assumes full responsibility for the service or work.

(6) [Repealed].

(7) [Repealed].

(8) Work as a contractor of work designed by a professional engineer or professional geoscientist or as a foreman, superintendent or inspector supervising construction or as a superintendent of maintenance is not deemed to be the practice of professional engineering or the practice of professional geoscience.

(9) This Act does not apply to prevent persons from acquiring mineral titles or from performing work on mineral titles required under the *Mines Act* or the *Mineral Tenure Act* to maintain those titles in good standing provided that these persons do not hold themselves out as professional engineers or professional geoscientists.

Incorporation of Association

3. The Association of Professional Engineers of the Province of British Columbia incorporated under the former Act is continued as a corporation under the name "The Association of Professional Engineers and Geoscientists of the Province of British Columbia".

1990-41-4.

Powers with Respect to Property

4. The association may acquire and dispose of property as occasion may require.

RSI 960-128-5.

Membership

5. The membership of the association shall consist of all members of the association who are in good standing under the provisions of the former Act at the time of its repeal and all persons admitted to membership by the council under the provisions of this Act and the bylaws of the association as long as they remain on the register.

RSI 960-128-6.

Organization

6. (1)(a) **The powers conferred on the association shall be exercised by the council.**

(b) The council shall govern, control and administer the affairs of the association, and **shall exercise all rights and powers vested in it by this Act or by the bylaws, and may pass resolutions necessary for those purposes, subject to**

this Act and the bylaws of the association.

(2) The council shall consist of the president, all vice presidents, the immediate past president and councillors appointed under subsection (8) and elected under subsection (9).

(3) Notwithstanding subsections (8) and (9), a councillor whose term of office has expired may continue to hold office until his successor is appointed or elected.

(4) All persons who are members of the council when this Act comes into operation shall continue in office until their successors are elected or appointed under this Act.

(5) The president shall be elected annually by the members of the association, and shall hold office until his successor is elected.

(6) The president, if present, shall preside at all meetings of the association and the council, unless he requests the meeting to appoint some other person to preside. He or the person appointed in his place shall vote only when the votes of the members are equally divided.

(7) One or more vice presidents shall be elected annually by the members of the association, one of whom shall be designated by the council to have all the powers and rights of the president during his absence.

(7.1) A vice president may hold office until his successor is elected.

(8) The council includes 4 councillors appointed under subsection (9), a further number, set by bylaw of the association and being not less than 8, of councillors elected by the members under subsection (9.2) and the councillors, if any, appointed under subsection (9.3).

(9) The Lieutenant Governor in Council must appoint 4 councillors who are not members of the association and

(a) subject to subsection (12), each serves for a 2 year term,

and

(b) 2 must be appointed each year.

(9.1) Despite subsection (9), the term of office of councillors appointed under the subsection (8) in force on June 1, 1993 ends January 1, 1994 and

(a) subsection (9) does not apply to the appointment of their immediate successors in office,

(b) 2 of the first councillors must be appointed under subsection (9) to serve for a one year term, and

(c) 2 of the first councillors must be appointed under subsection (9) to serve for a 2 year term.

(9.2) The association must conduct a letter ballot of members each year to elect the councillors to be elected by the members and

(a) each year the election must be for half the number of councillors to be elected by the members,

(b) in the event of a tie vote, the winner must be the candidate with greater seniority as a member, and

(c) each councillor elected by the members must, subject to subsection (12), serve for a 2 year term.

(9.3) If no member of a Faculty of Applied Science, Engineering or Geoscience in British Columbia or no professional geoscientist is elected under subsection (9.2), then the council must appoint a member of a Faculty of Applied Science, Engineering or Geoscience in British Columbia or a professional geoscientist, as the case may be, to the council for a 2 year term.

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(10) The council shall appoint a registrar, who must be a member of the association, and an executive director and both these offices shall be held at the pleasure of the council and may be held by the same person.

(11) [Repealed 1990-41-5].

(12) In the case of the incapacity, resignation or death of a member of the council,

- (a) if he is an elected member, the other members of the council shall appoint a member of the association to fill the vacancy; and
- (b) if he is a government appointee, his place shall be filled by appointment made by the Lieutenant Governor in

Council.

RS1960-128-7, 1987-22-2, effrcivrvJidv 17, 1987 ~ 'B.C. Reg. 220/8 7.; 1990-41-5.

Bylaws

7. (1) The council may pass, alter and amend bylaws, not inconsistent with the provisions of this Act, providing for

- (a) the election of the council;
- (b) the government, discipline and honour of the members, licensees and certificate holders of the association, including the establishment of a code of ethics;
- (bi) the establishment of quality management programs for members, licensees and certificate holders;
- (b.2) the establishment by the council of a professional practice review program for members, licensees and certificate holders, including the creation of a practice review committee to conduct practice reviews as directed by the council;
- (b.3) the circumstances and manner in which the members, licensees and certificate holders must disclose that errors and omissions liability insurance is not held or is not applicable;
- (c) the management and maintenance of the association and its property, both real and personal, the investment of its funds, banking, the borrowing of money, the appointment of staff and their remuneration and generally for the carrying on of the general business of the association;
- (d) the fixing of an annual fee and other fees, including fees on admission;
- (e) the levying, payment, remission and collecting of annual and other fees;
- (f) the establishment and regulation of standards of admission to membership and the enrolment and qualifications of candidates for admission to membership;
- (fl) the establishment and enforcement of standards for certificate holders;
- (g) the classification of the different disciplines of professional engineering and professional geoscience and the designation of the different grades of membership in the association and limitation of the rights of members within the different disciplines and grades;
- (h) the subjects of study, the examinations to be passed, the experience required and the fees to be paid as a preliminary to or on application for membership in the association, or for a licence issued pursuant to this Act;
- (h. 1) the establishment and monitoring of compliance with

standards of training and experience required for licensees, and the enrollment and qualifications for a limited licensee, including limited licences for applied science technologists;

- (i) the resignation of members;
- (j) the calling and conduct of meetings of the association and of the council, the necessary quorums, voting, the appointment of committees and their powers, the method of balloting, and other matters in that connection;
- (k) the assistance, pecuniary or otherwise, to be given to individuals and organizations where, in the opinion of the council, the assistance will be of benefit to the public, the association or its members;
- (l) the promotion of better public relations in the manner and by the means the council sees fit, including, without limiting the generality of the foregoing, the publication of books, papers and periodicals;
- (in) the creation of divisions, committees and regional groups, and the delegation to them of those powers and authority the council sees fit;
- (m.1) the establishment, development and administration of ancillary bodies and the qualifications for admission to these bodies;
- (n) all other purposes reasonably necessary for the management, regulation and well being of the association.

(2) No bylaw shall come into force until the expiration of 30 days fixed by section 8(3) and the other provisions of section 8 have been complied with.

RS1960-128-8; 1974-87-12; 1 987-22-3, effecrive July 17, 1987 (B.C. Reg. 220/87); 1990-41-6.

Ratification of Bylaws

8. (1) No bylaw passed shall come into force unless ratified by at least 2/3 of the votes cast by letter ballot taken under section 9(6).

(2) The executive director shall file with the minister a true copy of each bylaw, duly certified under the seal of the association, within 14 days after ratification.

(3) Any bylaw may be disallowed by the Lieutenant Governor in Council within 45 days after the filing of it under subsection (2).

RS1960-128-9; 1990-41 -7.

Meetings of Association

9. (1) An annual meeting of the association shall be held at the time and place appointed by the council at least once in every calendar year and not more than 15 months after the holding of the last preceding annual meeting.

(2) If default is made in holding any annual meeting, the Supreme Court, on the application of a member of the association, may call or direct the calling of an annual meeting of the association.

(3) The council, at any time of its own motion, may call a general meeting of the association.

(4) The council, on the written request

of 25 members of the association or of 5
members of the council, shall call a general

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meeting of the association, and such meeting shall be held within 6 weeks after receipt of the request by the executive director.

(5) Twenty-one days' written notice of the time and place of any meeting of the association shall be sent by prepaid post to every member of the association in good standing at his last recorded address.

(6) The council may, and on written request of 25 members of the association shall, take a vote of the members of the association by letter ballot in the manner provided by the bylaws of the association on any matter that, under this Act and the bylaws, can be voted on at a general meeting of the association, and a vote so taken has the same force as if the vote had been taken at a general meeting of the association.

RS1960-128-10; 1990-41-7.

Admission to Membership

10. (1) The council shall admit an applicant to membership in the association who is a Canadian citizen or permanent resident of Canada, and who has submitted evidence satisfactory to the council

- (a) that graduation in applied science, engineering or geoscience from an institute of learning approved by the council in a program approved by the council has been achieved or that examinations established by the bylaws of the association or examinations, requiring special knowledge in branches of learning specified by the council, of an association or institute approved by the council have been passed,
- (b) that the applicant has passed special examinations required by the council,
- (c) that the experience in engineering or geoscience work established by the bylaws has been obtained,
- (d) that the applicant is of good character and good repute, and
- (e) that all examination and registration fees have been paid to the association.

(1.1) Notwithstanding subsection (1) or (4), the council may refuse registration or a licence to a person where the council has reasonable and probable grounds to believe that the person has been convicted in Canada or elsewhere of an offence that, if committed in British Columbia, would be an offence under an enactment of the Province or of Canada, and that the nature or circumstances of the offence render the person unsuitable for registration or licensing.

(2) A person desiring to become a member shall comply with the provisions of all bylaws relating to application for membership, and, if he is required to qualify by examination, shall also comply with section 12(4).

(3) [Repealed].

1987-22-4, effective July 17, 1987 (B.C. Reg. 220/87).

(4) Any person who is not a citizen or a permanent resident of Canada whose qualifications are those required by paragraphs (a) to (d) of subsection (1), and who desires to engage temporarily in the practice of professional engineering or

professional geoscience in the Province, shall first obtain a licence from the council which will entitle him to engage in the practice of professional engineering or professional geoscience in respect of a particular work or for a temporary period, or both, as the council decides. On producing evidence satisfactory to the council of his qualifications and on payment of the prescribed fees, he shall be granted the licence.

(5) Neither corporations nor partnerships as such may become members of the association. Where professional engineers or professional geoscientists are employed by corporations or are members of partnerships, they individually shall assume the functions of and be held responsible as professional engineers or professional geoscientists.

RS1960-128-11; 1983-10-21, effective October 26, 1983 (B.C. Reg. 393/83); 1985-68-27, effective December 13, 1985 (B.C. Reg. 392/85); 1987-22-4, effective July 17, 1987 (B.C. Reg. 220/87), 1990-41-8.

Issue of Certificates of Authorization

10.1 (1) The council must issue a certificate of authorization to a corporation, partnership or other legal entity for the practice of professional engineering or for the practice of professional geoscience if the council is satisfied that the corporation, partnership or other legal entity

- (a) has on its active staff members or licensees who directly supervise and assume responsibility for the practice of professional engineering or for the practice of professional geoscience undertaken by the corporation, partnership or other legal entity, and
- (b) has satisfied the requirements of this section and the bylaws of the association.

(2) An application for a certificate of authorization, on a form provided by the council, must be filed, together with the application fee specified by the council, with the registrar and, to remain valid, the certificate holder must pay all fees specified by the council for certificate holders.

(3) If the practice of professional engineering or the practice of professional geoscience is carried on by a certificate holder as permitted under subsection (1), the estimates, specifications, reports, documents or plans prepared and delivered must

- (a) be signed and dated by, and sealed with the stamp of, the member or licensee of the association who is responsible for them and who supervised the preparation of them, and
- (b) show in a manner specified by the council the words "APEGBC CERTIFICATE OF AUTHORIZATION", together with the certificate number and expiry date.

(4) A certificate holder engaged in the practice of professional engineering or in the practice of professional geoscience in its own name as permitted under subsection (1) must keep the association advised of the names of the members or licensees of the association who are on the active staff of the certificate holder and who are directly supervising and assuming responsibility for the practice of professional engineering or for the practice of professional geoscience.

(5) The members or licensees named for the purposes of subsection (4) by a certificate holder are the authorized representatives of the certificate holder for all purposes under this Act and the bylaws, are subject to any inquiries under the Act and

must immediately advise the registrar on relinquishing for any reason, this responsibility for the certificate holder.

(6) A certificate of authorization issued to a corporation, partnership or other legal entity is valid for the calendar year for which it was issued provided the certificate holder complies with this Act and the bylaws governing certificate holders.

(7) A corporation, partnership or other legal entity holding a certificate of authorization must be registered by the registrar as a certificate holder but not as a member or licensee.

(8) A certificate of authorization may be revoked, or its renewal withheld, by the council for failure to comply with this Act or the bylaws or if the certificate holder

- (a) is convicted in Canada or elsewhere of an offence that, if

committed in British Columbia, would be an offence under an enactment of Canada or the Province and, in the circumstances, renders the certificate holder unsuitable for the practice of professional engineering or for the practice of professional geoscience,

- (b) contravenes this Act, the bylaws or the code of ethics of the association, or
(c) has demonstrated incompetence, negligence or unprofessional conduct.

(9) The council must inform the Registrar of Companies if a certificate of authorization is cancelled.

Boards of Examiners

11. (1) The council shall appoint a board of examiners annually, and shall fill vacancies in it as they occur.

(2) The board shall examine all candidates for admission to membership when an examination is required by this Act or by the bylaws.

RS1960-128-12.

Examinations

12. (1) Regular examinations of candidates for admission shall be held at places and times decided by the council, and the examinations shall be held within the Province at least once in each year.

(2) Special examinations, at the discretion of council, may be held if the candidate or candidates for them deposit in advance with the registrar a sum sufficient to defray the expenses of the special examinations and also the appropriate examination fees established by the bylaws.

(3) The council shall establish the scope of and procedure at examinations.

(4) Each candidate for examination shall give at least 2 months notice in writing to the registrar of his intention to present himself for examination, and with the notice shall forward the fees established by the bylaws for the grade of examination to be taken. In the event of passing the final examination, the candidate, before receiving his certificate of registration, shall pay the remainder of the admission fees established by the bylaws.

(5) As soon as possible, and not later than 21 days, after the close of each examination, the members of

the board who have conducted the examination shall make and file with the registrar a certificate showing the results of the examination, the council

shall then notify each candidate of the result of the examination and of its decision on his application.

(6) The board shall also file with the registrar the examination papers submitted to the candidates, together with the answers of each candidate, and shall attach to them a certified copy of its report with the marks awarded to each candidate in each subject of the examination, and these documents shall remain on file in the office of the registrar, and shall be open to inspection by any candidate, or by any person authorized in writing on his behalf, during regular office hours for a period of at least 6 months following the examination.

(7) If the candidate fails in his examination, he may, on payment of the established fee, present himself at any subsequent regular examination.

(8) Where a candidate has failed his examination 3 times, he may only present himself under subsection (7) with the permission of the council.

RS1966-128-13; 1983-10-21. effective October 26, 1983 (B.C. Reg. 393/83); 1987-11-17. effective July 17, 1988 (B.C. Reg. 220/87) 1990-41-9.

Investigation of Certificates

13. The council shall cause the examination of all degrees, diplomas, certificates and other credentials presented or given in evidence for the purpose of obtaining registration, and may require the holder of the credentials to attest by oath or affidavit any matter involved in his application.

RS1960-128-14~ 1987-22-6, effective July 17, 1987 (B.C. Reg. 220/87).

Central Examining Board

14. The council may establish jointly with the council or any other association similarly constituted, in one or more of the other provinces, a central examining board, and may delegate to the central examining board all or any of the powers possessed by the board respecting the examinations of candidates; but any examination conducted by the central examining board shall be held in at least one place within this Province, if so requested by the council.

RS1960-128-15.

Register

15. The registrar shall

- (a) continue the register of members kept under the former

Act,

- (b) enter in the register the full name and address of each member and the date of issue of each registration,
(c) make the register available for public inspection during normal business hours, and
(d) keep a record of licensees, certificate holders and members of each grade of membership in the association.

1990-41-10.

Certificate and Seal

- 16. (1) The registrar, on direction of the council, shall issue
- (a) a certificate of registration to each member of the asso-

ciation on registration of that member, and

ASSOCIATION OF PROFESSIONAL ENGINEERS A

ND GEoSCIENTISTs OF BRITISH COL,UMBIA

(b) a certificate of licence or a certificate of limited licence to each licensee,

(2) A certificate of registration shall show the signatures of the president and the registrar and shall bear the seal of the association, and the certificate constitutes evidence of registration at the date of issue, and on receipt of the annual fee in each subsequent year the registrar shall furnish the member with evidence of its renewal.

(3) A member shall display the member's certificate of registration and a licensee shall display the licensee's certificate of licence or limited licence in a prominent place in the office or other place of business of the member or licensee.

(4) On receipt of a certificate of registration or a certificate of licence, a professional engineer is entitled to use the title "professional engineer" or an abbreviation of this title approved by the council, and shall be provided with a seal or stamp by the association with which the engineer's name, the words "Professional Engineer, Province of British Columbia" and other designation required by the bylaws may be impressed.

(5) On receipt of a certificate of registration or a certificate of licence, a professional geoscientist is entitled to use the title "professional geoscientist" or an abbreviation of this title approved by the council, and shall be provided with a seal or stamp by the association with which the geoscientist's name, the words "Professional Geoscientist, Province of British Columbia" and other designation required by the bylaws may be impressed.

(5.1) On issuance of a certificate of limited licence, the association must provide the licensee with a seal or stamp impressed with the licensee's name, the words "Limited Licensee" and any other information required by the bylaws.

(6) A member or licensee receiving a seal or stamp under this section must use it, with signature and date, to seal or stamp estimates, specifications, reports, documents, plans or things that have been prepared and delivered by the member or licensee in the member's or licensee's professional capacity or that have been prepared and delivered under the member's or licensee's direct supervision.

Annual Fee

17. (1) Every member of the association and every licensee shall pay in advance to the executive director, or any person deputed by the council to receive it, the annual fee fixed by the bylaws, which fee shall be deemed to be a debt due by him to the association, and, in addition to any other remedy, is recoverable with costs by the association in any court of competent jurisdiction.

(2) If a member of the association omits to pay the established annual fee before March 1 in any year, he is liable to have his name struck off the register. If he is still in default one month after notice in writing has been sent by registered mail to him at his last recorded address, demanding payment, the registrar, on direction of the council, shall strike his name off the register without further notice. He then ceases to be registered and

shall not be registered again except at the discretion of the council and on payment of the arrears and reinstatement fee that the council directs.

RS1960-128-18; 1983-10-21. effective October 26, 1983 (B.C. Reg. 393/83). 1987-22-8, effective July 1 1990 (B.C. Reg. 220/8Th 1990-41-11.

Prohibition on Practice

18. (1) Except as permitted under this Act, no individual or corporation, partnership or other legal entity shall

- (a) engage in the practice of professional engineering or professional geoscience,
- (b) assume, verbally or otherwise, the title of professional engineer or professional geoscientist or advertise or use, or permit to be advertised or used, in any manner whatsoever, in connection with his or its name or otherwise, the title of professional engineer or professional geoscientist or any word, name, title or designation mentioned in the definition of practice of professional engineering or professional geoscience, or any combination or abbreviation thereof, or any other word, name, title, designation, descriptive term or statement implying, or calculated to lead any other person to believe, that he or it is a professional engineer or professional geoscientist or is reads' or entitled to engage in, or is engaged in, the practice of professional engineering or professional geoscience as defined in section 1 of this Act,
- (c) act in a manner which leads any person to believe that he or it is authorized to fill the office of or act as a professional engineer or professional geoscientist, or
- (d) advertise, use or display a sign, card, letterhead or other device representing to the public that the individual, corporation, partnership or other legal entity is a professional engineer or professional geoscientist or an individual, corporation, partnership or other legal entity ready or entitled to engage in the practice of professional engineering or in the practice of professional geoscience or holding out the individual, corporation, partnership or other legal entity to be a professional engineer, professional geoscientist or certificate holder,

unless

- (e) in the case of an individual, he is a member of the association or holds a licence other than a limited licence issued by the association, or
- (f) in the case of a corporation, partnership or other legal entity, it has on its active staff members or licensees who directly supervise and assume responsibility as this Act provides for the practice of professional engineering or professional geoscience undertaken by the corporation, partnership or other legal entity.

(2) An individual holding a limited licence must not engage in the practice of professional engineering or the practice of professional geoscience except in a manner consistent with the scope

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of the limited licence and according to the provisions of that limited licence.

1987-22-9, effective July 17, 1987 (B.C. Reg. 220/87).

19. [Repealed].

1987-22-10,

effective Jul-y 17, 1987 (B.C. Reg. 220/87).

holder may refuse to comply with this section on the grounds of confidentiality.

(5) Where the investigation is being conducted by a subcommittee under subsection (3), the subcommittee shall prepare a report of its findings and recommendations for the investigation committee.

(6) The investigation committee or subcommittee may make recommendations to the member, licensee or certificate holder that was investigated

(a) following an investigation under subsection (3), or

for contempt as if in breach of an order or a judgment of the Supreme Court. *1987-22-15, effective July 17, 1987 (B.C. Reg. 220/87).*

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may be enforced as if it were an order of the court.

the discipline committee may order that, without a

(4) Where the discipline committee has directed costs against a person under subsection (1) and these costs have not been paid,

further inquiry, the membership or licence of that person be suspended or revoked until such time as the costs are paid.

1987-22-15, effective JuN17, 1987 (B.C. Reg. 220/87).

Sections 25 to 28 are repealed.

1987-22-14, effective Jul-v 17, 1987 (B.C. Reg. 220/87).

Legal Assistance

29. The council, for the purpose of carrying out its duties under this Act, may employ, at the expense of the association, legal counsel or assistance the council thinks necessary or proper. A person whose status or conduct is the subject of inquiry also has the right to be represented by counsel.

RS1960-128-30.

Testimony Under Oath

30. The testimony of witnesses shall be taken under oath which a member of the discipline committee may administer.

1987-22-16, effective JuN17, 1987 (B.C. Reg. 220/87).

31. Repealed.

1987-22-16, effective July 17, 1987 (B.C. Reg. 220/87).

Appeal

32. (1) Any person who feels himself aggrieved by an order of the discipline committee under section 24.5(2), or whose application for membership in the association has been refused under section 10(1)(d) or 10(1.1), may appeal from the order or refusal of the application for membership to the Supreme Court within 42 days from the date of the order or the refusal, as the case may be.

(1.1) A corporation, partnership or other legal entity, other than an individual, who is aggrieved by an order under section 24.5(2), or whose application for a certificate of authorization is refused under section 10.1(1), may appeal the order or refusal to the Supreme Court within 42 days of the making of the order or refusal.

(2) The appellant shall appeal by filing in the Vancouver Registry of the Supreme Court a notice of appeal setting out the ground on which the appeal is based.

(3) With the notice of appeal, the appellant shall also file a copy of the proceedings, the evidence taken, the order of the council or discipline committee in the matter, and the reasons, if any, certified by the registrar of the association.

(4) The appellant shall cause to be served on the registrar of the association a copy of the notice of appeal.

(5) The notice of appeal shall state a place and time, not less than 7 clear days after the service of it, on which the appeal shall be heard.

(6) On hearing the appeal, the court may sustain, reverse, alter or amend the order, or remit the matter to the council or discipline committee for rehearing, or may make any order as to costs or otherwise in the premises as to the court

seems right.

(7) Every appeal shall be heard and determined on its merits, and shall not be defeated by reason of any technical defect in the proceedings.

(8) The registrar of the association, on the request of any person desiring to appeal, shall furnish him, upon payment by that person of the costs of the transcripts provided, with a certified copy of all proceedings, reports, orders, reasons and the papers on which the council or discipline committee has acted in making the order complained of.

RS1950-128-33, 1987-22-17, effective lu/v U. 1987 (B.C. Reg. 220/87).

Evidence of Registration

33. In any proceedings or prosecution under this Act in which proof is required that any person is or is not a member of the association, a certificate purporting to be signed by the registrar and under the seal of the association that the person is or is not a member of the association, as the case may be, is proof in the absence of evidence to the contrary of the fact so certified, without proof of the signature or of the seal or of the person signing being in fact the registrar.

RS1960-128-34.

Protection Against Action

34. No action shall lie against the council or any member of the association for any proceedings bona fide taken or enforced or attempted under a bylaw of the association or for anything done in good faith and pursuant to this Act.

RS1960-128-35; 1983-10-21, effective October 26, 1983 (B.C. Reg. 393/83).

Bylaw Continuation

35. The bylaws passed under the former Act shall remain in force and effect until new bylaws or amendments are passed and approved under this Act.

Offence Act

36. Section 5 of the Offence Act does not apply to this Act or to bylaws made under this Act.

Practice Review Committee

37. If a practice review committee is created under section

7(1)(b.2),

- (a) a member, licensee or certificate holder must, on request, provide the practice review committee with any relevant information, record, document or thing, and
- (b) no member, licensee or certificate holder may refuse to comply with a request under paragraph (a) on the grounds of confidentiality.

GUIDELINES FOR PROFESSIONAL EXCELLENCE

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Appendix B
GUIDELINES FOR
PRO
Bylaws

(Amended November 1993)

Associat

1 of the Association shall be held between the 15th day of September and the 15th day of December of each year and the actual date of the meeting shall be set by Council according to the provisions of the Act.

2 (a) All General Meetings of the Association shall be held in the following manner:

2 A written request that Council call a General Meeting pursuant to Section 9(4) of the Act shall be accompanied by a notice setting out specifically the

2 If neither the President nor any of the Vice-Presidents are present 15 minutes after the time appointed for holding the meeting, or if neither the President nor any of the Vice-Presidents are willing to act as Chair, then the members present shall choose someone of their number to be Chair.

d) The Chair may, with the consent of any meeting, and shall, from place to place, but no business shall be transacted at an adjourned meeting other than the business left unfinished at the meeting from which the adjournment took place.

It shall not be necessary to give notice of a meeting or of the business to be transacted at any adjourned meeting.

(1) A resolution shall be decided on a show of hands, unless a ballot is demanded before the show of hands. Unless a ballot is so demanded the Chair shall declare that a resolution has, on a show of hands, been carried or lost. An entry to that effect, made in the book of the proceedings of the Association, shall be conclusive evidence of the result without proof of the number or proportion of the votes.

2 If a ballot is duly demanded it shall be taken in such manner as the Chair may determine, and in the manner in which the ballot was demanded.

1.12.1 The Chair of any meeting, whether held by the President, a Vice-President or otherwise, shall preside in the meeting.

case of an equality of votes.

If required a letter ballot in such form as the Council may determine shall be mailed to each registered member at the member's last recorded address. Ballots received by the Council within 14 days of the mailing of the ballots shall not be counted.

A vote shall be counted under the supervision of the Council at the meeting at which the vote was authorized and the result of the votes shall be communicated by the Council to the members of the Association as soon as possible after the ballots are counted. In the case of an equality of votes, the rules contained in the latest edition of the Robert's Rules of Order shall govern the procedure in all cases to which they are applicable and in which they are not inconsistent with the bylaws.

Election of Council

(i) The immediate Past President, 10 elected councillors and councillors appointed by the Lieutenant Governor in Council.

Nominations for members of the Council shall be made by a Nominating Committee.

The Immediate Past President shall preside at the meeting of the Nominating Committee. In the event that the Immediate Past President is unable to act then a Chair shall be appointed by the Council or failing that the Chair shall be elected by the members present. No member of Council may serve on the Nominating Committee, except in the capacity of Chair.

(1) The Council shall constitute a geographical Branch appoint one member of the Nominating Committee.

The Council shall appoint additional members to the committee to bring the total number of members to 15.

In the event that a Branch Executive fails to make an appointment, then Council shall make such an appointment. The names of persons appointed by the Council shall be placed in the hands of the Registrar.

3 The Nominating Committee shall nominate one or more candidates for election to the Council.

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Such nominations shall be made, in the case of President, from members who shall have served for at least 2 full years as a Councillor prior to the date of taking office and, in the case of Vice-President, from members who shall have served for at least one full year as a Councillor prior to the date of taking office, provided that in each case such members are available.

3 (c) Providing that in each case candidates are available, the Nominating committee shall nominate at least 3 more candidates than there are vacancies to be filled on the Council, with at least one candidate from each of the groups of disciplines of:

(1) Engineering:

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7.13

7.12

- (ii) Civil and Surveying
- (iii) Mechanical, Industrial, Naval and Marine, and
- (iv) Mining, Metallurgical, Chemical, Forest, Agricultural and Bio-Resource Biomedical, Structural and Environmental
- (i) Geology, Geophysics and

Nominees in any discipline that is not listed shall be assigned to one of the 6 groups of disciplines at the discretion of Council.

In the case of a vacancy in the Council due to the incapacity, resignation or death of a member, the Council shall appoint a member of the Association to fill the vacancy.

3. The list of candidates, nominated by the Nominating Committee and signed by the Chair of the Nominating Committee, shall be accompanied by the written consent of the nominees shall be in the hands of the Registrar and shall be published at least

Nomination By 25

3. The Registrar shall prepare a ballot containing the name of a candidate and 25 or more members. Such nominations, signed by 25 or more members making the nomination and accompanied by the written consent of the Registrar, shall be submitted to the Registrar not later than 30 days after publication of the list of

Ballot

3. The Registrar shall prepare a ballot containing the name of a candidate and 25 or more members.

3 (g) The election of President, Vice-Presidents, and the Councillors shall be by ballot and Vice-Presidents shall be elected for a 1 year term. Half of the elected shall be elected each year for a 2 year term except as provided under subsections (c) and (k).

(h) In a procedure to be determined by and in the sole discretion of the Registrar all necessary ballot papers shall be prepared and returned to the Registrar at the Registrar's last recorded address at least 42 days prior to the Annual Meeting. Ballots returned to the Registrar shall be placed in the ballot box which shall be closed at noon on the day prior to the Annual Meeting. Ballots received after that time shall not be counted.

3. The Registrar shall prepare a ballot containing the name of a candidate and 25 or more members. Such nominations, signed by 25 or more members making the nomination and accompanied by the written consent of the Registrar, shall be submitted to the Registrar not later than 30 days after publication of the list of

Ballot invalid. Voting for less than the full slate of candidates shall not invalidate the ballot.

~ Ballots shall be opened and counted at least 10 days prior to the Annual Meeting under the supervision of 3 members

3 (k) The successful candidates for the offices of President, and Vice-President and for members of Council shall be those who receive the largest number of votes. When there is more than one candidate for an office, the candidate receiving the largest number of votes shall be elected first Vice-President and the candidate receiving the largest number of votes shall be elected second Vice-President. If there are any vacancies, the candidate or candidates receiving the next highest number of votes

shall be elected. In the event of a tie vote between 2 or more candidates, the person or persons receiving the highest number of votes shall be elected.

On completion of the counting of the ballots, the Chair of the ballot-counting committee shall deliver to the President or to the Registrar the results of the poll, together with the ballots and ballot sheets. The President or the Registrar shall inform each candidate in the election of the results and the results shall be announced at the Annual Meeting by the Chair of the meeting.

close of the Annual Meeting.

Assistance to Individuals and

4. The Council may by resolution: * or

where in the opinion of the Council such assistance is necessary to its members.

4 (b) Create divisions, committees, and regional groups (such as committees) and their powers and authority as the Council may see fit.

4 (c) Provide for the promotion of better public relations in such a manner as to be consistent with the general policy of the Association without limiting the generality of the foregoing, the publication of books, papers and periodicals.

the Registrar shall be responsible for the management, regulation and control of the Association.

Association Funds

3. The Registrar shall prepare a ballot containing the name of a candidate and 25 or more members. Such nominations, signed by 25 or more members making the nomination and accompanied by the written consent of the Registrar, shall be submitted to the Registrar not later than 30 days after publication of the list of

5 (b) The Council may acquire and hold property and sell, lease or otherwise dispose of it.

5 (c) The Council may borrow money for the purposes of the

GUIDELINES FOR PROFESSIONAL EXCELLENCE

the Association or its sources of funds as security.

5 (d) The Council shall manage and conduct **the** business and affairs of the Association, shall appoint staff and decide their remuneration, and exercise the powers of the Association in the name of and on behalf of the Association.

5 (e) The Council shall from time to time invest such of the funds of the Association not deemed by Council to be re

a--
quir
by Council.

Proceedings of Council

for the dispatch of business, adjourn, and otherwise
together it
Questions arising at any meeting shall be decided by a majority of
votes. In case of an equality of
votes, the Chair shall have a casting vote. 3 Councillors may
have a casting vote. 3 Councillors may
at a meeting of the Council, giving 7 days' notice to all members of
the date, hour and place and purpose of

6 The quorum necessary for the transaction of the business
of the Council shall be 9 members.

(c) A resolution shall be passed at a Council meeting.
duly passed at a Council meeting.

(d) The President and the Vice-President
both the President and the Vice-President
Councillors present shall exercise
the powers of the Council.

6 e) The Council may delegate
of its powers to
Comm
power so delegated conform to any regulations that may be
imposed on it by the Council.

The Council shall elect
of their number as Chair. If at any meeting the Chair is not
present after the time appointed for holding the
meeting, the Council shall elect a Chair from among the members
present.

6 A Committee may meet and adjourn as it sees fit
Questions arising at any meeting shall be determined by a
majority of the members present, and in the case of an equality of
votes, the Chair shall have a casting vote.

(h) The Council shall cause Minutes to be made in book
provided for the purpose of recording:

All appointments of Officers, Examining Board, and
Staff made by the Council.

The resolutions of the Councillors present at each meeting of
the Council and of any Committee of
the Council.

All resolutions and proceedings of all meetings of the
Association

Board of Examiners

provided in Section 11(1) of the Act, the Council
Board of
Examiners with sub-groups of engineering and geoscience

in which the sub-groups may operate separately at the
discretion of the Council. The Council shall
for each of the following disciplines:

Physics, Chemistry, Biology, Geology, Engineering, and Geoscience
The Council shall determine the number of members of the Board of
Examiners and the number of members of each sub-group for geoscience
and shall be remunerated as the Council sees fit, whether basing such remuneration on the number

7 Notices of the holding of examinations shall be sent to all
Candidates at least 3 months before the date of the examinations
and at least 2 months before the date of the examinations.

The Council shall determine the fee for the examination
and shall determine the fee for the examination.

8 The seal of the Association shall only be affixed to an
instrument by the authority of a resolution of the Council,
otherwise provided by resolution,
the President or a Vice-President of the Association, and the Registrar, and such
Officers as the Council may determine.

The Registrar may, however, sign and affix the seal of the Association
to a statement certifying that a member is in good standing, without an
formal resolution as noted above.

Ac Financial Statements and Audit

The Association shall appoint an auditor
to audit the accounts of the Association.

The books of account shall be kept at the office of the Association.

The Council shall from time to time determine whether and to
what extent and at what times and places and by whom the accounts and
books of the Association or any of them shall be open to the
inspection of the members of the Association.

The Council shall cause the accounts of the Association to be
audited annually by an accountant appointed by the Council.

9 The accounts of the Association, together with the books of the
Association, shall be audited annually by an accountant appointed
by the Council.

by the members. A report duly signed by such auditor shall be sent to all registered members at least presented to the members, and Council shall cause such report, together with the Financial Statements of the Association, to be

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days prior to the Annual Meeting. These reports shall be accompanied by _____

(ii) _____ is at _____ member Association or any _____

Council of Professional Engineers for a total of 20 _____

Application,

_____ who then shall be entitled to enjoy the rights and privileges of _____

10 _____ a- _____ by an En _____ r
_____ ntist-in-Training _____ by a non _____ r
residen and everx ap _____ r
ien _____ (except by a Pupil in good standing) an _____ r
every app _____ for enrolment as a Pupil (except by a student at _____ r
uni _____ or college in British Columbia) shall be accompanie _____ r
bx _____
an examination of credentials fee as set _____

Honorary Membership

honorary life membership in the Association, ~without payment of _____
professions of Engineering or Geoscience. _____

When registration is granted an administrative fee as set b _____
Council and additional fees shall be paid as follows: _____

Members _____ r
l _____ n

fee. _____

Eng _____ In-Training or Geoscientists-in-Training a _____
additional _____ s
in _____ e

(3) _____ ot _____ l

In _____ ent of an application for a licence by a non-residen _____
being approved, an additional fee to be set by the Council shall be _____

In _____ e event of an application for enrolment as an Engineer-In _____
Training, _____ o

If _____ licant for registration is required to submit an engi _____
neeri _____
Byl _____ 11(e)(2), and the report or thesis so submitted is rejecte _____
as not being satisfactory to the Council, then on any subsequen _____
su _____ of a report or thesis in support of the application, th _____
applicant _____,

Annual Fees

(b) The amount of the annual fee for registered member _____
shal _____ e
to _____ l

Th _____ annual fee for enrolled Engineers-in _____
Tr _____ Geoscien _____ d

Life Membership

(c) Council, in its discretion, may confer life member _____ p
the Association upon any member _____
who has served as President of the Association, or _____

10 (e) On written application, and for due and sufficient cause, _____
fee. _____

10 _____ a member desires to resign, notification must _____
the Registrar. Upon resignation being approved bx _____ the Council, _____

Grades of Membership

examinations required for all grades of _____

Pupils

max _____ apply to the Council to be enrolled as a Pupil and to write _____
are _____

(1) _____
gineering, geoscience, science, or technology, applicable _____

amined; _____
Presentation of credentials from 2 citizens showing the _____

(3) _____
professional capacity. _____

within 6 years of the granting of such status, and the professional _____
mental examinations. _____

are registered as full undergraduates in an engineering or _____

Engineers-in-Training

11 (c) Status as Engineer-In-Training or Geoscientist-in- _____

citizen or permanent _____

(1) _____

or _____

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- (2) Completed all the examinations required by the Council. Engineers-In-Training or Geoscientists-in-Training may not remain in that status for a period of more than

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8 years unless satisfactory reasons for doing so are presented to the Council.

11 d Anx enrolled Pupil, Engineer-In-Training or Geo-scientist-in-Training who does not conform to the requirements outlined in the Act and in the Bylaws of the Association, shall be liable to forfeit standing in the Association and erasure from the roll of the Association.

Registered Members

11 (e) Registration as a full member of the Association may be granted when Council is satisfied that the applicant is of good character and repute and:

- (1) Has graduated in applied science, engineering or geoscience from an institute of learning in a course approved by the Council and in addition has had 4 years' experience in engineering or geoscience satisfactory to the Council, or
- (2) Has passed the examinations required by the Council or the equivalent examinations of an association or institute approved by the Council requiring special knowledge in branches of learning as may be specified by the Council and in addition has had 5 years' experience in engineering or geoscience satisfactory to the Council and has submitted as partial evidence of this experience an engineering or geoscience report or thesis satisfactory to the Council, or
- (3) Has passed the examinations required by the Council or the equivalent examinations of an association or institute approved by the Council requiring special knowledge in branches of learning as may be specified by the Council and in addition has had 8 years of experience in engineering or geoscience satisfactory to the Council.

Seal of Member of the Association

12 Persons admitted to membership in the Association prior to the passing of the *Engineering Profession Act, 1955* may continue to use their seal or stamp designating the discipline of engineering in which they were accepted.

Change of Bylaws

13 (a) The introduction of new Bylaws and the amendment or repeal of existing Bylaws shall be effected in the manner prescribed in Sections 7 and 8 of the Act.

13 (b) Anx' request by a member or members of the Association for the introduction of a new bylaw, or the amendment or repeal of an existing bylaw, shall be given in writing to the Registrar and shall be considered by the Council within 60 days of the receipt of such request. If necessary a letter ballot shall be taken as provided in Section 9 of the Act, and if the proposed new bylaw, amendment or repeal of existing bylaw is approved by a

two-thirds majority of the votes cast, such action shall be considered as a mandate to the Council.

Quality Management

14 (b) Members and licensees shall establish quality management processes for their practices which shall include, as a minimum;

- (1) retention of complete design and review files for their projects for a minimum period of 10 years;
- (2) in-house checks of their designs as a standard procedure;
- (3) concept reviews of their structural designs by members or licensees not originally involved in the designs;
- (4) field reviews, by members or licensees, of their projects during construction.

Concept reviews under (3) above shall be in addition to any checks which are undertaken under (2) above. These reviews shall evaluate the structural designs to determine if the structural concepts appear complete, consistent, and in general compliance with the appropriate codes. Representative samples of the individual elements shall be checked to evaluate the analysis, design and detailing procedures used by the design engineer.

Practice Review

14 (c) Bx' means of a practice review process, the details and implementation of which shall be authorized by Council, Council may cause the professional practice of members and licensees to be reviewed.

Interpretation

15 In the event of any dispute as to the meaning or intent of these Bylaws, the interpretation of the Council shall be final, subject to the right of Appeal as contained in Section 32 of the Act.

Where the word "Act" appears in the foregoing Bylaws, it shall include the Engineers and Geoscientists Act and all subsequent Amending Acts, unless the context otherwise requires.

Where reference is made in the masculine gender it shall be interpreted as both masculine and feminine.

Repeal of Old Bylaws

16 Upon the coming into force of the foregoing Bylaws, all the Bylaws of the Association previously in force shall stand revoked.

Professional Practice

Code of Ethics

14 (a) See Appendix "C".

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Appendix C

GUIDELINES FOR PROFESSIONAL EXCELLENCE

Code of Ethics Guidelines

Foreword

The *Code of Ethics* for the Association of Professional Engineers and Geoscientists of British Columbia (APEGBC) consists of a Preamble and 10 brief principles of conduct. The Code is included in the Bylaws of the Association and was approved by the membership in 1991.

These Guidelines and Commentary on the *Code of Ethics* are intended to assist APEGBC members in dealing with ethical situations and to assist others in their understanding and application of the Code.

Hypothetical examples are also included.

The *Code of Ethics* defines a mandatory conduct for professional engineers and geoscientists. This document is intended as a guide only, and should not be considered as giving mandatory instruction. Each member of APEGBC is expected to exercise individual judgment at all times and in all situations.

The *Code of Ethics* applies to all APEGBC members whether they are actually engaged in engineering or geoscience work or are working in other areas.

The Professions

A profession is a learned calling with specialized skills, distinctive functions and recognized social obligations and has unique characteristics.

- It renders services based upon advanced knowledge, skill and judgment.
- It is charged with a substantial degree of public obligation and performs its services largely in the general public interest.
- It is bound by a distinctive ethical code in its relationships with clients, employees, colleagues and the public.
- It assumes responsibility for actions related to professional services provided in a personal or supervisory capacity.

Professions such as engineering and geoscience are generally highly organized; they have definitive standards of admission (which are minimum standards only and make no distinction between the least competent persons and the outstanding leaders of the profession); they regulate the activities of their members; they promote the advancement of knowledge, skill and experience; and they encourage the formulation of standards. While professionals should be fairly remunerated for their services, they are expected to put service above gain, excellence above quantity, rewards of self-

expression above any pecuniary incentive, and a code of honour above competitive spirit.

Professional engineers and geoscientists should be accountable for their profession generally, their own professional practice and for the professional practice of those under their supervision. They also have an obligation to conduct themselves and practice their professions in accordance with ethical standards. Professionals depend on confidence of two kinds for effective pursuit of their work – the personal confidence of the client or employer in the technical competence of the engineer or geoscientist and the confidence of the public at large in the integrity and ethical conduct of the professions as a whole. This, in turn, imposes a correlative duty and responsibility upon both the professions and the individual engineer and geoscientist to justify the trust they enjoy from the public, the client or the employer.

The accountability and responsibility accepted by professionals are a part of their obligations to society. In their practice they are concerned about maintaining the physical environment so as to ensure the well-being of future generations.

Ethics

The word “ethics” comes from the Greek word “ethos” and is defined as the study of standards of right and wrong; that part of science and philosophy dealing with moral conduct, duty and judgment. Ethics deals with voluntary actions specifically taken by an individual with sufficient knowledge of the options available to him or her.

Codes of ethics are drawn up to express the expectations of a group of persons of common vocation with regard to their conduct.

The professional engineer or geoscientist has specific privileges and responsibilities which have meaning and substance in our society only when they are coupled with a sense of ethical behaviour. Because society is changing rapidly, a high level of ethical behaviour on the part of the professional is increasingly important.

The professional engineer and geoscientist should apply the *Code of Ethics* not in passive observance but as a set of principles dynamically guiding his or her professional conduct. The true professional will then incorporate ethics into his or her daily decision-making situations.

The APEGBC *Code of Ethics* serves several purposes. It designates the standard of conduct expected of engineers and geoscientists in easily understandable terms. It distinguishes appropriate professional conduct from that which fails to meet a required standard. The Code also provides a basis on which allegations of unprofessional conduct are adjudicated by the Discipline Committee or other groups charged with responsibilities related to the conduct of members.

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Discrimination

The Association's *Code of Ethics* reads, in part:

“14(a) Professional Engineers and Professional Geoscientists shall:

- (7) *conduct themselves with fairness, courtesy and good faith towards clients, colleagues and others, give credit where it is due and accept, as well as give, honest and fair professional comment,”*

The requirement of fairness, courtesy and good faith towards others dictated by the Code of Ethics implicitly prohibits discrimination, while the following passage, part of the Canadian *Charter of Rights and Freedoms*, is a clear statement that explicitly prohibits discrimination:

Equality Rights

- 15.(1) *Every individual is equal before and under the law and has the right to the equal protection and equal benefit of the law without discrimination and, in particular, without discrimination based on race, national or ethnic origin, colour, religion, sex, age or mental or physical disability.*

This section of the Charter, together with the *Code of Ethics* requirements, rules out discrimination by members of the Association, in their business life as well as in their public life, and any discrimination by a member could result in charges of unethical or unprofessional conduct under the *Engineers and Geoscientists Act*. Furthermore, violation of the discrimination provisions of the Charter could result in charges under the British Columbia *Human Rights Act*, on a much wider basis than is available under our Act.

Discrimination can be defined as:

cc Treatment or consideration of or making a distinction in favor of or

against, a person or thing based on the group, class or category to which that person or thing belongs rather than on individual merit.

Webster's Encyclopedic Unabridged Dictionary of the English Language (1989)

Obviously, distinctions are regularly made, for or against individuals, in many work situations, but it is the basis of the distinction that is important. If the distinction is based on merit, discrimination is not a factor; however, if the distinction is based on the race, national or ethnic origin, colour, religion, sex, age or mental or physical disability of the individual, discrimination is a factor.

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Similarly, the treatment or consideration of individuals in a work situation must be based on their merits and on their ability to perform the work, not on incidental or extraneous factors that have no bearing on their capabilities. By extension, the attitude and demeanour of members towards others should not be influenced by distinctions based on the race, national or ethnic origin, colour, religion, sex, age or mental or physical disability of the individual.

This is the standard by which members' conduct towards others, whether intentional or unintentional, must be measured to determine if they have acted in a discriminatory manner that resulted in another individual feeling harassed, threatened or intimidated, that created a hostile or offensive work environment or affected the work performance or the condition or term of employment of another individual.

code of Ethics

The purpose of the *Code of Ethics* is to give general statements of the principles of ethical conduct in order that Professional Engineers and Professional Geoscientists may fulfill their duty to the public, to the profession and their fellow members.

Professional Engineers and Professional Geoscientists shall act at all times with fairness, courtesy and good faith to their associates, employers, employees and clients, and with fidelity to the public needs. They shall uphold the values of truth, honesty and trustworthiness and safeguard human life and welfare and the environment. In keeping with these basic tenets, Professional Engineers and Professional Geoscientists shall:

- (1) hold paramount the safety, health and welfare of the public, the protection of the environment and promote health and safety within the workplace;
- (2) undertake and accept responsibility for professional assignments only when qualified by training or experience;
- (3) **provide an opinion on a professional subject** only when it is founded upon adequate knowledge and honest conviction;
- (4) act as faithful agents of their clients or employers, maintain confidentiality and avoid a conflict of interest but, where such conflict arises, fully disclose the circumstances without delay to the employer or client;
- (5) **uphold the principle of appropriate and adequate compensation for the performance of engineering and geoscience work;**
- (6) keep themselves informed in order to maintain their competence, strive to advance the body of knowledge within which they practice and provide opportunities for the professional development of their associates;
- (7) conduct themselves with fairness, courtesy and good faith towards clients, colleagues and others, give credit where it is due and accept, as well as give, honest and fair professional comment;
- (8) present clearly to employers and clients the possible consequences if professional decisions or judgments are overruled or disregarded;
- (9) report to their association or other appropriate agencies any hazardous, illegal or unethical professional decisions or practices by engineers,

geoscientists, or others; and

- (10) extend public knowledge and appreciation of engineering and geoscience and protect the profession from misrepresentation and misunderstanding.

code of Ethics Guidelines

Principle 1: hold paramount the safety, health and welfare of the public, the protection of the environment and promote health and safety within the workplace.

Guidelines:

- (a) This principle overrides all other requirements of the *Code of Ethics*. The principle should, however, be interpreted in recognition of the reality that any action or construction undertaken necessarily involves some risk to safety, health, and welfare, and some impact on the environment. To “hold paramount” in this context means to give diligent regard to; to stand ahead of the other nine principles; and to rank ahead of either expediency or economic gain to either client or self.
- (b) Members should take appropriate action or notify proper authorities of any instance where, in their professional opinion, they believe that public safety or welfare is endangered or the physical environment may be adversely affected (see also Principle 9).
- (c) Members should not complete, sign or seal plans or other documents that, in their professional opinion, would result in conditions detrimental to human welfare, would have significant adverse effects on the environment or would not conform to current engineering or geoscience standards. If the clients or employers insist on such conduct, and the member is unable to dissuade them, then the commentary regarding Principle 8 should be followed.

Commentary:

Members should understand their obligations with respect to the many external regulations bearing on the public safety and welfare, including industrial and construction safety acts and current building codes. They should be aware that the use of modern technology may create situations that endanger the long-term safety and welfare of the public and the environment.

Members should maintain a responsible interest in both the immediate and long-term effects of the application of practices and technologies that affect public welfare and, if necessary, advise corporate management accordingly.

Members have obligations both to their clients/employers and to the public. Occasionally these obligations will be in conflict. On one hand, the member is obliged not to disclose confidential information of the client/employer and should avoid the use of such information to the disadvantage of the client/employer. On the other hand, failure to report a situation that the

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member believes may endanger the safety or welfare of the public and environment would be contrary to this paramount principle.

Members, like every member of society, are bound by the general rules of litigation, including rules of privilege and disclosure. These rules do not permit members to disclose information received or developed when retained as an expert in litigation cases unless permission is given by the client or the information loses privilege after its use in litigation. Members face a dilemma when information they have poses an imminent danger to the public but is bound by solicitor/client privilege.

There should be no doubt, however, as to how the member should act. The member should regard duty to the public welfare as paramount.

Principle 2: undertake and accept responsibility for professional assignments only when qualified by training or experience.

Guidelines:

- (a) Members should not sign or seal plans, specifications, reports or parts thereof unless actually prepared by them or prepared under their direct supervision.
- (b) Members should be cognizant of the differences between the professions of engineering and geoscience and should restrict practice in accordance with their professional registration.

Commentary:

Members should offer services, advise or undertake professional assignments only in areas of their competence by virtue of training and experience. This includes exercising care and communicating clearly in accepting or interpreting assignments and in setting expected outcomes. It also includes the responsibility to obtain the services of a specialist or an expert if required or, if the technique is uncertain, to proceed only with fullest disclosure of the experimental nature of the activity to all parties involved. Hence this requirement is more than simply duty to a standard of care; it also involves honesty with one's client or employer and oneself.

In this age of rapidly expanding technologies and new concepts and theories, members cannot be expected to be conversant with every new development of knowledge. Thus, members have increased personal responsibility to employ the services of others who have expertise to supplement their own capabilities. This responsibility is most important when adopting new processes like computer software to ensure the programs are site specific to the member's project (see also Principle 6).

Members are registered either as Professional Engineers (P.Eng.) or Professional Geoscientists (P.Ge.) and sometimes both. The professions are distinct and registration in one does not give a member the right to practice in the other.

Principle 3: provide an opinion on a professional subject only when it is founded upon adequate knowledge and honest conviction.

Guidelines:

- (a) Members should clearly distinguish between facts, assumptions and opinions in reference to engineering or geoscience in the preparation of reports, in discussion with clients and colleagues, in statements to the media, in the publication of papers and articles and in discussion in a public forum.
- (b) Members should not make statements, criticisms or arguments inspired or paid for by private interests on matters relating to public policy, unless they indicate on whose behalf the statements are being made.
- (c) Members should ensure, to the best of their ability, that statements on engineering or geoscience matters attributed to them properly reflect their professional opinion.
- (d) Members should not misrepresent their qualifications to their clients or their employers.
- (e) Members should engage, or provide advice on engaging, experts and specialists when in their judgment such services are in their client's or employer's best interest.

Commentary:

It is incumbent upon members to express the results of their work clearly and accurately; when a matter is only partially resolved, to place an appropriate qualification on the result; and to avoid bias due to political, economic or other non-technical factors. In both corporate and societal settings, they should focus discussion on the facts of the issue and do their best to ensure that their professional opinions are accurately represented. When presenting complex issues to a non-technical audience, members should simplify their discussion without losing the critical elements, in order to avoid misinterpretation by the audience.

Members who are called upon to provide opinion evidence for the purpose of litigation should be careful not to take an adversarial position. As has been expressed by our B.C. Supreme Court, the member is there to assist a judge with technical matters which are beyond the expertise of the judge. The member is not an advocate and should

be willing to present the same opinion

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regardless of which side in a dispute has hired him (or her). Prior to providing an opinion, the member should consider advising the client that payment of the account will be required regardless of whether or not the client likes the opinion expressed.

Members need not be devoid of personal or political interests; rather, they should separate their personal views from their professional activities and be impartial and factual when expressing professional opinions.

Principle 4:

act as faithful agents of their clients or employers, maintain confidentiality and avoid a conflict of interest but, where such conflict arises, fully disclose the circumstances without delay to the employer or client.

Guidelines:

- (a) Members should act with fairness and justice to all parties when administering a contract on behalf of their client or employer.
- (b) Members should be realistic and honest in all estimates, reports and statements.
- (c) Members should not use information coming to them confidentially, in the course of their assignments, for personal gain.
- (d) Members should not divulge specific confidential information, acquired during the course of an assignment for a client or while employed by a former employer, to either another client or new employer, unless permission is obtained from the previous client or employer.
- (e) When a conflict of interest arises members should reveal the conflict without delay to the client or employer, including interests held by close associates, relatives and companions.
- (f) If, with the full knowledge of the client or employer, members are instructed to continue regardless of the conflict, they will keep the interests of the client or employer in priority over their own interests.
- (g) Members should not engage in any outside activity likely to adversely affect their employers' businesses (legal job action excepted).

Commentary:

In providing services to a client, members should consider themselves part of the client's organization or team, with high regard for the client's interests. This is implicit in the term "faithful agent" and should be the basis of the member/client relationship.

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a-If members become aware of errors or

omissions in their services, they should

report these to their superiors or clients immediately and work positively to remedy such errors and omissions.

Members have an obligation to provide timely notification and advice to their clients and employers when they believe a project will not be successful.

Members involved in project management, contract supervision and field services should spend sufficient time on the job site and at subcontractor and suppliers' plants, to ascertain that the work is proceeding properly and expeditiously and with due regard for safety and the environment. Reports and progress estimates should reflect actual site conditions and progress. The interpretation of agreements and contract documents should be undertaken with fairness and impartiality.

The relationships of members with their associates should be friendly but independent and free from obligating gratuities.

All information received from a client or employer should be considered as confidential unless such information is in the public domain. Confidential information is privileged and proprietary and is loaned to a member only to facilitate the work. All confidential information received during professional services should be considered the exclusive property of its owner and should not be disclosed to others or used by the member except with the owner's specific approval. Particular care should be taken regarding trade practices that may be unique and identify the owner's special attributes.

When members use designs supplied by clients, the designs remain the property of the clients and should not be duplicated by the members for others without express permission from the first client.

Technical knowledge gained by an individual through exposure to the work environment is part of the member's experience and may be freely used in subsequent projects without consent from other parties.

Most but not all conflicts of interest arise out of business activities. Members should be careful in their business relationships in order that potential conflicts within their control are avoided. For example:

- **a member with** authority to recommend purchase of vehicles ought not own

stock in an automobile manufacturer.

- **a geoscientist in a management position in the exploration division of a** major oil company ought not hold stock in a seismic contractor.

- an engineer employed by a municipality ought not have an interest in a land developer operating in that municipality.

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- a member ought not actively participate in organizations, lobby groups or voluntary committees detrimental to the employer's image and competitive position.

Conflict of interest extends to holdings of associates and to members of the professional's immediate family including common-law spouse or companion. Where a conflict exists a member should take steps to mitigate it, including recommending the engagement of another professional to oversee the work. Such mitigation does not however erase the conflict – the best conduct is avoidance.

As long as an outside activity (moonlighting) does not conflict in any way with the employer or the member's ability to perform his/her duties in either occupation, notification to the employer is voluntary. If conflict arises then notification is recommended and a decision regarding continuance or adjustment should be made.

Precise rules in conflict of interest are not possible. Members should use their conscience and sense of honour for guidance. In any Inquiry the Discipline Panel will seek to know the total circumstances surrounding the alleged conflict in order to adjudicate and will give weight to any signs of subterfuge.

Principle 5:

uphold the principle of appropriate and adequate compensation for the performance of engineering and geoscience work.

Guidelines:

- (a) While they should be fairly remunerated for their services, members are expected to put service above gain, excellence above quantity, rewards of self-expression above any pecuniary incentive, and a code of honour above competitive spirit. Notwithstanding the foregoing, members in a supervisory role over other professionals should strive to ensure that compensation is appropriate and fair.
- (b) Members should not undertake an engineering or geoscience engagement on a contingent fee basis.
- (c) Members should not submit any proposal to secure an engagement or assignment with a firm price or estimated cost lower than the realistic expected full estimated cost of the proposed engagement.
- (d) Members should not offer to pay or agree to pay, either directly or indirectly, any commission, political contribution, gift or other considerations in order to secure work.

- (e) Members should not accept compensation, financial or otherwise, from more than one interested party for the same service, or for services pertaining to the same work, unless there is full disclosure to, and consent of, all interested parties.
- (f) Members should not accept financial or other considerations, including free services, from material or equipment suppliers as a reward for specifying their product.
- (g) Members should not accept commissions or allowances, directly or indirectly, from contractors or other parties dealing with their clients or employers in connection with work for which they are responsible.

Commentary:

Members should determine fees by reference to the scope of work and level of service required to perform the task satisfactorily. Cutting fees to an extent that would result in the rendering of an incompetent or dangerous service is unethical.

Contingent fee arrangements are inappropriate as the judgment of the member may be affected by the size of the fee; e.g. zero in the case of an unsatisfactory conclusion or disproportionately high in other situations.

Services offered at less than cost as a “loss leader” in order to secure future work is strongly discouraged, particularly where the services might have an effect on quality of the work and the feasibility of the future project. If a “loss leader” is offered, the potential client should be made aware of this together with the member’s expectations for the future work.

Principle 6:

keep themselves informed in order to maintain their competence, strive to advance the body of knowledge within which they practice and provide opportunities for the professional development of their associates.

Guidelines:

- (a) Members should ensure that their competence is maintained throughout their careers by remaining abreast of developments and knowledge in their area of expertise. This requires a personal commitment to ongoing professional development and continuing education.
- (b) In addition to maintaining their own competence, members should endeavour to contribute to the advancement of the body of knowledge within their areas of expertise.
- (c) Members have a special obligation to demonstrate understanding,

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professionalism and technical expertise to members-
in- training under their supervision.

- (d) Within the framework of the practice of their profession, members are expected to participate in providing opportunities to further the professional development of their subordinates and colleagues.

Commentary:

Should there be a technologically driven or individually motivated shift in the area of technical activity, it is a member's duty to attain and maintain competence in all areas of involvement.

Members are free to tackle new challenges and learn new skills through their work as long as successful completion of the assignment is not jeopardized, and honesty is maintained with the client or employer.

Where members render services based on computer programs, they should do so only after taking steps to thoroughly understand the program, its underlying assumptions and its limitations.

Members should actively participate in technical and professional development seminars, continuing education programs and the presentation of papers at professional meetings. They should contribute to the dialogue fostered by their professional journals and support instructional activities in their area of involvement.

Members should contribute to professional growth of members-in-training by asking for, and expecting, the thorough performance of assigned tasks, followed by constructive review of the quality of their work and general performance.

Duties assigned to members-in-training should make use of their training and experience and give them maximum exposure to the knowledge of experienced members, which would include informal discussions with senior members on ethical dilemmas, individual employment interests and professional growth to maintain an up-to-date and competitive capability to serve employers, clients and the public.

Members-in-training should be encouraged to participate in professional development seminars, continuing education programs and the presentation of papers at professional meetings.

Members-in-training should be assisted in their advancement through teaching and thoughtful supervision, and encouraged to become registered when they demonstrate adequate qualifications.

Principle 7: conduct themselves with fairness, courtesy and good faith towards clients, colleagues and others, give credit where it is due and accept, as well as give, honest and fair professional comment.

Guidelines:

- (a) Members should not maliciously injure the character or the prospects of business of another member or other individual, being as careful with a colleague's reputation as with their own. Unless convinced that responsibility to the community demands it, they should not express professional opinions that reflect on the ability or integrity of another person or organization.
- (b) Members should exercise restraint when commenting upon the work of another member.
- (c) Members should not, except in cases where review is usual and anticipated, evaluate the work of a fellow member without the knowledge of and after communication with that member where practicable.

Commentary:

Contacting a member whose work is to be reviewed is not only a professional courtesy but also provides the opportunity for the exchange of pertinent information that would assist in the review. If the results of such a review demonstrate safety or environmental concerns, it is recommended that the member responsible for the work be contacted again to review these concerns in order to provide him or her with an opportunity to comment prior to further action (see also Principle 9). It is recommended all oral communication be confirmed in writing.

If a client requests a review of the work of a member and further stipulates that this member not be contacted, the client should be advised that these instructions are contrary to the spirit and intent of the APEGBC *Code of Ethics*.

Members are entitled to review and evaluate the work of other members when so required by their employment duties and when the experience and knowledge are appropriate. For an adequate review, it may be important to be aware of the nature and conditions attached to the assignment handled by the first member. Open communication should exist between the two members so that underlying assumptions are understood by the reviewing member, and so that the first member has an opportunity to respond to any comments or criticisms.

If a document is simply being read for information it is not being evaluated. The essence of evaluating is that the document be read in a critical manner and the statements be confirmed or rejected by the reader. This process of criticism is not limited to the obvious formal full techniques of analysis and calculation; it can be quite informal and based simply upon experience.

Guideline:

- (d) Members should not attempt to supplant another member in a particular employment after becoming aware that definite steps have been taken toward the other's engagement.

Commentary:

Members, when accepting assignments, should ensure this subject is introduced in pre-contract discussions. They should not continue to seek employment on a specific engagement after being advised that another member has been selected.

Guideline:

- (e) Members should not use the advantages of a salaried position to compete unfairly with another member.

Commentary:

Members should not engage in outside engineering or geoscience work to an extent prejudicial to their salaried position.

Members should not use the influence of a salaried position to direct clients to an engineering or geoscience office in which they have a financial interest.

Members should not use equipment, supplies, laboratory or office facilities of their employer to carry on outside practice without the employer's consent.

Guidelines:

- (f) Members should not compete improperly by reducing charges to underbid a fellow member after having been informed of that member's charge.

- (g) Members, when using designs supplied by a client or by a consultant, should recognize and protect the ownership of the designs by the client or consultant and refrain from duplicating them for others without express permission.

- (h) Members, before undertaking work

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for others that involves improvements, plans, designs, inventions or other records which may be copyrighted or patented, should attempt to enter into an agreement regarding the ownership of such copyrights or patents.

- (i) Members should provide, when requested, a frank but private appraisal of employees or of members being considered for employment.
- (j) Members should not use an association with a non-member, a corporation or a partnership as a "cloak" for unethical acts or to avoid acceptance of personal responsibility for members* acts.

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- (k) Members should refrain from distorting or altering facts in an attempt to justify decisions or avoid responsibilities.
- (l) Members should advise the client or employer when it appears that a project will not be in the best interests of the client, employer or the public.
- (m) Whenever possible, members should acknowledge contributions of others for work with which the member is associated and name those who were individually responsible for designs, inventions, writings or other accomplishments.
- (n) Members should be open and receptive to new approaches or criticisms offered in a positive vein, and not unduly defensive regarding preconceived positions.
- (o) Members may promote and advertise their work or abilities provided that:
 - the advertising preserves the public interest by reporting accurate and factual information which neither exaggerates nor misleads,
 - the advertising does not impair the dignity of the members or their professions,
 - the statements do not convey criticism of other members directly or indirectly.
- (p) Members should endeavour to provide prospective engineering or geoscience employees with complete information on working conditions and proposed status of employment and, after employment, keep them informed of any changes in such conditions or status.

Principle 8: present clearly to employers and clients the possible consequences if professional decisions or judgments are overruled or disregarded.

Commentary:

Members may occasionally find themselves in a situation where their recommendation is being questioned by their employer, client, or another expert.

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When the disagreement is between two members, the duty of the individual who bears professional responsibility for the recommendation is to ensure that the facts and recommendations are correct and that the information and assumptions are laid out simply and lucidly. This should be done both in writing and by personal contact for contentious issues. If the senior member chooses to overrule the other member*s recommendation, in full knowledge of its basis, the senior member consciously takes responsibility.

A member has continuing obligations although his or her recommendations may be overruled by others.

When members find themselves in a situation where their recommendation is being questioned by a non-member, an additional element of difficulty is introduced. The non-member may lack the technical sophistication to appreciate both the rationale of the recommendation and the potential consequences of failure to accept the recommendation. In such instances the member should make all reasonable efforts to ensure that an appropriate decision is made. The member remains the last line of defence for the public welfare.

When a client or employer makes a decision that adversely affects the public interest and is contrary to the recommendation of the member, the client or employer should be informed of the consequences of the decision. If the client or employer is unavailable or unresponsive, the member should notify the appropriate regulatory authorities who have the ability to evaluate the concerns and the power to suspend activities until the technical issue is resolved.

Principle 9:

report to their association or other appropriate agencies any hazardous, illegal or unethical professional decisions or practices by engineers, geoscientists, or others.

Guideline:

- (a) The actions of non-members as well as members should be considered and commented on if they would result in an illegal situation or hazardous condition.

Commentary:

Through informal contact, normal working relationships, or special circumstances such as design reviews, one member may develop the opinion that the work of another member is deficient. The inadequacies may arise from unskilled practice and/or unprofessional conduct.

If the immediate physical safety of the public is in jeopardy, speedy notification of the owner, operator or appropriate regulatory authorities is the immediate duty of the member. So that a full investigation may either substantiate or dismiss the concern, notification to the Registrar of the Association is the member's next duty. Prompt notification is necessary to prevent potential harm to the public through the continuation of unacceptable engineering, or geoscience practices. Members have a responsibility to be aware of hazards to society created by their profession, and also have a responsibility to report unethical practice so it may be dealt with through the disciplinary process.

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Some hazards are slow to develop, yet are of potentially greater hazard, such as chemical waste disposal. Such actions should be reviewed with the same concern for maximum public protection and minimum environmental impact.

A conflict may develop when a member has been retained to assist in litigation and forms the opinion that another member has acted unprofessionally. To report to the authorities during the course of litigation, if there is no imminent danger to the public, would violate rules of legal privilege and confidentiality. Once the litigation has been determined, either by final judgment or settlement, the member should ascertain whether the client has any objection to reporting the unprofessional conduct. If the client objects, the member is in a conflict of interest, and should seek advice from the Association or from the member*s own lawyer.

Ignoring unprofessional practices, either for expediency or sympathy, may indirectly endanger the public and certainly circumvents the responsibility of self-regulation that has been granted to the Association. Intentionally refraining from reporting substantive breaches of the Code of Ethics on the part of another member of APEGBC therefore constitutes unprofessional conduct.

Principle 10:

extend public knowledge and appreciation of engineering and geoscience and protect the profrssion from misrepresentation and misunderstanding.

Commentary:

The image of a member in the mind of the general public is the result of an amalgam of inputs. These vary from the image of the engineering students at universities; heroes or otherwise in novels, movies and television programs; to friends, relatives and teachers, etc. who are members. The members of our profession are role models and images of our profession. What you do, what you say, the manner in which you communicate, are all absorbed by children, young adults, and non-member associates and friends. Their image of a member is thus the result of this composite character and personality.

The public*s appreciation of what members are, and what engineering and geoscience work is, also depends on what we as members of these professions understand ourselves to be. Drawing the public*s attention to the good that our profession has provided for the public in the way of good roads, clean water, safe sewage disposal, etc. can only help reinforce the "positive" image of the professions.

However, the individual member should also be ready to defend the professions in the light of unfair or defamatory comments. If you do not know the facts, do not compound

the problem by guessing; get someone who does **know to contact the person denigrating the profession or spreading false information and get the facts straight. Make use of the Spokespersons and Specialist List from the Association. Volunteering to speak to high school students** on career days and similar opportunities should be sought.

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Helping people to know how they can be better informed on the professions of engineering and geoscience will help reinforce a positive image.

Hypothetical Examples

These narratives are devised to illustrate the various principles in the *Code of Ethics*. While fictional, parts of them may indeed be parallel to real life cases, but this is coincidental and unintended. Several of the cases illustrate more than one principle. The heading “Principle” refers to the one most illustrated.

Principle 1

- 1.1 Engineer “A” was superintendent of a plant which used toxic chemicals to reduce ores. These chemicals were recirculated and prevention of their escape relied in part on good operating practice in the plant. An adequate manual was in place and operators had been well trained. However, plant management’s attitude, including that of “A”, was sloppy and infractions of the manual regarding operating procedures were widespread throughout the plant. Because of this, toxic material was allowed to escape. Fish in a creek were killed, as were birds in a downstream marsh. A rancher had to take special measures to provide water to his stock.

“A” clearly failed in his duty to protect the environment and avoid hazard to the public. He should have instilled the attitude into his managers that the manual was to be strictly followed. It might also be considered that the designers of the plant ought instead to have produced a design that relied less on the human element to prevent escape of the chemicals.

Principle 2

- 2.1 Engineer “A” was very busy and reluctantly agreed to provide a report on a proposed plant layout, for an old friend. “A” assigned the task to technician “B” who was experienced in mechanical construction but had little background in plant layout. “B” did his best but was out of his field; whenever he tried to get advice from “A” he was unable to do so because “A” was too busy. “B” completed the report to draft stage, expecting that “A” would amend it, tie up loose ends, etc. “B” gave the report to “A” with a short memo saying he was not confident of it and that “A” should give it detailed study. By this time “A” was even busier than he had been before and he had to get several things completed before going overseas for a month. He simply had the draft report retyped in final format and then “A” signed and sealed it without even reading it. When the client received the report he phoned the partner of “A” and said he was not going to pay for the report and would never ask “A” to work for him again. The partner

apologized and wisely told the client he would not be billed.

“A” should have realized that he could not properly carry out the assignment and should have declined it or, alternatively, he should have put off something else so that he could give it proper attention. He should have arranged his personal work schedule so that he could provide personal supervision so that he could, with conscience, sign and seal the report.

- 2.2 Engineer “A” had several years’ experience in the design of water and sewer and municipal streets. He had no experience in retaining walls. A citizen who was building a large lakeview house on the lower slopes of a hill asked “A” to design a retaining wall 3m high and 50m long to provide a flat lawn area in front of the house. “A” accepted the assignment and went to an old manual of standard concrete designs. He took his dimensions, bar size and spacing from this standard and produced drawings and specifications for the contractor. Soon after construction the wall failed by sliding. It was revealed that the standard design was intended to cover structural aspects only and there were notations to this effect in the manual.

“A” behaved very badly in this case. His work was sloppy and negligent. His university course had included retaining wall design, including some material on failure by sliding. Notwithstanding this, he performed no foundation investigation. At the very least he should have put down a couple of hand auger holes and performed soil classification to estimate bearing resistance, compressibility, etc. He performed no structural calculations to code, preferring to simply copy the manual design whose provenance was quite unknown. He made no checks for sliding and made no provision in the design to resist sliding. In short, “A” provided very little of the work his client was paying him to do and relying on him to perform properly. The client launched a successful lawsuit.

Principle 3

- 3.1 Engineer “A” was engaged by an environmental advocacy organization to provide a report on past road-building practice by a major forest company in an area where cutting ceased in the late 1970s. He found many examples of practice that had led to erosion. The environmental organization used the report in a submission to a commission to illustrate what practices ought to be avoided.

“A” made his report the basis of an article he wrote for a national magazine in which he stated this was the current practice of the forest company and in the article he castigated the government and the forest company and called on readers to mount a write-in campaign. The magazine, noted for its bias, would not have published his article had he said anything less. In the article “A” acknowledged the assistance of the logging superintendent in his review of the area but made no mention of

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the environmental organization whose money had supported his work. This article was picked up by the local weekly newspaper which did a rehash implying the story was the result of an interview. In the story “A” was quoted as saying the unacceptable road-building practice was widespread throughout the province. Before publication the reporter phoned “A” saying he had written the story from the article content but it was too long to read it all out. He gave some highlights which did not include the “widespread” statement. “A” said on the phone he was satisfied with the story which then appeared in the next issue of the paper and included the “widespread” statement.

Clearly the behaviour of “A” :‘vas much less than professional. First he made the assumption the poor road-building practice he had observed in the area studied was still the practice of that forest company. A little checking of recently developed roads and some questioning of the logging superintendent would have resolved this issue.

Second, in his article he did not indicate that he had been paid by the environmental organization to do the work that had formed the basis of his article. He did acknowledge the assistance of the logging superintendent, thus giving the impression that omission of the environmental organization was deliberate. Third, he should have insisted that the reporter show him a copy of the whole newspaper story and he could then have refuted the “widespread” quote. Chances are the reporter would have printed it regardless but “A” would at least have done his best to stop it and would have learned something of the hazards of dealing with the media on matters in the political arena.

- 3.2 Engineer “A”, who recently moved to B.C. from Ontario, learned from a classmate at a reunion that an eastern mining company had a prospect at tidewater on the coast and needed design of a short bridge over a creek. “A” had designed a single-lane timber logging bridge over a creek in northwestern Ontario but had no other bridge experience. He approached the mining company saying he had extensive experience in bridge engineering and was given the assignment for the design. The site was at the head of a steep fan of about 15% slope composed of unsorted blocky material. No flow records were available so “A” selected a clear waterway area based on high-water marks. He felt the site was straightforward and did not arrange for geotechnical investigation and advice. The bridge he designed was a standard 1 Sm span concrete box girder with H piled abutments. The contractor was very experienced in mine and mill buildings and mechanical plants but had no experience in bridges. Nevertheless the construction went well although with a little difficulty in driving the piles. The bridge served well for 6 years and was then destroyed by a debris torrent.

“A” clearly misrepresented his qualifications to his client. He had in fact minimal bridge experience and none of that in the mountains. Given this fault he then compounded it by not engaging another engineer to provide geotechnical advice. An engineer experienced in bridges or geotechnical work would have noted the blocky unsorted material in the fan and concluded it was likely deposited by debris torrents. That issue could then have been addressed by relocation of site, provision of debris basin~ greater vertical clearance, etc.

Principle 4

- 4.1 An engineering firm had the assignment for design and field services for a pulp mill being developed by a large forest products company. “A” was the Resident Engineer. The contract was biased in favour of the forest company and, among many other things, contained a clause that said no payment would be made to the contractor for delays or consequential costs of those delays, whatever the cause of those delays. During the course of construction the forest company realized it could not install the designed chlorine bleach process because it would not meet more rigorous effluent standards that were in stream and likely to become law in a few months.

“A” ordered the contractor to cease work on this part of the project while an alternate process was designed. Work was able to restart after a two-month delay. However, two months of good weather had been lost and the contractor had to work much overtime to close in the building before winter. The contractor wrote to “A” explaining the additional unforeseen cost of overtime which had been imposed on him by the delay. The contractor said a detailed claim would follow in a few days. “A” wrote back referring to the delay clause and said no claim would be considered and any claim received would be sent back by next mail.

“A” had a duty to act with fairness and justice, notwithstanding the exact wording of the contract. “A” should have received the claim, analyzed it carefully and forwarded it to the forest company with his evaluation of the merits and value of the claim. This would have been the fair and just course of action. “A” well knew that the courts do not like unfair contracts and have often made awards in the face of unfair language. In fact, the contractor launched a lawsuit and was awarded these Uelay costs. The additional costs of mounting and defending the action, and the consequent deterioration of the relationship between contractor and engineer, could have been avoided by acting with fairness and justice in the first place.

- 4.2 Engineer “A” was a member of an ad hoc citizens committee which wanted the municipality to build a small recreation centre in their neighbourhood. They believed the council would not approve the project

at the realistic likely cost. “A” then produced an estimate at about 40% of the realistic likely cost and the committee advanced this estimate to council. Council accepted the estimate, relying on a professional, and approved the project without seeking another estimate. When the design process was part way along it was realized that the estimate was low. Council was annoyed at “A” but felt it had gone too far in the process to stop it without excessive political reaction, and continued the project.

“A” should have been realistic and honest and given the proper realistic likely cost. To deliberately give a known low estimate to induce someone to do something is a serious offence.

- 4.3 Engineer “A” was one of three civil engineers in private practice in a medium-sized town in the Interior. A nearby village gave her the assignment for design and field services of 2 blocks of curb and gutter on the main street, including extension of the existing storm sewer. “A” undertook the design and prepared the contract documents. When the village advertised for bids “A” told the clerk she had an interest in one of five small construction companies in the area and that her company wanted to bid. She recommended to the clerk that the village engage another engineer to review the bids and if “A” ‘s company was successful, to then provide field services. Council agreed and engaged Engineer “B” to review the bids. “A” ‘s company was the successful bidder and “B” then provided the field services.

“A” was clearly in conflict of interest by having the construction company she had an interest in bid on the work she had designed. Since there were three engineers locally and five contractors she could easily have avoided the conflict by either not doing the design or not doing the construction. “A” should have considered which was the best business decision and picked either the design or the construction, not both. However, having made this error she did not compound it by remaining silent. The recommendation to engage another engineer was a good mitigative action under these circumstances.

Indeed, members should be very careful about their personal investments so that they do not create conflict of interest situations. An astute person doing a design could easily provide a small advantage to her construction company: in this case, for example, if her construction firm had the only curb extrusion machine in the area she could slant the specifications to favour extrusion, thus putting the other contractors at a competitive disadvantage.

Nothing here prevents businesses from vertical integration, design-build, etc. Where there is one competition (formal or informal) for one contract there is no conflict. In design-build, for example, the contractor bids or

negotiates a contract with the owner which requires the contractor to carry out a design and then build to that design – all in one contract. Conflict would arise if the contractor was instead assigned the design by the owner under one contract and, when the design was complete, the owner then called bids for construction and this contractor submitted a bid.

- 4.4 Engineer “A” wrote a report on a gold prospect for a junior resource company active on the VSE. He used real numbers in his report but gave an inflated impression of the property by employing flowery adjectives. One example of several statements giving the impression was “Assays on samples recovered from drill holes 6-14 revealed a very respectable 0.01 ounces of gold per tonne average with some samples as rich as 0.03 ounces per tonne.” There was considerable activity on the VSE but no mine resulted.

“A” should not have used such expressions as “very respectable” or “rich” in the context of these figures. Adjectives can be used to modify the impact of hard figures and should always be very carefully chosen so that they do not inflate or deflate a quantity.

“A” was not being “realistic and honest” in his report.

- 4.5 An equipment dealer was developing a new depot in a small town in the Interior. The building was designed by a Vancouver architect/engineering firm. The project manager for the firm was Engineer “A”. A sole practitioner, Engineer “B”, lived in the town and offered his services to “A” to perform site inspection. “B” argued that since he was based locally he could attend the site at critical stages on short notice from the contractor. “A” declined to contract this work to “B” and arranged instead to make personal visits to the site every second week on a regular basis.

The building was concrete block with partial second storey for offices. There was some structural steel in trusses and roof trusses. The foundation for the walls was a strip footing some 1.2m below grade. When the contractor excavated, the ground was still partly frozen and the contractor poured parts of the strip footing against this frozen ground. This work was done between “A”’s visits and backfilled before his next visit. “B” heard that this had been done and reported it to “A”. He again suggested that “A” should engage him to at least attend at the critical stages between “A”’s visits. “A” again declined and took no action with respect to the report of bad workmanship. Just after occupancy the building began to suffer differential settlement and expensive underpinning measures were necessary to rehabilitate.

“A” most certainly did not provide his client with the proper level of field services. The work was in fact large enough to warrant a full-time inspector

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and “A” ‘s first position in negotiating fees with his client should have been that full-time inspection was required. If he was not successful in this he should have informed the client of the risks and arranged to do inspection at critical stages such as footing excavation, placement of rebar, concrete mix and placement, etc. He should have recognized that inspection of critical stages is difficult to arrange from Vancouver at remote sites on short notice and at the very least he could have arranged with “B” to make some of these inspections and perhaps attend site himself only monthly.

Having been told of the bad workmanship, “A” compounded his problem by ignoring it. He should have made a special site visit to investigate so that the poor footings could have been removed at that stage before becoming a major problem.

The provision of field services and site inspection is most important and should be done conscientiously. A significant proportion of failures occur at this stage. Acceptance of poor materials, bad construction methods, sloppy workmanship, etc. all can contribute. The cost of full field services and inspection is well worth it and clients should always be vigorously urged to invest in it.

- 4.6 Engineer “A” was the sole civil engineer in a small town in a remote area of the province. Other engineers in the area were all mining engineers. “A” had a broad background including sewer and water, roads, bridges, structural design and building construction and inspection. His wife owned four commercial buildings in the downtown area. A major earthquake took place which caused widespread damage in the region with significant cracking and settlement in commercial buildings, many of which were of unreinforced masonry.

Immediate structural inspection was necessary before persons could be allowed back in to the buildings, to live or work. The town administrator asked “A” to undertake this inspection work. “A” responded that he could not do so because of his wife’s ownership of four of the buildings and it would be a clear conflict for him to inspect his wife’s property.

Furthermore he felt he ought not to inspect and pass on buildings owned by others as that might give the appearance of a conflict since his wife was in competition with them for tenants. The administrator said he appreciated that but he could not get outside help both because of poor transport communications and because other engineers were fully busy at this work in other communities in the region. “A” then agreed to do the work and indeed found he had to condemn two of his wife’s buildings and five others. An

aftershock confirmed his work by doing further damage to all seven of these buildings and some minor damage to one he had passed as habitable. This was not one of his wife*s buildings.

"A" behaved correctly and honourably by trying to avoid the assignment that put him in conflict and possible appearance of conflict. When he found this could not be avoided he undertook the work with the client's interest uppermost.

Conflict of interest can almost always be avoided by not taking an assignment or by withdrawing when a conflict arises. In rare cases conflict cannot be avoided and should be declared and the client/employer interest held in priority over the member's. Most of these rare cases will be like this one, where there is not enough time to get another member to do the work, or where the required expertise is so narrow or the depth of experience so great that there is consequently only a handful (or less) of members qualified.

- 4.7 "A" was an electrical engineer working for a small manufacturing firm owned by "B", also an electrical engineer. "B" 's firm made small control devices for heavy lifting equipment used by loggers and contractors. The total market consisted of about 210 firms and "B" had about a quarter of the total business with 36 of the firms as repeat customers providing about 85% of his sales volume. "A" resigned to set up her own firm and designed a more advanced control device in the same field. "A" phoned the 36 repeat customers to try to get them to switch allegiance to her new firm and her new improved product.

"A" certainly behaved unethically by contacting only "B" 's regular customers. Knowledge of who these customers were was available only in "B" 's firm and "A" was therefore using confidential information acquired during her time working for "B". "A" should have tried to identify the 210 firms by other means such as contacting trade magazines and other public sources such as *Journal of Commerce*.

Note that confidential information is not confined to engineering or geoscience. Confidentiality of business information is just as important. And to be confidential it does not have to be in a file labelled "Confidential". If it is information that is not privy to persons not in that organization, it is confidential.

Principle 5

5.1 Engineer "A" was one of several engineers asked to submit proposals for a feasibility study for a deep-water bulk-loading facility. "A" submitted his proposal with a cost estimate of about half the realistic estimated cost in order to increase his chances of getting the assignment. He believed, and with some justification, that if he got the feasibility study it would give him the inside track for the subsequent design study.

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This practice is strongly discouraged. "A", if he gets the assignment, is dependent on the subsequent assignment to recover his costs and profit for the feasibility study. This may affect his judgment on the "feasibility" of the project. In order to avoid erroneous conclusions in a feasibility study it is not uncommon to state that the successful consultant for the feasibility study will not be a candidate for the subsequent project.

Principle 6

- 6.1 Engineer "A" was assigned a design by a client. "A" undertook the design using a methodology she had learned in university some 20 years ago. Subsequent to that time the widespread introduction of the computer had enabled a new methodology. The old methodology was revealed to be over-conservative. "A" 's design therefore produced a structure that was safe and serviceable but with larger X sections than the modern methodology would produce and, thus, more expensive to the client than it should have been.

"A" had a duty to keep herself up to date in her discipline by study of the journals of learned societies, attendance at refresher courses and seminars etc., and failed to do so.

- 6.2 Engineer "A" was the immediate supervisor of Engineer "B" in a large organization. "A" and "B" and one technician and a secretary constituted the local office of the organization in a medium-size town in the Interior of the province. "B" was secretary to the local branch of APEGBC, which had several towns in its territory and held evening meetings in different towns throughout the territory. To get to some of the more-distant meetings on time it was necessary to leave work early because of the travel time. On being elected secretary of the branch "B" asked "A" for permission to leave work an hour early on those days and make up the time by working late on other days. The nature of his work was such that the employer's interest would not have suffered.

Moreover the employer had a policy that professionals were to be encouraged to actively participate in their respective professional associations and learned societies up to and including allowing a reasonable amount of time off with pay. Nevertheless "A" refused permission for "B" to leave early and make up the lost time. "A" himself only attended branch meetings that were held in his town of residence.

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"A" was wrong in refusing permission and particularly so in the face of his employer*s policy. He should have allowed "B" time off with pay and if "B" had insisted on working the time anyway he should have agreed to that graciously.

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6.3 Geoscientist "A" was the supervisor of Engineer "B" in a consulting company. "B" 's work was mostly in developing computer programs and he had very little contact in his work with other persons in the firm and no contact at all with clients. "B" wished to take a relevant technical course at a nearby university. This would have necessitated attendance on campus for 3 hours a week for 10 weeks. "B" asked "A" for permission to be absent to attend the course on the basis that he would work late on other days to make up the time. "A" refused permission.

"A" should have given permission even if it would have affected the work of the firm to some degree. Engineers and geoscientists should encourage and facilitate professionals and technicians to participate in continuing education to improve relevant engineering, geoscience and management skills. The question of making up the time is a matter of policy for the organization concerned: members should encourage the employer to provide time off with pay. However, it should be recognized that such time may often not be billable to client or project and it may be difficult for the organization to accept this aspect.

Principle 7

7.1 Engineer "A" was a senior employee of a large corporation. He was manager of the maintenance division, which oversaw the mechanical maintenance of heavy plant. He was also one member of six on the specifications committee, which approved all standards and specifications for the organization. He did not participate in the purchasing of equipment, which was handled by the purchasing division. The president of one of the few manufacturers of this equipment invited "A" and his wife to join him and his wife for a week's holiday in the Bahamas at the manufacturer's expense. "A" and his wife went.

"A" acted incorrectly. He should not have accepted the paid vacation. While not directly involved in purchasing, "A" certainly could have had some influence in his role as a member of the

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specifications committee, which could have given a competitive advantage to the manufacturer.

Members should be very careful about accepting gifts from anyone. This is particularly true of members of the larger organizations with large and formal structures. While a member may at the time have a position that has no connection with a supplier, contractor, etc., during his/her subsequent career he/she may be appointed to a position that does have such a connection. It is best to try to decline all gifts.

7.2 Engineer "A" was Resident Engineer on a construction project. The contractor submitted a claim for extra payment which was inflated and unsupportable. "A" simply returned the document to the contractor with a rude expression written across it in large letters.

"A" should have treated the contractor with courtesy, regardless of provocation, and should have carefully reviewed the claim and then written to the contractor politely denying the claim and pointing out the reasons why it could not be supported. Such a letter need not be long or detailed but should cover the main points.

7.3 A contractor building a structure designed by Engineer "B" felt that the design of part of the structure was not at all suitable. To assist him in his approach to "B" to seek a change in the design, the contractor engaged Engineer "A" to review the matter and prepare a report. "A" went to the site and spent some time there looking into the matter but made no attempt to notify "B" who in fact was on site at the time discussing matters with the resident engineer.

"A" most certainly should have spoken to "B" (however briefly) in a courteous manner and told him he was reviewing some of "B" 's work for the contractor. If "B" was in fact not available to speak to, then "A" should have written a short note and sent it over by one of the contractor's staff, and proceeded with his work. Before in any sense reviewing another member's work for any reason a member owes him/her the courtesy of notification that the member is doing the review. A phone call is usually sufficient; however, it is recommended all oral communication be confirmed in writing. Note that there is no general obligation to tell the member any conclusions in the review unless something unsafe or harmful is found.

7.4 Engineer "B" was undertaking design of a water system for a small municipality to replace a mishmash of small public utility systems and individual wells in which the water was of doubtful quality. "B" proposed to pump from a creek that had adequate flow all year but was subject to intermittent ice jams, which stopped the flow for about 6-12 hours about once each winter. "B" proposed to address this by providing a reservoir to which the pumps supplied. This reservoir had a

capacity of 48 hours* consumption. The electric power transmission lines serving the area were subject to icing and power failures occurred about once a year up to about 12 hours. "B" proposed to address this by installing diesel generators in the pumphouse so that in the event of loss of power supply the pumps could continue to pump. "B" made a presentation to the municipal council early in the design stage and there was a detailed account of this in the weekly newspaper. On reading this Engineer "A",

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who was not connected with the project or the municipality, concluded that the 48 hours* supply in the reservoir would be more than adequate to take care of both the drying up of the creek and the power supply failure even if both occurred sequentially. She felt that "B" ~'as putting the municipality to unnecessar~* expense and immediately wrote a stinging letter to the weekly newspaper commenting on what she saw as an unnecessary and expensive duplication. She made no attempt to contact "B".

"A" should have exhausted other avenues before going to the newspaper. Courtesy required her to go to "B" in the first instance and give her views and try to convince "B" to change the proposal. (She should also have gone to "B" with an open enough mind that "B" could have been able to convince "A" that "B" 's proposal was right after all). Failing to resolve this with "B", then "A" should have tried once more by in~'iting "B" to join her in a meeting with the appropriate municipal official. If that meeting did not resolve the matter then "A" could have gone public after first telling "B" and the municipal official that she was going to do so. A member has a duty to try to resolve such differences privately before going to the media.

- 7.5 Engineer "A" was a specialist in a narrow field with only a few practitioners. He had a small consulting firm consisting of himself, one CAD technician and a shared secretary. He was engaged to do part of the design of a facility for a large utility compan~*. Other engineers doing the balance of the design were less than workmanlike in their execution and many field changes had to be made to "A" 's design in order to accommodate changed conditions. The resident engineer "B" was an employee of the utility. While himself fairly skilled in "A" 's field, "B" was not, of course, going to make changes in "A" 's design without prior contact with "A", who well knew that changes were required.

The first time "B" needed to contact "A" he found that "A" was attending a wedding in Ontario and had not provided his staff with any phone number or name of hotel. The next 3 times "B" made contact satisfactorily. The 5th time "B" had made an early afternoon appointment to see "A" at "A" 's office. "A" appeared 45 minutes late, clearly having over-

consumed alcohol. "B" made another appointment for the next day and this meeting took place in a satisfactory manner. The next 4 times "B" made contact successfully. The 10th time "B" phoned "A" and had a satisfactory discussion at the conclusion of which "A" promised to fax a small drawing that day, a Friday. By 4:00 pm. "B" had not received the fax and phoned "A" 's office only to learn from the secretary that "A" and his technician had left early to attend a short seminar in Seattle. The secretary knew nothing of the promised fax. "B" phoned "A" early on the

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Monday and "A" apologized profusely, saying he had had the drawing ready by lunch time but had simply forgotten after lunch to fax it. "A" sent the fax within minutes. When the facility was completed there was a dedication ceremony with a large audience of workers, politicians and local residents. "B" had phoned "A" and invited him to attend and be on the platform as one to be introduced to the audience but not speak. "A" said he would be very pleased to be there. In the event, "A" simply did not show. "B" phoned "A" the next day to see if "A" was sick. "A" said he had had to arrange an urgent meeting for another client and forgot to phone "B" to apologize in advance of the event.

Some of these incidents, taken by themselves, might be excusable as simple lapses of behaviour. However, taken together they form a course of action that bespeaks an attitude of mind on the part of "A" that is not acceptable conduct. "A" did not, on the whole, act with the necessary courtesy or faithfulness to the client. As it happened "B" made a special subsequent visit to "A" to discuss this attitude and warn him that in addition to the ethical aspect he faced a strong likelihood of losing clients if he continued with this attitude.

7.6 Engineer "A" was asked by lawyer "B" to take a quick look at an intersection. "B" 's client was suing the municipality for an accident which had injured him. "A" took a quick look at the intersection and told "B" he thought the design was a factor in the accident. "B" then said that the client had no money and "B" was representing him on a contingent basis and asked "A" if he would prepare a report and appear in court on a contingent basis. "A" estimated his fee would be \$2000 but because of the business risk he would want \$3000 if "B" won the case. (He would, of course, get nothing if "B" lost.) "B" agreed with "A" and engaged him on the \$3000 contingent basis. The case was settled out of court for a reasonable sum one week before the trial date. "B" paid "A" the \$3000.

"A" acted incorrectly to accept the assignment on a contingent basis. No member should accept an assignment where the size of the fee depends on the outcome of some event such as a legal action, application for a permit, sale of shares, successful construction contract bid, etc.,

being replaced by 4-storey buildings with habitable basements. The existing main street was developed with 2 lanes of blacktop with rudimentary drainage ditches and sporadic short sections of asphalt or wood sidewalk. The town needed 4 lane width pavement with curb and gutter, storm sewer with a long outfall, and concrete sidewalks. While 25% of the capital cost was available as a grant from the province, the town's assessment was low and it could not raise the 75% until the mine and mill were in production and tax revenues increased. The town therefore decided to proceed on a staged basis over 4 years with all the storm sewer in the first year. The town engaged Engineer "A" to provide the design and field services. "A" proceeded to design the storm sewer based on a 10-year storm. His preliminary cost estimate was more than the town could find. The town called "A" in and explained the situation and asked him to redesign for a 2-year storm. "A" readily agreed and left and redesigned the storm sewer to this lower level of service and the town was able to afford that and it was built. The next year a rainstorm overwhelmed the storm sewer and the consequent flooding of the downtown basements caused extensive property damage, especially to retail merchandise. The town had to make expensive settlements with the owners.

When the town had asked "A" to reduce the design capacity he had accepted the decision without comment. In this he was derelict as he had a duty to warn the town of the consequences of the action, which were that the lower level of capacity meant more risk of flooding. He should also have pointed out that most designers now use storms of return periods in the 10- to 30-year range and the old 2-year period has been generally superseded. In the face of this 10- to 30-year level the courts are more likely to award damages for flooding in cases where recent designs have used the 2-year. Thus while the 2-year design was affordable to the town, it carried a clear risk of damage settlements or lawsuits. Had "A" told the town this and the town insisted on the 2-year design still, "A" would have discharged his duty to advise his client so that the town would have had the full

information on which to base the decision.

Principle 9

- 9.1 Engineer "A" used to live in town X. "A"'s close friend "B", a** pharmacist, visited from X and they were chatting about old times, and who was who and what was what, etc. "B" said that Engineer "C" was now city engineer but "B" did not trust him. "A" enquired why, and "B" said that "C" had persuaded the city to widen Elm Street to 4 lanes in front of the new Elm Heights shopping centre and in return the developer had paid "C" off with some stock in the shopping centre company. "A" asked how "B" knew this and "B" said he had talked to a disaffected former employee of the developer.

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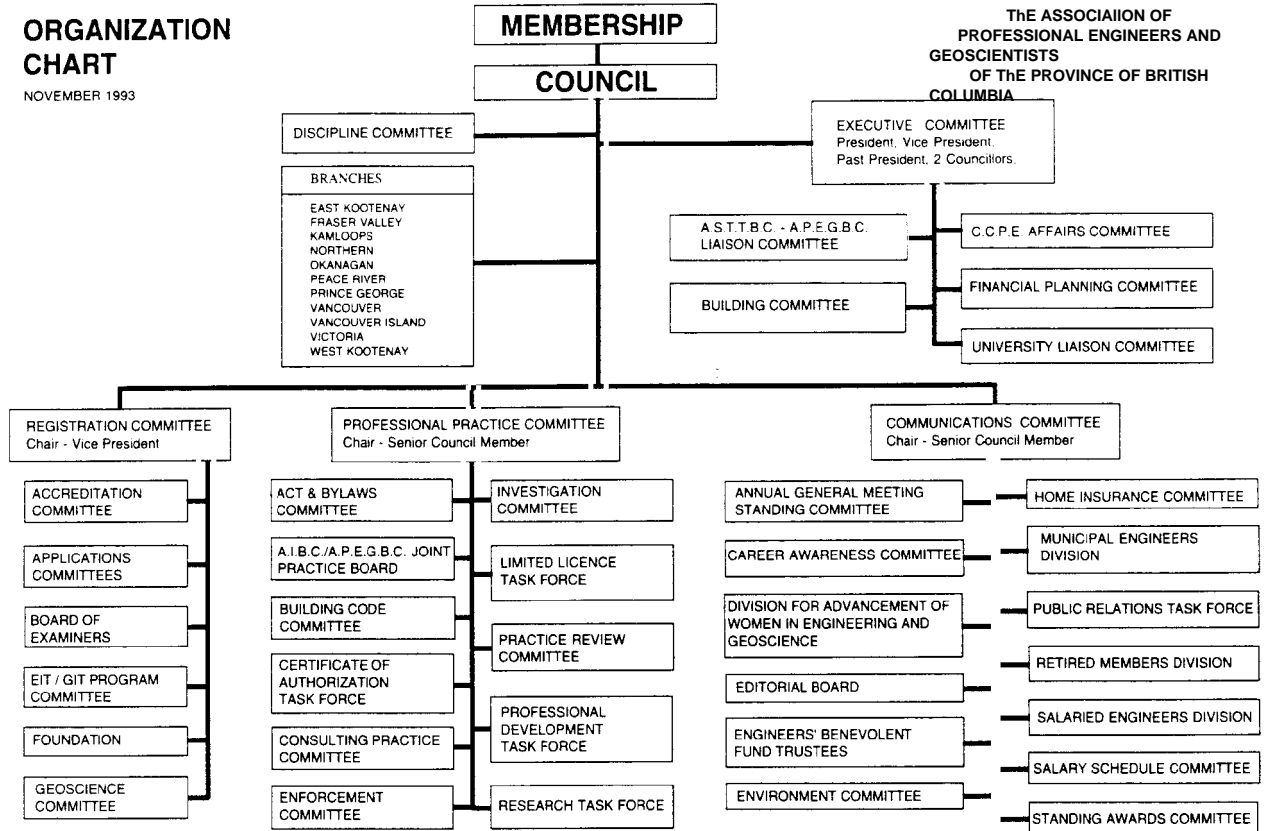
Appendix D

GUIDELINES FOR PROFESSIONAL EXCELLENCE

Organization Chart

ORGANIZATION CHART
NOVEMBER 1993

THE ASSOCIATION OF
PROFESSIONAL ENGINEERS AND
GEOSCIENTISTS
OF THE PROVINCE OF BRITISH
COLUMBIA



Committee

Branches

Discipline
Executive
ASPTBC-APEGBC Liaison
Building
CCPE Affairs
Financial Planning
University Liaison Committee
Accreditation
Applications
Board of Examiners
EIT / GIT Program Committee
Foundation
Geoscience Committee
Act & Bylaws
AIBC/APEGBC Joint Practice Board

Building Code
Certificate of Authorization Task Force
Consulting Practice
Enforcement
Investigation
Limited Licence Task Force
Practice Review
Professional Development Task Force
Research Task Force
AGM Standing
Career Awareness
D.A.W.E.G.
Editorial Board
Engineers Benevolent Fund Trustees
Environment
Home insurance
Municipal Engineers Division
Public Relations Task Force
Retired Members Division
Salary Engineers Division
Salary Schedule
Standing Awards

Appendix E

GUIDELINES FOR PROFESSIONAL EXCELLENCE

Discipline

complaint Procedure

The *Engineers and Geoscientists Act, 1979*, an Act of the British Columbia

Legislature, authorizes the Association of Professional Engineers and Geoscientists of British Columbia to regulate the conduct of its members.

Several sections of the Act define a system under which complaints to the Association are subjected to a thorough investigation and passed on, if

appropriate, to the Discipline Committee for action.

One reason the British Columbia Government has given this authority to the Association of Professional Engineers and Geoscientists is to provide the general public with confidence that members of the Association are competent and take full responsibility for their actions. A complaints, investigation and discipline system is an essential tool for maintenance of that confidence. The groups involved in the process are the Association staff and volunteers who serve on the Investigation Committee and the Discipline Committee.

Professional engineers, professional geoscientists (members)~ licensees and corporations, partnerships or other legal entities holding a Certificate of Authorization (certificate holders) to practice professional engineering or professional geoscience or former members, licensees and certificate holders may be investigated and disciplined under the provisions of the *Engineers and Geoscientists Act*.

Any person or group of persons wishing to make a complaint (complainant) about the actions or behaviour of a member, licensee or certificate holder can do so by following the procedures set out below:

1. The complaint should be submitted, in writing, to the Association to the attention of the Registrar or the Director, Professional Practice and Ethics. A simple letter setting out the facts on which the complaint is based is the usual method of initiation. Guidance as to contents of the letter may be obtained by telephoning the Director, Professional Practice and Ethics at 299-7100.

2. The complainant may refer to a contractual dispute with a member, licensee or certificate holder or to a criminal offence. Usually these matters are handled through the civil courts or by a report to the police.
3. When a complaint is received, an acknowledgment will be sent to the complainant.
4. The member, licensee or certificate holder complained against will be sent a copy of the complaint and asked to comment on the allegations. A time limit may be set on when the comments are required.

5. All information available will be sent to the Association's Investigation Committee if the Director, Professional Practice and Ethics is of the opinion that further investigation should be held.
6. The Investigation Committee is appointed by Council specifically to look into complaints and determine if there are reasonable and probable grounds to believe there has been a contravention of the *Engineers and Geoscientists Act*, Bvla~vs or Code of Ethics. The Investigation Committee is made up often or more volunteer members who are experienced professional engineers or geoscientists plus a lay member representing the general public.
7. The In~*estigation Committee will examine the complaint and may request further details from the complainant, from the member, licensee or certificate holder or from others with knowledge of the circumstances.
8. The Investigation Committee will, after thorough review, make one of two decisions:
 - a) That the complaint is justified.
 - b) That the complaint is not justified.
9. If the Investigation Committee decides the complaint is not justified, the complainant and the member, licensee or certificate holder shall be so notified in writing.
10. If the complaint is justified, the Investigation Committee will decide that one of the following procedures will be undertaken:
 - (i) Formal Inquiry
 - (ii) Tribunal
 - (iii) Stipulated Order

Alternatively, the Investigation Committee may make recommendations to the member, licensee or certificate holder who was investigated.
11. The Tribunal and Stipulated Order are "without prejudice" procedures; i.e., all

offers, promises, conduct and statements, whether oral or written, made in the course of the proceedings by any of the parties are. confidential and cannot be used in any other inquiry into the professional conduct of the member, licensee or certificate holder.

ASSOCIATION OF PROFESSIONAL ENGINEERS AND GEOSCIENTISTS OF BRITISH COLUMBIA

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Formal Inquiry

The procedures for a Formal Inquiry are defined in Section 24 of the *Engineers and Geoscientists Act*. Formal Notice of an Inquiry is served on the member, licensee or certificate holder to appear before a Discipline Panel, comprised of at least 3 members of the Discipline Committee. The Inquiry is conducted on a formal basis, normal rules of evidence are used, legal counsel is usually present and it is open to the public. In the event of findings of guilt by the Panel, they may, by order, do one or more of the following:

- (a) reprimand the member, licensee or certificate holder;
- (b) impose conditions on the membership, licence or certificate of authorization of the member, licensee or certificate holder;
- (c) suspend or revoke the membership, licence or certificate of authorization of the member, licensee or certificate holder;
- (d) impose a fine, payable to the association, of not more than \$25,000 on the member, licensee or certificate holder;
- (e) direct that reasonable costs incidental to the investigation and inquiry be paid by the member, licensee or certificate holder.

The member, licensee or certificate holder may appeal the ruling to the Supreme Court of British Columbia.

Tribunal

A Tribunal, as an alternative to a Formal Inquiry, may be used where a case is reasonably straightforward, the evidence readily documented, and some verbal presentation would be helpful in resolving the matter.

On the recommendation of the Investigation Committee to

enquire into the actions of a member, licensee or certificate holder by means of a Tribunal, the member, licensee or certificate holder will be contacted and asked to agree to the procedure. The Tribunal will be held in private, with only the member, licensee or certificate holder, a representative appointed by the Investigation Committee and an Umpire participating. The Complainant would be given the opportunity to attend as an observer. The Umpire shall be appointed from the Discipline Committee. Any ruling made by the Umpire shall become binding when the member, licensee or certificate holder and the representative from the Investigation Committee are in agreement. There shall be no appeal of the ruling once agreed. In the event of non-agreement among the parties, the case shall automatically be moved to a Formal Inquiry.

In the event of a guilty verdict the results of the Tribunal will be publicized.

Stipulated Order

A Stipulated Order may be offered to a member, licensee or certificate holder when an obvious breach of the Act, Bylaws or *Code of Ethics* has been made and, in the opinion of the Investigation Committee, any further hearing would be unnecessary.

At the request from the Chair of the Investigation Committee, a Reviewing Member would be appointed from the Discipline Committee to review the Investigation Committee's findings. With the assistance of the Director, Professional Practice and Ethics and legal counsel, the Reviewing Member would determine the nature of the breach of the Act, Bylaws or *Code of Ethics* and decide on an appropriate penalty.

The member, licensee or certificate holder is then given in writing a detailed description of the alleged offence, the finding of guilt and the penalty, complete with an explanation of the Stipulated Order procedure.

The member, licensee or certificate holder will be offered a Stipulated Order, as an option to the expensive, time-consuming Inquiry process, which he may choose to accept or reject, at his sole direction. Rejection would result in the case being referred to the Discipline Committee and a Formal Inquiry would be held.

By signing the Stipulated Order the member, licensee or certificate holder admits guilt and accepts the penalty stipulated. There shall be no appeal. The Stipulated Order shall be publicized.

The complaints process described above is operated in such a manner that it is fair to the member, licensee or certificate holder complained against as well as to those placing complaints. All correspondence about the complaint, investigation and disciplinary procedure will remain strictly confidential until the actual start of the Inquiry before a Discipline Committee Panel.

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Professional Practice

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Over the years the Association of Professional Engineers and Geoscientists of B.C. has produced bulletins and guidelines on various aspects of professional engineering practice for the general knowledge of members. Recently, many of these documents have been reviewed by committees and staff, revised and updated. A selection of these new documents relating to professional practice have been included in this section. All members are urged to read these publications and to abide by the principles embodied therein.

BULLETIN:

Q August 1993

Selection of a consulting Engineer

The Report of the Commissioner Inquiry Station Square Development, Burnaby, B.C., known as the Closkey Report, was published in August 1988. Chapter 14 of the Report deals with the Responsibilities of the Engineers. The

Report states:

“Engineering services associated with a building such as Station Square consist of :

- preliminary studies of the structural form to determine the optimum layout, choice of materials and so forth;
- the performance of precise calculations to establish member sizes and details;
- the preparation of drawings which convey this information in unmistakable terms to the contractor;
- the careful checking of all these calculations and drawings by an independent individual within the organization;
- the preparation of specifications defining the materials and procedures to be used during construction;
- the transfer of all the necessary information to the contractors who will, perhaps, make further calculations and prepare shop drawings for the fabrication of items such as steel beams, joists, and their connections, precast concrete, etc.;
- the careful checking of these shop drawings to ensure that the details are correct, or, at the least, that they conform to the overall concept;
- inspection in the field to ascertain that the construction proceeds in general accordance with the design

drawings and specifications;

- the revision of the drawings as the work proceeds, especially in "fasttrack" operations, to accommodate changes called for by the architect and owner; and,
- the dissemination of this new information, a gain in unequivocal terms, among all those involved."

The second part of the Closkey Commission's terms of reference related to ascertaining and recommending measures that could serve to prevent

engineering failures, such as the Save-On-Foods roof collapse. The Commission found that “subtle issues are raised by the relationship among the owners, professions and contractors, and resulting standards of work on construction projects.” The Closkey Commission heard evidence regarding the manner in which developers and owners engaged the services of consulting professional engineers. It was informed that “... owners and their representatives are increasingly calling for tenders from architects and engineers involved in Part 4 buildings” and that “...with tendering, relatively intense competition has driven fee levels down, and this has raised questions about the quality of professional services in this environment.”

From the evidence provided at the Closkey Commission hearings, it was obvious that the selection of engineering services on a tendered low-fee basis was not conducive to the provision of quality engineering. Therefore, there is a need to establish a selection process which will place quality of service ahead of price.

The Consulting Engineers of British Columbia has prepared a *Guide to Selecting a Consulting Engineering Firm* which tries to simplify the bringing together of the client, the project and the consulting engineering firm. This document emphasizes the following fundamental considerations:

1. **Select design engineering on quality of service –not on price.**
Design engineering is only 1.5% of the total construction and operating expenditure on a project and it is unwise to cut corners on design.
2. **Define the problem or issue (the future project).**
Understand and define the problem, not its symptoms, before trying to tackle it.
3. **Define the source of help.**
Some problems can be tackled by in-house staff, some by staff assisted by a consultant, and some by a consultant alone.
4. **Prepare and discuss the Terms of Reference (TOR).**
Clear TOR are crucial to successful projects and good relationships and must be understood by both parties before selection and evaluation can begin.
5. **Prequalify consultants and prepare a shortlist.**
If a large number of consultants are invited to prepare detailed proposals on a single project, the collective expense can be greater than the value of

the assignment, and this overhead cost is eventually reflected in higher fees to the clients.

The size of a project is a matter of judgment depending on several factors.

However, it is important in the selection methodology for consulting engineers. Small projects (up to \$100,000) should be sole-sourced, involving **no competition whatsoever. The consulting engineers are retained on referral**, reputation, performance and expertise in previous projects.

For medium projects (\$50,000 to \$200,000) the client should provide a detailed outline of the project requirements. TOR should be presented to up to four consulting engineering firms, who have performed similar assignments, and written proposals requested. After the proposals have been ranked on the basis of methodology, qualifications and experience, the leading two or three consultants should be interviewed, the contract awarded to one and the other consultants notified.

Large projects (\$200,000 to \$1,000,000 plus) require a modification to the above procedure. Up to 10 consulting firms should be required to submit credentials based on an outline of the TOR. Then, the same procedure as for medium projects should be followed up to the selection of three or four consultants. From this point, the client is strongly advised to use the two-envelope system in order to make the final selection.

The basic two-envelope system involves the presentation, in answer to a request for proposal, of two envelopes, one containing the technical proposal and the other containing the price. The technical proposals only are opened and evaluated. The preferred technical proposal is chosen. The relevant price envelope is then opened and negotiations begin. If negotiations fail, the client proceeds to the next-rated consultant. If negotiations are successful, the client returns to the tenderers the technical proposals and the remaining unopened price envelopes.

BULLETIN:

H

REVISED: June 1993

Professional Liability Insurance

Many practising Professional Engineers and Geoscientists need the protection provided by Professional Liability Insurance. In some consulting fields, it is virtually impossible to obtain work without the design professional having to provide proof of liability coverage.

In general, Professional Liability Insurance for professional engineers, geoscientists, architects and others in Canada is underwritten by Encon Insurance Managers Inc. (National Program Administrator) on behalf of the Simcoe Erie Group. The liability insurance program of Encon Insurance Managers Inc. is endorsed by the Royal Architectural Institute of Canada (RAIC), the Association of Consulting Engineers of Canada (ACEC) and the Canadian Council of Professional Engineers (CCPE).

Other companies may provide liability insurance for professionals. Professional engineers and geoscientists are free to select any liability insurance carrier they feel will best suit their needs. As with most insurance coverage, some care is required in the selection of a suitable carrier.

H-1 General Outline of a Typical Professional Liability Insurance Program.

H-2 Choosing a Professional Liability Insurer.

H-3 Partial List of Insurance Brokers Handling Liability Insurance in Vancouver Area.

BULLETIN:

H-i

REVISED:

June 1993

General Outline of a Typical Professional Liability Insurance Program

In purchasing this form of insurance, the engineer or architect is basically buying three forms of protection. Firstly, for the payment of claims assessed against the insured for having committed a wrongful act; secondly, for the investigation and defence costs associated with the claims or alleged claims; and thirdly, the reimbursement of other expenses incurred at the request of the insurer.

Professional liability insurance is underwritten on the basis referred to as "claims made". Under a "claims made" policy, coverage applies only if the policy is in force at the time the claim is made. A claim may be a demand for money or an allegation of negligence or breach of contract. For this reason, it is important that coverage be maintained without permitting gaps to form between the various expiry and renewal dates.

Since the insurance is provided on an "all risk" basis, the exclusions become important. Although exclusions may vary in wording, most are fairly standard. They include: infringement of trademark or copyright; insolvency or bankruptcy; failure to advise on insurance; failure to complete drawings or specifications on time; liability of others under contract; warranties or guarantees; duties not customary to the professional architect or the professional engineer and geoscientist; estimates for return on investments or capital; participation in joint ventures or other partnerships which are not the subject of endorsement; any nuclear exposure.

The basic policy provided by the National Program Administrator provides for a limit per claim of \$250,000, subject to an aggregate per year of \$500,000 and \$5,000 deductible. From that point, coverage and limits can be modified ordinarily to suit individual cases. On occasion, modifications of limits in midterm are necessary as a result of an engineer or geoscientist undertaking a contract where a certain minimum liability limit must be maintained. This can generally be done.

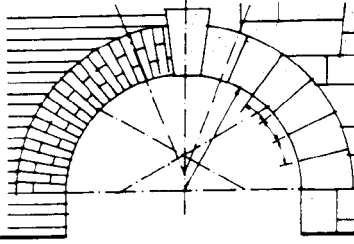
Attached is a sample copy of an application form. The purpose of this document is to provide an underwriter with the necessary

information to be able to assess a risk, and thereby affix a premium charge. At the present time, the underwriting industry in this class of insurance is in a state of uncertainty. The number of underwriters willing to write this risk can vary drastically over a short time span. It is, therefore, important for a practising professional engineer or geoscientist to be represented by his broker. Understanding the nature of a professional engineer's or geoscientist's operation is important in terms of the proper relay of information to the underwriting company in order to negotiate the best terms possible.

ASSOCIATION OF PROFESSIONAL ENGINEERS AND GEOSCIENTISTS OF BRITISH COLUMBIA

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FOR
PROFESSIONAL
LIABILITY
INSURANCE PROGRAM
ARCHITECTS
& ENGINEERS
IN PRIVATE PRACTICE
Application Form

PROGRAMS ADMINISTERED BY: NATIONAL PROGRAM ADMINISTRATOR, Ottawa, Ont.
PROGRAMS ENDORSED BY: The Royal Architectural Institute of Canada
The Association of Consulting Engineers of Canada
The Canadian Council of Professional Engineers

The Applicant

- 1. Name of applicant: _____
- 2. Address of head office: _____
- 3. Date established: _____ Tel. No. _____ Telex No. _____
- 4. Location of branch offices: _____
- 5. Predecessor firms: _____
- 6. Total No. Professional persortrtel _____ Full-time _____ Technical personnel _____ Full-time _____

Part-time

Part-time

Names of partners, active directors hod, sole practitioner)

Please attach curriculum vitae of those listed above.

Insurance

- 8. Has the applicant or predecessor firm previously carried professional liability insurance?

Pres ous
insurer
Present
insurer

9. Previous insurance – Has any application for insurance been made on behalf of the applicant, or any of the present partners, officers, directors or employees, or, to the knowledge of the firm, on behalf of their predecessors in business, been declined or cancelled, or has renewal been refused in the past five years? Yes _____
 No _____

10. Please indicate limit and deductible required.

5 250,000 per claim/S 500,000 annual aggregate

Limit: 5 500,000 per claim/S1,000,000 annual aggregate
 51,000,000 per claim/S1,000,000 annual aggregate

Deductible: SSCOC _____
 SIO.000 _____

Other i _____

Other 11.A,,,,,it,-

525.000

11. Does the applicant usually require proof of professional liability insurance from subconsultants? _____ If so, indicate approximate percentage of contracts or mandates undertaken during the last 12 months for which proof of insurance was obtained from all subconsultants ____%. What percentage of these insured subconsultants are insured through National Program Administrator? _____-u. The answer to this question is NOT ESSENTIAL but may help reduce the applicant's premium.

Nature of Practice

12. Fee income:	Last 12 Months or	
Last		s
	Fiscal Year	
(a) Gross fees		S
(b) Fees paid to subconsultants		Anticipated Next 12 Months or Next Fiscal Year
(c) Fees emanating from projects & joint ventures separately insured		S S
(d) Fees emanating from services performed in USA or for USA projects (CS)		S
(e) Fees emanating from services performed overseas or for overseas projects (CS)		
(f) Market value of non-monetary compensation received in lieu of fees		S

13. Total construction values (see Guidelines)

s _____

S _____

S _____

S _____

S _____

S _____

Engineers Only

14A. Please indicate % of gross consulting fees (do not include fees declared under 12(c)) derived from the following:

Disciplines	Projects	
Services not resulting in construction	Buildings (excluding industrial)	-1
Structural	Industrial. oil & gas	00
Soils	Municipal (water, sewage, etc.)	%
Civil engineering	Heavy civil (bridges, dams, tunnels)	
Mechanical	Light civil, roads	
Electrical	Marine engineering	
Industrial process	Other (specify)	
Materials testing		
Other (specify)		

100-'u

GUIDELINES FOR PROFESSIONAL EXCELLENCE

IMPORTANT: Please indicate percentage of gross fees passed on to subconsultants. ____

important: please enclose curriculum vitae of the senior members of the firm involved in geotechnical work and in work related to bridges, dams or tunnels.

14B. Is the applicant a member of AC1C-

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Architects Only

15A. Please indicate % of gross consulting fees (do not include fees declared under 12(c)) derived from the followings

	alt		ala
Services not resulting in construction	_____	Recreational projects	
Residential projects (private)		Institutional projects	_____
Residential projects (multi unit)	_____	Commercial projects	_____
Industrial projects		Other (specify)	
IMPORTANT: Please indicate percentage of gross fees passed on to subconsultants. _____ alt			
100%			

15B. Are the principals or employees of the firm members of RAIC? If so, please indicate number of member architects, including principals, employed by the firm. _____

See Guidelines

If the answer is 'yes' to any of the Questions 16, 17. IS. full details of operations and personnel involved must be included.

16. Does applicant or any related company engage in actual construction, installation or erection?	Yes	No
17. Does applicant or any related company engage in actual manufacture, fabrication or assembly?	Yes	No
18. Does applicant or any related company enter into contracts wherein they assume responsibility for any of the activities mentioned in Questions 16 and 17 above?	Yes	No
19. Do more than 25% of applicant's fees emanate from a single client (if yes, please state client's name)	Yes	No

20. Please indicate the approximate percentage of new mandates or contracts undertaken during the last 12 months for which the applicant used standard contract documents R.A.I. .C. #6 or A.C.E.C. #31 ____%. Under what percentage of these was the applicant successful in including the standard limitation of liability clause? ____%. The answer to this question is NOT ESSENTIAL but may help reduce the applicant's premium.

Declarations

21. Does the applicant or any of its partners, officers, directors or employees have any knowledge or information of:		
(a) any alleged error, omission or negligent act which might reasonably give rise to a claim against them?	Yes	No
(b) any claim made or threatened to be made against them in the last five years?	Yes	No
(c) any unresolved job dispute or circumstance which might reasonably result in a claim?	Yes	No
(d) having been called upon to make any payment or to forego any claim for fees as a result of any job dispute during the past five years?	Yes	No
(e) Their licence having been suspended or their having been fined or reprimanded during the past five years?	Yes	No

In the event that the answer 'yes' is given to any of the above questions, full details of the circumstances must be provided.

14b. Is the applicant a member of AC1C-

Additional Information

PLEASE PROVIDE DETAILS WHERE YOUR ANSWER WAS 'YES' TO THE FOLLOWING QUESTIONS:

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0
16, 17, 18.

21. (Indicate amount in millions)

PLEASE LIST DETAILS OF PROJECTS/JOINT VENTURES INSURED SEPARATELY:

IF NEW APPLICANT,
PLEASE ATTACH LIST OF
THE 10 LARGEST PROJECTS COMPLETED

IN THE PAST FIVE YEARS

USING THE FOLLOWING FORMAT. (ALSO ATTACH RECENT COMPANY BROCHURE).

Name of Project & Location	Insurer	Policy Term

Signature

The applicant has read the foregoing and understands that completion of this application does not bind the Insurer or the Broker to complete the insurance. It is agreed, however, that this application is complete and correct to the best of his knowledge and belief and that all particulars which may have a bearing upon his acceptability as a Professional Liability Insurance risk have been revealed. It is understood that this application shall form the basis of the contract should the Insurer approve the coverage and should the applicant be satisfied with the Insurer's quotation.

It is further agreed that if, in the time between submission of this application and the requested date for coverage to be effective, the applicant becomes aware of any information which would change the answers furnished in response to Question 21 of this application, such information shall be revealed immediately in writing to the Insurer.

Signature of Applicant
(authorized representative)

Date

NATIONAL PROGRAM ADMINISTRATOR
a division of

ENCON Insurance Managers Inc.

99 Metcalfe Street, Suite 1200, Ottawa, Ontario K1P 6L7 (613) 238-6373

119 1,1-

~EbA

ASSOCIATION OF PROFESSIONAL ENGINEERS AND GEOSCIENTISTS OF BRITISH COLUMBIA

THE FORM
ARCHITECTS & ENGINEERS
IN PRIVATE PRACTICE

Guidelines For The Completion Of Your
Professional Liability Insurance Application Form

Please ensure that you complete the application form applicable to your particular requirement. There are three types of application forms:

- . FORM 1 is for Consultants in Private Practice
- . Application for SINGLE PROJECT, GROUP OR JOINT VENTURE is for insurance for a specific project
- . Application for INDIVIDUAL ENGINEERS AND ARCHITECTS is for personal coverage for individuals employed by other than consulting firms

THESE GUIDELINES ARE DESIGNED SPECIFICALLY FOR USE WHEN COMPLETING FORM 1.

THE APPLICANT
(Q. 1)

The name or names you enter here will become the Named Insured(s) shown on the Declarations of the Policy, and will be the only entities for which coverage will be provided.

FORMER FIRMS
(Q. 5)

The policy may be extended to provide coverage for your liability arising from former or predecessor firms, provided these firms are no longer active. If you require this coverage, please indicate the name of the firm(s) and the date(s) they ceased to operate.

PERSONNEL
(Q. 6)

For the purpose of this question, Professional personnel includes only registered architects and engineers and Technical personnel includes draftsmen, field personnel and specification writers.

LIMITS AND DEDUCTIBLES
(Q.10)

The Policy shows two limits. One is a per claim limit and the other is an aggregate limit which is the maximum amount payable by the Insurer in any one year. Policies with per claim limits of \$250,000 and \$500,000 have annual aggregate limits of twice these amounts respectively. For limits of \$1,000,000 or more, the per claim annual aggregate limits are the same. Limits up to \$12,000,000 are available, except in Quebec where the maximum limit available is \$10,000,000.

The limit is the amount of insurance protection which the Policy will afford. When deciding, it may be appropriate to consider:

- . the nature of services your firm provides and their relative importance to projects;
- . the size and type of projects with which your firm is involved;
- . insurance requirements placed upon your firm by current and prospective clients; and
- . any legislated insurance requirements present in the jurisdictions in which you practice.

You may wish to discuss appropriate limits with your insurance broker.

The minimum deductible is \$5,000. Choosing a higher deductible will reduce the cost of insurance. It is important to keep in mind that in most circumstances the Policy will provide first dollar defence coverage wherein the Insured will be required to contribute the deductible only if a payment or a settlement is made on a claim by the Insurer. The deductible does not apply to costs incurred by the Insurer for the investigation and defence of claims. The deductible should be an amount which your firm is financially capable of absorbing.

14b. Is the applicant a member of AC1C-

FEE
S
(Q.
12)

Gross fees include all fees received by the applicant in a 12 month period including those subsequently paid to subconsultants. DO NOT INCLUDE, however, amounts billed to your clients as "disbursements such as travelling, hotel costs, etc. The answer to 12(a) should include amounts shown in answer to 12 (b) to (f). If there is an amount shown in answer to 12 (f), please explain the form of compensation received in lieu of fees. You may report on the basis of calendar or fiscal year, but should be consistent in doing so on successive years' applications.

TOTAL
CONSTRUCTION
N
Value (Q. 13)
DESIGN/BUILD
(Q. 16,17,18)

professional against claims arising out of the rendering of professional consulting services. The Policy is NOT intended to provide errors and omissions insurance to individuals or firms who act as contractors or fabricators. If the answer to any of these three questions is in the affirmative, the applicant is requested to provide separately a full description of activities which are not of a traditional consulting nature. The percentage of the applicant's fees emanating from such activities must also be indicated. Complete information will greatly increase the chances of tailoring the coverage to the applicant's needs and exposures. For example, enclosing with the application an example of a typical contract with the applicant's clients or an organizational chart would help.

The application must be signed and dated by an authorized representative of the applicant if coverage is to subsequently be made effective. IF THE APPLICATION IS OVER 30 DAYS OLD, a new application must be submitted before coverage can be arranged.

SIGNATURE

- 1 You can reduce the cost of your professional liability insurance coverage by providing the Insurer with additional information which you feel reduces your exposure to claims. If some of the gross fees you have reported were billed for a project which has been cancelled and will in no event be constructed, this should be indicated. You may also wish to send the Insurer copies of contracts with your clients wherein you were successful in limiting your liability.
- 2 The answers to Question 11 and 20, although not essential, may indicate to the Insurer your efforts to protect yourself by employing subconsultants who insure the professional services they provide to you, as well as your efforts to undertake contracts which allow you to accept liability which is reasonable in comparison to the remuneration you receive.
- 3 Professional liability insurance covers your liability at law and excludes liability assumed contractually by the Insured beyond that imposed by law. If you are insured with the programme, ENCON provides a contract review service and encourages Insureds to submit contracts for comments whenever there is any doubt that the contract wording may jeopardize the Insured's coverage.

USEFUL TIPS
Only show an approximate figure reflecting the amount of construction value for which you have rendered professional services during the course of the year. One way of answering this question VALUE might be to add the progress certificates issued during the year.

ENCON and the Insurers also provide a TOLL FREE HELP LINE (1-800-267-6684) service to Insureds. This allows for prompt consideration of questions relating to contractual matters, and early attention to situations in which an Insured is seeking advice regarding the handling of disputes or potential claims.

Conceptually, a professional liability insurance policy provides protection to the insured

PROGRAMME
E
FEATURES

IMPORTANT

POLLUTION Most professional liability insurance policies contain an exclusion for claims arising from pollution risks. If you are interested in obtaining additional information regarding purchasing coverage for this risk, your broker can provide you with an appropriate application.

NEW
REGISTRANTS

If you have not previously been a principal of a consulting architectural or engineering firm and have started your practice within the past 12 months, you may qualify for coverage under this programme at a reduced premium. Your broker can provide you with additional information and a NEW REGISTRANTS SUPPLEMENTARY APPLICATION to attach to your Form I application.

This document is provided for the purpose of assisting you in the preparation of an application for

14B. Is the applicant a member of AC1C-

insurance. It
does not
constitute any
form of
insurance.
Should you
proceed to
purchase
coverage, the

insurance provided will be strictly in accordance with the terms and conditions of your policy.

SUPPLEMENTAL APPLICATION FOR POLLUTION LIABILITY COVERAGE

- 1. **Name of Firm'**
- 2. **Please indicate the approximate percentage of total fees reported in your Application for insurance (including those paid to sub-consultants but not projects insured separately) derived from each of the following project types:**

Past Accounting Year (%) Current	Accounting Year Estimate (%)
---	---

- A. Studies and Reports
(excluding soils investigations or remediation)**
 - i. **Environmental impact studies or assessments**
 - ii. **Environmental permit review or approval**
 - iii. **Building Inspections/audits**
 - iv. Environmental monitoring (please describe type of service)
 - v. Air Emission Control Systems
- B. Waste Disposal**
 - i. **Waste site evaluation or selection**
 - ii. **Design, monitoring or closure of landfills**
- C. Design or Construction services for remedial action of contaminated buildings**
- D. Services related to the evaluation, removal or replacement of underground storage tanks**
- E. Industrial Process Engineering (non-petrochemical)**
- F. Petrochemical Engineering**
- G. Design of Laboratories**
- H. Soils Investigations**
 - i. Underground investigations for possible contamination
 - ii. Determination of extent of contaminated sites
 - iii. Design of remedial action of contaminated sites
 - iv. **Investigations not related to waste or contamination detection**
- 3. How many years has your firm provided services for the detection, monitoring, handling or disposal of hazardous substances?

Pot tApp.Eng.

7 May 1992

14B. Is the applicant a member of AC1C-

8.14

BULLETIN:

H-2

REVISED:

June 1993

Choosing a Professional Liability Insurer

The purpose of this Bulletin is to inform professional engineers and geoscientists in private practice of the Criteria which the insurer and the administrators of the professional liability insurance programs (endorsed respectively by the RAIC and jointly by ACEC and CCPE) had to meet when the programs were first established. Design professionals contemplating the purchase of coverage for the first time or considering a change of coverage to another carrier, should weigh a number of factors prior to reaching a decision about which policy to purchase. This Bulletin will review a number of these factors to assist in the evaluation.

Because design consultants' professional liability policies are written on an annual "claims made" basis, the decision to change from one insurance company to another can have important and potentially disastrous consequences. For example, if a claim arises from services performed prior to a change in insurance companies, the design professional could well be without coverage because the first insurer's obligations ceased when its policy expired and the new insurance company may try to avoid honouring the claim if it finds evidence that the insured (or any of the employees of the insured) knew, prior to the decision to change coverage, about the circumstances which led to the claim.

In selecting a professional liability insurer, the design consultant must consider a number of factors relating to security, service and cost. More specifically, the criteria for the selection of an insurance carrier are: (1) the scope of insurance coverage offered, (2) claims handling and defence capability, (3) other insurance-related services, (4) degree of financial strength and outlook for longevity, (5) cost.

1.0 THE SCOPE OF COVERAGE OFFERED

1.1 Retroactive Coverage

Under virtually all forms of professional liability insurance policies offered in North America, coverage is triggered by the date when the claim is made against the insured as opposed to the date when the actual error or

PROFESSIONAL PRACTICE

omission may have been made. It is therefore important that the policy cover liability arising out of prior acts without any time limitation or retroactive date for coverage.

1.2 Scope of Services Covered

The definition of insurable professional services is particularly important. The policy offered under the Association-endorsed programs refers to “services customary to an architect or an engineer”. This should be compared to policies which use the more restrictive wording of “professional services described in the Declaration or for which the design consultants are qualified”.

Thus, if a claim arises out of a discipline not described in the policy Declaration or if the qualifications of the insured for a given service are questionable, there is potential for disagreement.

1.3 Defense Costs

Another important difference among policies is the inclusion of defense costs within the policy limits as done by many insurers. Defending design professionals and attempting to extricate them from lawsuits is often a lengthy and costly process. The legal costs involved in some suits are staggering and may, at times, exceed the limits of liability insurance carried. It is important, therefore, that the professional liability insurance policy chosen contains a clause which states specifically that investigation and defense costs are covered in excess of policy limits.

It is also worthwhile to remember that defense costs are subject to the policy deductible under the terms of some professional liability insurance policies offered on the marketplace. Under the terms of the standard policies offered under the Association-endorsed programs, the defense costs are not subject to a deductible.

2.0 CLAIMS HANDLING AND DEFENSE CAPABILITY OF THE INSURER

When evaluating a professional liability insurance company, the insurer’s claim handling experience, ability and procedures are factors that should not be overlooked. After a claim arises, it may be too late for an insured to do much about an insurer which quoted a low premium to attract the risk but then is unable to provide prompt, efficient and economical claims service.

The factors to be considered when judging claims handling capabilities are:

- a) How are claims reported and processed?
- b) Do the personnel who will be handling the claims have any background, experience and qualifications in the field of the design professional’s liability?
- c) How promptly and in what way does the insurance carrier respond when a claim is reported?
- d) How are defense lawyers selected and what are their

PROFESSIONAL PRACTICE

qualifications?

- e) Is there any program for educating claims personnel and defense lawyers about design professionals and the construction industry?

3.0 INSURANCE-RELATED SERVICES

3.1 Loss Prevention and Quality Control Process

Another feature of a comprehensive professional liability insurance program is the ability of the insurer to provide an on-going service of continuing education for the benefit of design consultants with a view to mitigating claims frequency and claims costs. More importantly for the individual insured firms, this service makes it possible for the owners and management of the consulting firm to provide free loss prevention education to the more junior members of their personnel as part of the services provided by their insurer.

3.2 Contract Review Services

An increasing number of project owners demand that design consultants sign contractual agreements which often impose onerous liabilities upon the design consultant at the risk of creating a conflict between the owner/consultant agreement and the professional liability insurance policy. Such contracts often include express warranties and guarantees which are uninsurable. Few insurers offer a contract review service, which enables the insured to consult his insurance carrier before entering into a contractual agreement and thereby ensure that it does not conflict with and possibly void his insurance coverage. Few insurers are willing to confirm in writing that a given contract or clause DOES NOT in fact conflict with an exclusion of the insurance policy. What risk paying a substantial professional liability insurance premium to discover when a claim is reported that you have no coverage because your contract with your client conflicts with your insurance policy?

4.0 DEGREE OF FINANCIAL STRENGTH AND OUTLOOK FOR LONGEVITY

One should never assume that an insurance company cannot become insolvent. Should an insurance company become insolvent or bankrupt, there are absolutely no government guarantees that unrecoverable losses will be funded for the protection of insurers.

The existing capitalization of some insurance companies is inadequate and the Federal Department of Insurance, recently recognizing this, is seriously considering increasing the requirements for minimum capitalization to \$5 million from the current and unacceptably low \$1.5 million.

The financial strength of the insurer is more vital in the case of professional liability or malpractice insurance than for any other type of coverage. Claims for this class of insurance usually develop slowly and take years to resolve. By the time a claim is settled, some six, seven or even ten years after the claim was originally reported, it is often necessary for the insurer to make payments well in excess of what was originally estimated. If, in the intervening years, the insurance carrier has met financial

difficulties, the insured may find himself without the coverage on which he was counting.

The financial integrity of a given insurer is often mostly affected by the quality and nature of the reinsurance secured by the issuing insurance company. The financial strength of the endorsed insurer and, more importantly, the integrity of its reinsurance treaties have met severe tests before the endorsement was given by the national associations. The same thing cannot be said of all other insurers.

5.0 PREMIUM COST

Last, but by no means least, recognition must be given to the cost of professional liability insurance coverage. There is no denying that this type of insurance is expensive, regardless of the size of the insured firm or the limits of coverage being purchased. However, as can be seen from the various factors reviewed above, it is important to look beyond a simple comparison of premium costs to determine which insurance company's policy is most appropriate for an architect's or engineer's needs. Premium costs should be evaluated on the basis of total service offered and not on price alone.

BULLETIN: H-3

REVISED: July 1993

Partial List of Insurance Brokers Handling Professional Liability Insurance

The following partial list of insurance brokers in the Vancouver area is provided for the guidance only of Association members. The Association does not recommend one broker over another. Further information concerning professional liability insurance can be obtained from these agents or any other insurance broker of your choice.

Reed Stenhouse Ltd.

900 Howe St.
PO Box 3228
Vancouver, BC
V6B 3X8

Marsh and McLennan Ltd.

1300-5 10 Burrard St.
Vancouver, BC
V6C 312

Sedgwick Ltd.

1600-401 W Georgia St.
Vancouver, BC
V6B 5B8

Dale Intermediaries Ltd.

873-595 Burrard St.
Vancouver, BC
V7X 111

Jardine Rolfe Ltd.

PO Box 1112
1055 W Georgia St.
Vancouver, BC
V6E 4G2

Mr. Bruce McLaughlin

Mr. Don Rose

Mr. Jim Inkster

Mr. Clive Bird

Mr. Lawrence Bicknell

688-4442

685-3765

682-0811

681-0121

682-4211

ASSOCIATION OF PROFESSIONAL ENGINEERS AND GEOSCIENTISTS OF BRITISH COIL~1111A

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BULLETIN:

I

REVISED: September 1993

Use of Seal

1.0 OVERVIEW

A professional stamp, when affixed to a document, is intended to indicate to the public that the document has been produced by, or under the supervision and control of, a professional member of the Association, who is fully qualified by virtue of training and experience in the field of the profession contained in the document to take professional responsibility for its contents.

The purpose of this Bulletin is to provide instruction and direction to the members on the proper use of the professional seal and to reduce the overuse and misuse of the seal. These guidelines provide both answers to frequently asked questions and recommendations with examples. They should be read in conjunction with the Association Bulletin on Shop Drawings regarding the use of the seal.

CCPE, together with the constituent provincial associations, is currently investigating the development of an "Electronic Seal" for use on documentation in electronic form. Therefore, at this time, these guidelines do not address the unique issues pertaining to the proper use of an "electronic seal". However, as technological developments and standards are established, the Association will be revising

Engineers & Geoscientists Act (As amended July 1993)

Section 16(4), (5), (5.1) and (6)

- (4) On receipt of a certificate of registration or a certificate of licence, a professional engineer is entitled to use the title "professional engineer" or an abbreviation of this title approved by the council, and shall be provided with a seal or stamp by the association with which the engineer's name, the words "Professional Engineer, Province of British Columbia" and other designation required by the bylaws may be impressed.

Bulletin I as required.

2.0 GENERAL

Following registration, each Professional Engineer or Professional Geoscientist is issued a stamp or seal through the Association of Professional Engineers and Geoscientists of British Columbia. The terms “seal” and “stamp” are interchangeable.

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- (5) On receipt of a certificate of registration or a certificate of licence, a professional geoscientist is entitled to use the title “professional geoscientist” or an abbreviation of this title approved by the council, and shall be provided with a seal or stamp by the Association with which the geoscientist’s name, the words “Professional Geoscientist, Province of British Columbia”, and other designation required by the bylaws may be impressed.
- (5.1) On issuance of a certificate of limited licence, the association must provide the licensee with a seal or stamp impressed with the licensee’s name, the words “Limited Licensee”, and any other information required by the bylaws.
- (6) A member or licensee receiving a seal or stamp under this section must use it, with signature and date, to seal or stamp estimates, specifications, reports, documents, plans, or things that have been prepared and delivered by the member or licensee in the member’s or licensee’s professional capacity or that have been prepared and delivered under the member’s or licensee’s direct supervision.

3.0 DEFINITIONS

PROFESSIONAL PRACTICE

documentation:	Professional Engineer (P. Eng.)
engineer:	The Professional Engineer with the lowest level of overall and total responsibility for the documentation.
Engineer of Record (EOR):	Professional Geoscientist (P. Geo.)
geoscientist:	The Professional Geoscientist with the lowest level of overall and total responsibility for the documentation.
Geoscientist of Record (GOR):	Master copy of documentation used to create additional copies for distribution.
original:	To describe the specific extent of responsibility for design usually limited to a single discipline.
qualify the seal:	The technical (engineering) portions of the document.
specifications:	To include, but not be limited to, design briefs, drawings, plans, specifications, estimates, reports and letter reports on technical subjects.

4.0 RULES FOR THE USE OF THE SEAL

4.1 General

The seal shall always be signed and dated.

The seal shall be applied in a prominent location.

The terms “seal” and “stamp” are interchangeable.

4.2 Final Documents

4.2.1 Drawings

- **Covering a single discipline of engineering**

For drawings covering a single discipline of engineering or geoscience, sealing should be carried out by the engineer or geoscientist most directly responsible for preparing the design and drawing. Where the single discipline requires speciality expertise/design by more than one Engineer of Record (EOR) or Geoscientist of Record (GOR), each EOR/GOR shall apply their seals which shall be qualified to outline the extent of their responsibility.

- **Covering more than one discipline of engineering and geoscience**

Sealing of drawings containing information from multiple disciplines of engineering or geoscience shall be by the EOR/GOR for each discipline involved and the seals shall be qualified to outline the extent of responsibility.

- **General Concept or Layout Drawings**

Sealing of diagrammatic or general drawings should be by the EOR/GOR.

4.2.2 Specifications

Sealing of engineering or geoscience specifications shall be by the EOR/GOR who is directly responsible for the specifications. Since some documents contain non-technical information regarding the product or service being presented, which has not been prepared by the EOR/GOR it is recommended that only the technical portion of such documents be sealed. However, where such documents are prepared in total by the

PROFESSIONAL PRACTICE

engineer or geoscientist, that person is professionally accountable for the accuracy of the entire document and not just the technical portion.

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- If several specifications of different engineering or geoscience disciplines are bound into one cover, the EOR/GOR for a specific discipline may seal the document and qualify the seal to outline the extent of responsibility.

4.2.3 Reports, Letters, Estimates and Certificates

- Reports, estimates and letter reports providing engineering or geoscience information or direction shall be sealed by the EOR/GOR.
- Letters and certificates specifically required to be sealed by a regulatory authority, or client for contract purposes, or by law shall be sealed by the EOR/GOR.

4.3 Preliminary Documents

In general, preliminary documents should NOT be sealed. Where sealing such documents is required to meet the requirements of regulatory bodies, these documents should be clearly marked **PRELIMINARY** or **NOT FOR CONSTRUCTION**.

4.4 Revisions to Documents

- Revisions to a document issued by, or under the direct supervision and control of, the same professional member(s) responsible for the original document should be clearly identified as revisions to the original document. The original professional stamp(s) and permit stamp should be re-dated to indicate the date of the revision and initialled by the respective professional member(s).
- When revisions to a document are made by someone other than the professional member(s) responsible for the content of the original document, the revisions only, including all elements of the document which are affected by the revisions, should be stamped, signed and dated by the professional member(s) under whose direct supervision and control the revisions were made. Care should be taken in documenting the revisions to clearly identify the boundary of professional responsibility between the original and revised documents.

5.0 A COMMENTARY ON STAMPING AND SEALING

Many aspects of the use and abuse of the seal have been examined to clarify the concerns of members. Proper use of the seal can be defined by providing answers to five questions:

- When should the seal be used?

- When should the seal not be used?

- Who should use the seal?
- Where and how should the seal be used?
- Is seal duplication a danger?

5.1 When Should the Seal Be Used?

The Act is specific: **SEALING IS NOT OPTIONAL**. Section 16(6) of the *Engineers and Geoscientists Act* states:

“A member or licensee receiving a seal or stamp under this section must use it, with signature and date, to seal or stamp estimates, specifications, reports, documents, plans or things that have been prepared and delivered by the member or licensee in the member’s or licensee’s professional capacity or that have been prepared and delivered under the member’s or licensee’s direct supervision.”

The wording in the Act is explicit and specific with the words **...must use it, with signature and date, ...**

The Association’s support of the correct use of the Seal is based on:

The Act specifically directs under Section 16(6) that, “A member or licensee receiving a seal or stamp under this section must use it, with signature and date, to seal or stamp **...FAILURE TO SEAL IS A BREACH OF THE ENGINEERS AND GEOSCIENTISTh ACT.**

Public Relations and Professional Recognition. Documentation including drawings, specifications, reports or other documents which become visible to the public may be stamped or sealed. A greater use of the seal benefits the Association and its members by making the public aware of the role of the professional engineer and geoscientist in the community. In addition, personal recognition of the work of individual engineers or geoscientists is most desirable. However, it should be noted that the aspect of greater visibility of the engineering profession should not be a driving force to overuse or misuse the seal.

Legal Implications. The legal liability of an engineer or geoscientist is not dependent on whether or not the engineer or geoscientist seals documentation. If engineers or geoscientists (or, for that matter, any individuals) are negligent, they may have to defend themselves if litigation results. The seal only makes the responsible BOR or GOR more easily identifiable. Notwithstanding the above, as the *Engineers and Geoscientists Act* directs, engineers and geoscientists are **required to use the seal on** work prepared in a professional capacity or under their direct supervision.

PROFESSIONAL PRACTICE

Occasionally, an engineer or geoscientist may be called on to act for a client in cooperation with a company providing sub-professional specialist

ASSOCIATION OF PROFESSIONAL ENGINEERS AND GEOSCIENTISTS OF BRITISH COLUMBIA

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services such as shop drawing preparation. If the engineer or geoscientist acts as the senior technical advisor and is directly responsible for the initial design, the engineer or geoscientist shall stamp plans and other documents. A test of “direct responsibility” is the ability of that engineer or geoscientist to alter or revise the original design. Engineers or geoscientists shall indicate the particular focus of their design and quality of the seal as necessary.

From time to time, an engineer may be asked to seal an engineering design or work prepared by a professional engineer registered in another jurisdiction. The seal is required to permit the use/application/ construction of the engineering design or work within British Columbia. In such cases, the engineer must carry out a thorough and documented review/check of the engineering design or product sufficient to merit the application of the engineer’s seal to the pertinent documents. Such a review/check would include consideration of all design assumptions and parameters and checking of the design calculations and selections, etc. Subsequent to the application of the seal, the engineer assumes full responsibility for the sealed documents and for the performance of the service or product described in those documents. While this situation is directed to engineers, the views expressed above would apply equally to geoscientists sealing geoscience work prepared by others.

Frequently, a building classified under Part 9 of the *B.C. Building Code* or the *Vancouver Building By-law* must have certain structural components designed under Part 4. Part 4 requires that the design of structural components be undertaken by a qualified professional engineer. It is important that the structural component be designed to carry the applied loading and that the load path and load transfer be checked through to the foundation.

5.2 When Should the Seal Not Be Used?

Preliminary documents should generally not be stamped. If a regulatory authority requires a stamped preliminary design before issuing a permit, it is most important that the design be clearly marked **PRELIMINARY or NOT FOR CONSTRUCTION**.

Internal documentation within the engineer’s or geoscientist’s office need not be stamped.

One obvious example in which the seal must not be used is when engineers or geoscientists are requested to “sell” their seals by sealing the work of others not under their direct supervision. Such action by an engineer or geoscientist would be irresponsible. They would be sealing

work for which they are not truly responsible and therefore would be in violation of Section 16(6) of the Act.

If, for some reason, an original or reproducible plan or drawing is requested by a client or by a regulatory authority, this should definitely not be sealed. The Association recommends sealing of originals should be avoided unless there are established and written company procedures for microfilming (or recording on non-erasable electronic media) the master and subsequent revisions of the document. It recommends that a fresh stamp on a drawing, specification or other documents complete with signature and date provides the greatest degree of security, authority and definition of responsibility.

Documents which are incidental to an engineering or geoscience project need not be sealed.

5.3 Who Should Use the Seal?

For drawings covering a single discipline of engineering or geoscience, sealing should be carried out by the engineer or geoscientist most directly responsible for preparing the design and drawing. Where the single discipline requires speciality expertise/design by more than one engineer or geoscientist, e.g., computer system design and general electrical design of building services, such seals should be applied and qualified as to what is covered by each seal.

For drawings covering more than one discipline of engineering or geoscience, sealing should be by the EOR/GOR in each discipline for which there is specific design information on the drawing. Each seal should be correctly qualified by the engineer or geoscientist involved. For example, the structural engineer should qualify the structural engineer's seal with a statement such as "For Structural Aspects Only".

For drawings covering the concept and general arrangement of the project, sealing, if required, should be by the engineer or geoscientist of responsibility. For specifications, sealing should be by the EOR/GOR who drew up the specification or, if the document is produced by a non-professional, by the EOR/GOR directly responsible for the specification. If several specifications are bound into one cover, the EOR/GOR should seal the document for the specific discipline and qualify the seal accordingly.

For reports, sealing should be by the EOR/GOR and not the junior person who may have coordinated the project for the author. If several engineering or geoscience disciplines are bound into one cover, the EOR/GOR should seal the document for the specific discipline and qualify the seal accordingly.

5.4 Where and How Should the Seal be Used?

The seal should be applied in a prominent location on all documents to allow maximum exposure of the seal for easy identification and for “Recognition of the Profession” purposes.

The seal must always be signed and dated. Section 16(6) of the Act specifically requires signature and date. Occasionally, documents are revised without knowledge or approval of the sealing EOR/GOR. The engineer or geoscientist may be employed on a new project or may have left the employment of the particular company. Dating, sealing and identifying the extent of the revision defines the responsibility of the revising EOR/GOR.

For the original seal, when applied to hardcopy, to be distinguished and protected from mechanical reproduction, it is recommended that the application of the seal and signature/date should use different colour ink combinations, eg., seal applied with blue ink and signature/date applied with red ink.

The Association recommends the stamp or seal should be placed:

- For drawings, in the allotted space in the title block or in the lower right corner of the plan;
- For specifications, on the first page or cover sheet of the sections to be sealed. If a seal is to be applied to the overall specification, the seal should appear on the cover sheet;
- For reports, next to the title of author or signature in the report, whether the title or signature appears at the beginning or at the end of the report;
- For computer electronic documents, although attempts have been made to identify responsibility by electronic means, the only safe and practical method of use of a seal is for the EOR/GOR to seal the hard copy of the documents.

5.5 Is Seal or Stamp Duplication a Danger?

While difficult to standardize the application of the symbol which proclaims “I take professional responsibility for ... the following alternatives have been classified together with a preferred means of asserting the engineer’s or geoscientist’s acceptance of responsibility:

- "Stick-on" stamps are clearly undesirable because of their easy removal and application;
Photocopies and other reproductions of the seal or stamp are not recommended. Reproductions without dating and signing may be misleading and are contrary to the Act. The Association recommends against reproduction of the stamp;
Sealing of original drawings is practised by some organizations. It is important that such companies have a system of firm internal discipline, file originals with care, and ensure that the correct revision procedure is followed. The common practice is then to issue sealed copies of the drawings and reports as necessary whether these are for a regulatory authority, or for a client for contract purposes, or by law. The security and authority of the reproduced seal diminish when the internal discipline of filing, revising and reproducing is less than perfect. The Association's recommended policy is not to seal originals.

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BULLETIN:**R****REVISED: September 1993**

Engineering Design File Guidelines

Preamble:

An essential part of good practice is good records. Elements of this practice include quality through complete

Purpose: engineering design, complete drawing and specification documents for tender and construction, and an appropriate level

by the

of completed construction review design professional.

Association Bylaw 14(b)(1) requires that all members and licensees establish quality management processes for their practices, part of which is the “*retention of complete design and review files for their projects for a minimum period of 10 years.*” These guidelines serve engineers and geoscientists in developing and maintaining a comprehensive filing system throughout the progress of the assignment and allows these records to be properly archived. Adopting a comprehensive and consistent filing system assists the professional in serving the public interest as required under the Act.

Application
:

Ideally, every firm should adopt a standardized filing system. A filing or records system allows any person trained in the profession to locate readily any part of the project information during the project development or at an subsequent stage. A sample filing and records-keeping system which may serve as a guide to a corporate filing and archiving standard in the firm follows.

DESIGN FILE CONTENT

1. TABLE OF CONTENTS

Every project record system should have at its beginning a standard Table of Contents listing *all information categories likely to be encountered in the design or construction of a typical project or assignment.* For smaller or single disciplinary firms this Table may be standardized company-wide. In multi-disciplinary firms such a Table of Contents may be standardized for specific design groups or divisions within the firm.

For clarity and consistency, the Table of Contents can be arranged with the file names along one axis and project categories or disciplines along

the other axis.

File Names along one axis typically include: Project Scope, Correspondence -In, Correspondence -Out, and so on, generally as outlined in the PROJECT SPECIFICS section below. Each file is numbered.

Project Categories are arranged along the other axis of the Table, and may typically include disciplines such as: Storm Drainage, HVAC, Structural, etc. Each category is given an alphanumeric designation.

In this manner, placing a mark in the Table at the intersection of Category B (Storm Drainage) with File 12 (Correspondence In) confirms that this project or study contains:

File B-12: STORM DRAINAGE – CORRESPONDENCE – IN

Adopting a standardized Table of Contents facilitates locating information in any project across all work categories for as long as the files are maintained.

2. PROJECT SPECIFICS:

- project identification number and year;
- client identification;
- project name and location;
- project engineer's name;
- list of project team names and assignments;
- engineer/client agreement.

3. SCOPE OF WORK definition including:

- copy of the project design schedule;
- design functions to be accomplished;
- a list of Additional Engineering Services required and where these may be filed, e.g., cost estimates, quantity takeoffs, etc. See Guidelines For Structural/Mechanical/Electrical Engineering Services For Building Projects for full description;
- reference to the separate Correspondence Files.

4. REFERENCE DOCUMENTS FOR DESIGN:

- codes, by-laws and amendments;
 - reports;
- environmental restrictions;
- client and agency approvals;
- interdisciplinary drawings and specifications from outside sources.

5. DESIGN NOTES – A statement of concept and desired performance complete with documentation of key assumptions, calculations including software programs identification and verification (testing), and conclusions are filed in a

progressive form that can be referenced by others when required. Design notes are dated, signed and numbered.

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6. **INDEPENDENT REVIEW CONFIRMATION** (as required under Bylaw 14(b)(2) and/or (3)) with a signed written statement from the reviewer with a checklist and design notes attached as appropriate to confirm that construction documents or reports are complete and comply with the defined Scope of Work and Reference Documents. These documents are filed with design notes as described in item 5 above. Drawings may also be initialled by the reviewer in the “checked by:” location to confirm the completion of checking.
7. **CHECKLIST** to confirm completion of required design functions and to confirm completion of key correspondence to clients and required Authorities. Each element of The checklist is tracked by the three entries: “Assigned to:”, “Confirmed completed by:”, and “Checked by:”.
8. **CLOSURE** instruction from the project design engineer that the design and construction documents/reports are complete, checked and ready to be filed. These instructions are written and dated on the bottom of the checklist or clearly appended to the checklist.
9. **REGULATORY APPROVALS** such as Letters of Assurance (*B.C. Building Code/City of Vancouver Building By-law*) and other government documentation requirements.
10. **INSPECTION LEVEL RECOMMENDATIONS** are documented and forwarded to construction contract managers as required in order that any additional specific field reviews confirm construction compliance with critical design assumptions. A checklist is made of these specific items to be monitored during construction and may include: connection design and shop drawing review; assessments of noise performance levels; seismic restraint of mechanical and electrical components; construction procedure review and temporary bracing of partially erected structures.
11. **CHANGES** to assumptions, codes, and drawings, if any, made before or during construction are documented in the design file. Reference to record drawings or as-built drawings is made.
12. **COMPLETION DOCUMENTATION** such as **Certificate of Completion**, Letters of Compliance (*B.C. Building Code/City of Vancouver Building By-law*), etc.

13. CORRESPONDENCE FILE (kept separately on large jobs) includes:

- telephone conversation records;
- correspondence with client;
- interdiscipline correspondence;
- correspondence with speciality consultants;
- correspondence with equipment suppliers;
- key correspondence to regulatory authorities as required;
- minutes of engineering meetings;
- minutes of construction meetings at site;
- records of field reviews (as required under Bylaw 14(b)(4)).

14. CONTRACT DOCUMENTS

- contract documentation;
- contract drawings;
- specifications;
- shop drawings;
- record drawings.

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REVISED: May 1993

Legal Notes

THE ENGINEER AS AN EXPERT WITNESS

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The purpose of this article is to discuss the issue of professional engineers providing “expert” evidence at arbitrations and trials in relation to the conduct of services performed by their fellow members. In our experience, recently there has been an increasing trend by claimants to retain professional engineers to provide opinions to be used as a tool to demonstrate to the court that the defendant engineer has fallen below the standard expected of him by the engineering community; that is that he or she has been negligent in the performance of professional services.

In fact, we have noticed that a number of professional engineers appear to have carved a career out of acting as a “professional” witness against their colleagues. Professionals should be very careful and certain of their opinions before criticizing another professional engineer. We see experts in court providing opinions on behalf of their clients which opinions are diametrically opposed. We appreciate engineers have differing opinions on many matters, but in every court case there are opposing opinions.

Our advice to you as a professional is that when you are providing expert testimony against one of your fellow members, you should apply the well-known golden rule. The reason for this is simple. We believe that the increase in legal claims against engineers directly affects the public and the practice of engineering in a number of ways, a few of which are as follows:

1. Claims affect the ability of engineers to create innovative designs because of potential for claims;
2. Claims increase the conservatism found in design, thereby increasing the cost of the project to the owner;
3. Claims increase the cost of preparing the design and

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therefore similar cost increases in the services performed by the engineer; and

4. Claims increase the engineer's cost of performing engineering services and therefore, his profits may be decreased by overhead and ever increasing insurance premiums.

The items listed above are but a few of the serious effects that claims have on the construction industry as a whole, and in most cases, the claims against professional engineers are proven through the testimony of another engineer who has acted as an expert witness for the claimant.

Recently, decisions in British Columbia have reiterated the test employed by the courts to determine whether an engineer has properly performed his or her services. The test to be applied is whether another engineer acting in similar circumstances would have conducted himself in the same manner as the defendant engineer. It is not necessary that the defendant engineer's work be an example of perfection, but it might be up to the standard of the average engineer practising in the particular discipline in the Province of British Columbia. Yet in the courts the "average" engineer is faced on many occasions with expert testimony from a "specialist".

Although we see expert testimony in some cases as being detrimental to the profession (and to the construction industry as a whole), there are many occasions when expert testimony is required in order to determine the proper responsibility for the damage or loss in question. For example, expert testimony is valuable to the trial judge in evaluating the causes of the damage or loss in issue. In addition, it is important for expert witnesses to provide such guidance as is necessary to the trial judge in order for the trial judge to determine the proper standard in the community so as to measure the performance of the defendant engineer. As a consequence, we believe that we should provide the professional with some comments regarding the role, function and conduct of expert witnesses at trial.

Editor's Note: While this Bulletin is directed to professional engineers, the views expressed would apply equally to professional geoscientists.

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L-1 May 1993

Legal Notes

THE ROLE OF THE EXPERT WITNESS

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The purpose of these comments is to provide some guidance to Professional Engineers when they are retained to act as expert witnesses.

The courts have indicated to the legal and engineering professions that expert reports must be drafted and prepared in a different manner than has sometimes been done in the past. In recent judgements the courts have repeatedly emphasized that the function of an expert witness is not to be an advocate for either party, but to provide the court with an independent, objective, assessment of the matters which are the subject of the expert opinion.

“Professional witnesses”, in the sense of engineers who have appeared as expert witnesses in other (perhaps many other) law suits, are not looked upon with disfavour. The courts do not tend to view an engineer’s having given expert evidence in other law suits as a sign that he or she can always be counted upon to give evidence that supports the case of the client. On the contrary, the courts tend to view the fact that the engineer has been accepted as an expert in other litigation as a sign that other Judges have already passed favourably upon his or her expertise. But the courts do insist that engineers give their own opinion, uninfluenced by consideration of the interests of the party hiring them.

In any lawsuit involving expert evidence, different witnesses may express different opinions. That does not necessarily mean that one of them has to be “wrong”. It certainly does not mean that one of them is acting improperly. Different engineers may have different opinions on many subjects.

The following are some brief comments as to the appropriate manner of preparing an expert opinion:

1. Qualifications

It is the lawyer's task to decide if the engineer's qualifications are sufficient for him or her to be accepted by the court as an expert in the specific area in question.

It is the engineer's task to prepare a detailed resume of his or her experience, training, publications, and so on which might seem to demonstrate "expertise" on the matters which are the subject of the engineer's report.

“Expertise” really means knowledge beyond the knowledge possessed by the man on the street. In this sense every engineer has “expertise” in engineering, or at least in his or her field of engineering (it would be of no assistance to have an electrical engineer give evidence as to what a mechanical engineer should or should not have done in certain circumstances). But nonetheless the weight that the court will give to an engineer’s opinion will be greater if the engineer has particular expertise in a specific area.

2. Facts

It is not necessary for an engineer who is acting as an expert to observe the site, the project, or the accident.

The engineer can do so, and may even give evidence as to his or her observations. That is factual, not opinion, evidence, and can be given in court just like the evidence of any lay person.

It is important, however, that the engineer not draw conclusions about facts based upon such observations. The observations are for the witnesses, but the conclusions are for the Judge.

The engineer’s real purpose is to give “opinion” evidence. That opinion must rest upon certain factual assumptions. Since it is impossible to know in advance what facts the Judge will accept and what facts the Judge will not accept, it is appropriate for the factual assumptions to be set out expressly, so that at the end of the day the Judge will be able to ascertain whether the opinion expressed by the engineer was based on assumptions that the Judge accepts, or was based on assumptions that the Judge does not accept.

It is the responsibility of the lawyer, not the engineer, to prove the facts. It is also the responsibility of the lawyer, not the engineer, to provide the engineer with a list of assumptions to be made. But this is an iterative process: the engineer will know what assumptions have to be made, the lawyer will know if there is a reasonable possibility of establishing the truth of those assumptions at trial.

Since the assumed facts are completely hypothetical, the decision as to what facts will be assumed can be made on the basis of documents, hearsay, or any other source.

3. Standards in the Industry

It is appropriate for the expert to indicate what the expert understands to be the

standards in the industry. In this way the court can make a ready comparison between the standards of behaviour in the industry as determined by the expert and the behaviour of the parties who are involved in the dispute.

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It is not necessary for the expert to make a finding as to whether there was compliance with the standards (that is a finding of fact). It is enough to set out what the standards are and whether those standards would or would not have been met if certain factual assumptions are correct.

4. Interpretations

It is not useful for the court to have a expert interpret the meaning of a contract or other document. This task is reserved to a court or to an arbitrator.

The one exception concerns technical or scientific terms, where the expert can advise the court as to their meaning.

5. Production of Documents

Most professional engineers who act as experts have a tendency to retain all of their documents in a working file commencing from the moment they are retained until the moment they appear in court. It should be remembered that all of these documents are producible to the opposing counsel once the expert takes the stand.

For example, if you have reviewed a document prepared by the lawyer or by a witness, it may be ordered to be produced to the opposing lawyer by a court or an arbitrator.

Many professional engineers have adopted the practice of not maintaining a working file, and simply discarding drafts as they are superseded. So far there has not been any judicial criticism of this practice. It is recommended by many, if not most, lawyers.

6. Generally

An expert witness can give evidence on the technical state of the art at the time material to the action. He/she may provide his/her opinion as to the adequacy or inadequacy of the design, construction, methods or procedures followed and any other factors that are relevant in order to provide the trial judge with an indication of the standard expected in the engineering community.

In order to provide expert evidence, we believe that an expert witness should possess the following characteristics:

- (1) Thorough knowledge of the design or construction principles in issue in the law suit;
- (2) Experience in the application of these principles;
- (3) The ability to present his or her

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opinion in a clear, concise and convincing manner in terms readily understandable by persons without such expertise, such as lawyers and judges;

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- (4) The ability to provide an opinion which is impartial, unbiased and fair to all concerned;
- (5) Some knowledge of trial procedures (which will be imparted by the lawyer); and
- (6) The ability to support his/her expert opinion when it is tested (in some cases quite forcefully) through cross-examination by opposing counsel.

As with any task, your fees should be determined – and determined in advance. We recommend that they should be commensurate with your hourly rate, perhaps with a marginal increase for the inevitable stress of attendance at trial. They should not, of course, be based on the result of the action, or whether your evidence is accepted – the resulting tendency to shade your evidence would seem inevitable to court, once your fee arrangement were disclosed (as it would have to be). But there is certainly nothing untoward about accepting fees: the court would be astonished if you did not do so.

Editor's Note: While this Bulletin is directed to Professional Engineers, the views expressed would apply equally to Professional Geoscientists.

BULLETIN: L-2

REVISED: June 1993

Legal Notes

EXCEEDING COST ESTIMATES – LIABILITY Glenn A. Urquhart

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Decisions by courts across Canada have resulted in design professionals losing their fees, and in fact having damages awarded against them, for services rendered because their project cost estimates were negligently prepared.

A Nova Scotia case, *Gordon Shaw Concrete Products Limited v. Design Collaborative Limited* resulted in such a decision. Gordon Shaw Concrete Limited was a manufacturer of concrete products and Design Collaborative Limited was an architectural firm. In June, 1982 the two parties entered into a contract. Under the terms of the contract, the architect was to design an earth-sheltered home using products manufactured by Gordon Shaw Concrete. The architect prepared plans and specifications based on the client's budget. The architect's design, when costed, exceeded the budget thereby making the project uneconomic.

The manufacturer alleged that it had been led to believe that the house could be built for approximately \$60,000 and since the actual cost was almost double that estimate, the manufacturer claimed the services performed by the architect were of absolutely no value. The manufacturer sued for return of the fee paid, and the architect counterclaimed for the balance of his fee.

The court concluded that it was a condition of the agreement between the manufacturer and the architect that a house constructed from the plans and specifications prepared by the architect could be placed on the market for **\$60,000** or thereabouts. The court then went on to conclude that the manufacturer had relied on the expertise of the architect to produce plans for a house within the budgetary limits previously given to him, and that the architect's work had been valueless to the manufacturer since the cost overrun made the plans totally unsuitable for the purpose. The court further concluded that the architect was negligent in its preparation of the plans as they totally missed the specific market targeted.

The court ordered that the architect return all of the fees it had received from the manufacturer. In addition, the court allowed the manufacturer to recover a number of out-of-pocket expenses that it had incurred as a result of the architect's negligence.

An Alberta case, *Saxby & Pokornyy v. Fowler*, also illustrates the design professional's exposure to liability in this area. In this case the estimate of costs by the architect was much lower than the price tendered for construction by the contractor. The architect was held to be negligent in estimating the cost of construction, and the court concluded that the architect was not entitled to any fees for the performance of its services.

The architect had relied on a term in its contract with the owner that the architect would not guarantee the accuracy of the preliminary estimates of cost. The court concluded that notwithstanding the written word in the contract there was an implied condition that the final cost would be within a reasonable range of the estimate, which it was not in this case.

The most recent British Columbia decision, *Lutz Associates v. Phare*, confirms that:

"There can be no question that an architect is obliged to advise his client if the client's design requirements cannot be met within his financial limitations...It is also beyond doubt that an architect will be negligent if his construction cost estimates are inadequate in relation to the accurate costs of construction."

How far these principles can go is illustrated by a British Columbia case concerning a lawyer's estimate of his own fees, *Roberts & Muir v. Price*. The lawyer estimated the cost of trial, once the preliminary stages had been passed, as a "further \$7,000 approximately". He emphasized that he was giving "my best estimates, not guarantees". The work ended up costing significantly more: although the estimate meant that the total fee would be approximately \$28,000, the total bill was about \$45,000.

The court agreed that the lawyer's work was "well done", that "the results were good", and the fees charged were "appropriate". The lawyer was praised as one "whose skill is well known to the Judges of this court". The client was an experienced business person

But none of this helped the lawyer. Madam Justice Southin (who has since been elevated to the Court of Appeal) held that the lawyer was bound by his estimate nonetheless. The Court of Appeal agreed in a unanimous judgement delivered by Madam Justice McLachlin (now on the Supreme Court of Canada). Both courts held

that there might be special circumstances – for example, if the lawyer “does work outside the estimate at the request of the client, or if the client by his or her conduct unduly increases the amount of the

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work, or if unforeseen circumstances add a new and unexpected dimension to the work” but nothing like that had occurred, except for one unforeseeable event which justified an extra \$1,000 in fees.

The lawyer*s use of the word “approximately” in his estimate was, however, held to “allow for some variation”. As a result, the \$28,000 estimate still allowed an account of \$32,000 a 15% increase –plus the \$1,000 for the unforeseeable event.

Of course the case did not involve architects or engineers. What makes it particularly interesting for us is that Madam Justice Southin based her decision on the law relating to architects. She stated that:

“I see no difference in principle between an architect estimating what a contractor will charge to build a building designed by the architect and a solicitor estimating what his own fees will be.”

These cases, and others, appear to establish that design professionals who prepare cost estimates may well be liable to their clients if those cost estimates are significantly exceeded, and that the damages might extend to the architect’s’s entire fee as well as other expenses incurred by the client.

Three points should be kept in mind.

First, although one might think that design professionals can only be liable in this regard if they were negligent in their cost estimates –or, to put it another way, that the only relevant term of the contract between professionals and their clients would have to be at most a term that the design professional would exercise reasonable care in cost estimating –this is not necessarily so. Although many of the cases involved allegations of negligence, and therefore required the courts to consider whether the design professional acted with due care, some of the cases suggest that the design professional might actually be bound contractually by the estimate. If that is the case then the architect can be liable even if he or she exercised all due care in preparing the estimate.

Second, although the client always bears the burden of proving the case against the design professional, in practice if there is a great disparity between the estimated cost and the actual cost (or the tenders received) then the design professional bears the burden of showing that this disparity did not represent negligence on his or her part (and in fact, as is pointed out in the preceding paragraph, even this might not be good enough).

Third, the best evidence to this effect will come from a

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showing, through other design professionals who give evidence, that the cost estimate was prepared "in accord with general and approved practice". That is not a conclusive defence but, as our Court of Appeal said in 1989 in a case called *Funk v. Clapp*, "the cases do show that conformance with a generally accepted practice usually results in a finding of no negligence."

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We make the following recommendations. It would be better never to give cost estimates at all, but that is not practical. If cost estimates are provided, it goes without saying that they ought to be skilfully made. Most importantly the*,* must be properly qualified. Contingencies which might operate to affect their accuracy should be set out, in as much detail as possible. And the', ' must be set out in writing: if a dispute later arises the client will remember the estimate, not the qualifications.

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BULLETIN:

S October 1993

Certificate of Authorization

On September 8, 1993, the *Engineers and Geoscientists Act* was amended to provide for the issuance of Certificates of Authorization to corporations, partnerships or other legal entities to practise professional engineering or professional geoscience through employees who are members or licensees of the Association. Within a short time corporations, partnerships or other legal entities providing professional engineering or professional geoscience services or products which, in the opinion of Council, affect the safety or well-being of the public, will be required to hold a valid Certificate of Authorization issued by the Association. Certificate holders will thus be required to comply with the *Engineers and Geoscientists Act*, Bylaws and *Code of Ethics*. The investigation and discipline process will apply to certificate holders in addition to individual members of the Association.

This significant change to the *Engineers and Geoscientists Act* has been endorsed by the government as it is recognized that corporations, partnerships or other legal entities can have a significant influence over the practice of employee Professional Engineers and Professional Geoscientists.

BULLETIN: K

REVISED: July 1993

Letters of Assurance

Introduction

The Closkey Commission Recommendation No. 2 states:

“The building code should be amended to incorporate standard letters of assurance to be used throughout the province in connection with buildings governed by Part 4 of the code. These letters should be required of the owner, and of architectural, structural, mechanical, plumbing and electrical services which are provided directly or indirectly by professionals, prime consultants and subconsultants.”

While the Closkey Commission was responding to the conditions surrounding the Station Square roof collapse, the Association and its representatives had been involved in discussions with the City of Vancouver and the Provincial Government about Letters of Assurance well before that incident took place.

The *Vancouver Building By-law* (effective September 1990) includes Letters of Assurance developed after several years of discussion between the City, Architectural Institute of B.C. and the Association of Professional Engineers and Geoscientists of B.C., together with their legal advisors and in close consultation with the Building Inspectors Association of B.C. These Letters are contained in Schedule C of the *Vancouver Building By-law* with the following titles and By-law references:

PA-i Configuration of “Commitment by Owner” Re: Coordination of Design and Field Review of Construction by a Coordinating Registered Professional
[1.7.5, 1.7.9, 1.7.16, 1.7.19, 1.10.5.1]

PA-2 Assurance of “Coordination of Design” and Commitment for

“Coordination of Field Reviews”
[1.7.5, 1.10.5, 1.12.1]

PA-2a Assurance of “Architectural Design” and Commitment for
“Field Review”
[1.10.5, 3.7.1.4.]

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PA-2b Assurance of "Structural Design" and
Commitment for
"Field Review"
[1.10.5.]

**PA-2c Assurance of “Mechanical Design” and Commitment for
“Field Review”**

[1.10.5.]

PA-2d Assurance of **“Plumbing and Fire Suppression System
Design” and Commitment for “Field Review”**

[1.10.5.]

PA-2e Assurance of “Electrical Design” and Commitment for
“Field Review”

[1.10.5.]

PA-2f **Assurance of “Geotechnical Design” and Commitment for
“Field Review”**

[1.8.2, 1.10.5.]

PA-3 Assurance of **“Coordination of Field Reviews” and “Compliance”**

[1.10.5, 1.15.3.]

PA-3a Assurance of **“Field Review” and
“Compliance” for the Architectural, Structural,
Mechanical, Plumbing, Fire Suppression and Electrical
Disciplines**

[1.10.5, 1.12, 1.15.3, 1.15.4, 2.6, 3.7.1.4.]

**PA-3b Assurance of “Geotechnical Field Review” and
“Compliance”**

[1.8.2, 1.10.5, 1.12.]

PA-4 Assurance of **“Tenant Improvement Compatibility”
with**

Original Base Building

[1.10.5.]

Members are advised that the Letters of Assurance included in the *Vancouver Building By-law* are deemed necessary before building permits are issued for complex buildings and alterations regulated under Part 3 and 4 of the Bylaw and requiring professional design and review. The Letters described above are the only acceptable forms for submission. As a rule, no changes in the wording will be considered. Members who deal with the City of Vancouver for building permits on behalf of owners must be conversant with the *Vancouver Building By-law* and the Letters of Assurance described in Schedule C.

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Following the report of the Closkey Commission, the Provincial Government turned its attention to standard Letters of Assurance. In January, 1990, the Building Standards Branch formed a committee comprising representatives of the Branch, the Architectural Institute of B.C., the Association of Professional Engineers and Geoscientists of B.C., the Union of B.C. Municipalities, and the Building Inspectors Association of B.C. This committee developed the wording for the changes to the *B. C. Building Code* and for the standard Letters

of Assurance now included in Part 2 as Schedules A, B-i, B-2, and C. They are entitled:

Schedule A Confirmation of Commitment by Owner and by Coordinating Registered Professional

Schedule B-i Assurance of Professional Design and Commitment for Field Review

Schedule B-2 Summary of Design and Field Review Requirements

Schedule C Assurance of Professional Field Review and Compliance. The former Section 2.6 of the *B.C. Building Code* has been deleted and replaced with a new Section 2.6 entitled "Professional Design and Review". The requirements of this section apply to an owner who applies for a building permit for all Part 3 buildings, all structural components designed under Part 4 and all buildings divided up with firewalls which have common egress systems. The precise wording of the Letters of Assurance has been carefully scrutinized by numerous practising professional engineers and architects and by legal counsel. Members who deal with municipalities other than Vancouver for building permits on behalf of owners must be conversant with the *B. C. Building Code* and the Letters of Assurance described in Schedules A, B-i, B-2, and C.

The changes in the *Vancouver Building By-law* and the *British Columbia Building Code* together with the respective Letters of Assurance provide a uniform standard across the Province for the design and field review of new construction. The roles and responsibilities of the owner, registered professionals, and municipalities are clearly defined.

All concerned members should become familiar with the regulatory requirements in Vancouver and the rest of the Province. Relevant articles re Provincial Letters of Assurance were published in the November, 1991, issue of the *B.C. Professional Engineer* on pages 35 to 39.

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BULLETIN: G-1

REVISED: March 1993

Association Guidelines for Advertising and Promotion

1.0 PREAMBLE

The titles "engineer" and "geoscientist" in this document mean "Professional Engineer" and "Professional Geoscientist".

The engineer and geoscientist may: promote and advertise their work or abilities provided that:

- (a) The advertising preserves the public interest by reporting accurate and factual information which neither exaggerates nor misleads.
- (b) The advertising does not impair the dignity of the engineering and geoscience professions.
- (c) Statements do not convey criticism of other engineers or geoscientists directly or indirectly.

2.0 GENERAL

These guidelines are set out for engineers and geoscientists registered or licensed in British Columbia when they are working or advertising in the province. Association members who are living and working outside British Columbia will comply with the rules of the country or province in which they are working.

The general qualifications which are applied to advertising and promotion of all types are contained in three relatively simple statements:

- (a) Advertising must be truthful. Statements made must be factual and no form of exaggeration is allowed. Those who seek to use the words "only" or "best" or "most experienced", or similar wording should be warned that this may be judged as unreasonable and improper.
- (b) Advertising should not imply criticism of an organization employing engineers or

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geoscientists or an individual engineer or geoscientist.

- (c) The dignity of the engineering and geoscience professions and of the individual engineer or geoscientist must be preserved. Improper or garish advertisements should be reported to the Association.

3.0 RESTRICTIONS

In addition to the qualifications in 2.0 GENERAL, the following guidelines apply:

3.1 Newspapers, Magazines, Telephone Directory Listings, Radio, Television, Leaflets and Circulars

The text and photographs in paid advertisements must ensure that the actual role played by the engineer or geoscientist is defined as opposed to a general description or picture of the complete project in which the engineer*s or geoscientist*s role is not specified. If an engineer or geoscientist has paid for insertion of an article or interview, a clear statement to that effect must appear adjacent to the text.

3.2 Advertising Specialties

There is no objection to giving or receiving advertising specialties provided they are "reasonable" or "token" articles devoted to advertising or promotion. The giving and receiving of other than token articles of this kind is not advised.

3.3 Products

Paid testimonials are not allowed. Provided they are truthful, factual, and restrained, unpaid testimonials may be acceptable when such testimonials are made:

- (a) by employee engineers or geoscientists of the company producing the products; or
- (b) by comment from customers who have examined or used the products.

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4.0 OTHER ADVERTISING FUNCTIONS

The following is a list of advertising functions or areas which are separate from the list under 3.0. Beyond the qualifications contained in 1.0 and 2.0, there is no restriction for:

- Billboards
- Brochures
- Company Cocktail Parties
- Company Displays
- Congratulations Announcements (See 3.1)
- Insignia
- Symbols and Motifs
- Job Site Signs
- Letterheads
- Motion Pictures
- New Media Interviews
- Office Signs
- Political Participation
- Professional Cards
- Public Announcements
- Slides and Photographs
- Staff Additions
- Use of the Seal
- Vehicle Identification
- Video Tapes and Filmstrips

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Professional Development

The Engineer in Training and Geoscientist in Training Program represents a significant step in the development of candidates for entry in to the professions of Engineering and Geoscience in British Columbia.

This restructuring, begun with the Association of Professional Engineers and Geoscientists of B.C., will eventually become Canada-wide. Its primary objective is the refinement of training requirements for Canadian engineers and geoscientists in order that they may become increasingly mobile across Canada and around the world.

The effective implementation of the program by the employer will ensure that trainee engineers and geoscientists receive appropriate experience, education and supervision to fulfill the requirements for registration as professionals in the Province. Complementing the roles of the employer and the candidate is the Association, which will monitor candidate progress and provide feedback to the candidate and the employer at regular intervals during the four-year training period.

Employers are urged to provide in-house training programs, encourage their trainees to take advantage of continuing education opportunities and challenge them with assignments which require them to accept increasing levels of responsibility. The Association may be contacted at any time for assistance with program development or clarification.

This cooperative venture will ensure that professional engineers and geoscientists in British Columbia meet the levels of responsibility and accountability required for professional practice and will benefit all of the participants.

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Training and Development of the Engineer-in- Training (EIT) and Geoscientist-in-Training (GIT)

1.0 THE NEW GRADUATE

Many prospective employers are unsure what should reasonably be expected of a new bachelor graduate in geoscience or engineering. Most new graduates have demonstrated an ability to learn and to deal with theoretical concepts but there will be gaps in the knowledge required to perform on the job and to prepare for progression in responsibility.

When new employees are being recruited at the entry level, it may well be true that the future success of the organization is at stake. The personnel resource needs nourishment, encouragement and effective leadership for optimum development. It follows that a structured in-house training program makes good economic sense. A well-managed organization whose existence is to continue indefinitely must be led by skilled and well-experienced people. It is absolutely necessary to maintain an organized progression of employees from entry level through junior and intermediate to senior levels of responsibility. Otherwise, the day may come when leadership is lacking because of senior level retirements. In general, it may be even more in the interest of the employer than of the employee to foster personal and professional development. The most difficult questions to answer will probably be "what?" and "how?" What should be offered and how should it be delivered? For entry-level professionals, the answers are more easily found than for others. For example:

- 1.1 **Many people not used to working within a business organization will not** know how to communicate in that environment. It will be worthwhile for the employer to provide instruction in organization structure, job responsibilities, reporting channels and methods as well as the tools and the support system available to the new employee.
- 1.2 The management of corporate budgets and expenditures is a mystery to most new graduates. Training in this area is important.
- 1.3 The employer would be well advised to require the entry-level person to become involved in public speaking, either through a formal course or toastmaster*s club.

- 1.4 Basic accounting and financial management are recommended as options if available.

- 1.5 Time spent in familiarization with the organization and particularly in the area of specialization of the new recruit can be of immense value. If an opportunity can be provided for a little hands-on, “nuts and bolts” exposure, so much the better.

2.0 OUTLINE OF THE PROFESSIONAL DEVELOPMENT PROGRAM

2.1 Preamble

In British Columbia, the primary requirement of registration as a Professional Engineer or Professional Geoscientist is the attainment of acceptable academic standing and four years of work experience showing progression in technical capability, responsibility and mature judgment. This experience is to be recorded in the Log Book and verified during the Professional Interview. In addition, the candidate shall show evidence of professional development. Interviewers will look for active participation, for a balance between activities and for a striving for growth and improvement. Moreover, there should be a demonstrated commitment to lifelong learning.

2.2 Professional Development

There are many means through which professional development may be pursued. It is clearly impossible for any particular individual to have access to all of them. The candidates may wish to consult with their supervisor or other superiors to find out what professional development activities might be recommended. Some choices to be considered include:

- a) involvement with Association affairs
- b) membership in technical associations or societies
- c) participation in courses and seminars offered by
 - universities, colleges, technology institutes
 - consultants, vendors, manufacturers and suppliers
 - trade or industry associations
 - technical societies
 - government agencies

While it is a candidate’s individual responsibility to pursue professional development, many employers will offer encouragement and support.

3.0 WHY HAVE AN EIT/GIT PROFESSIONAL DEVELOPMENT PROGRAM.

The *Engineers and Geoscientists Act* of the Province of British Columbia was passed by the legislature to regulate the practices of engineering and geoscience in the Province

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for the benefit and protection of the public. The Association is given the right and responsibility to administer the Act, including the establishment of regulations, bylaws, policies and procedures through which to accomplish the task.

The Association also has a responsibility to cooperate with similar organizations in other jurisdictions throughout Canada for the purpose of promoting common standards and enhancing the mobility of Canadian Professional Engineers and Geoscientists. This task is addressed through membership in the Canadian Council of Professional Engineers (CCPE), a national federation of provincial professional engineering associations. CCPE has identified a further responsibility to promote and enhance the mobility of Canadian engineers internationally. It is anticipated that Canadian geoscientists will also benefit from these efforts.

The structured program to be followed by Engineers-in-Training and Geoscientists-in-Training was evolved by this Association and modified in response to a recommendation from CCPE. The desire is that the length and quality of experience required for membership be consistent with that required in jurisdictions with which reciprocal recognition of engineering and geoscience qualifications is sought. Some of the policies and procedures were borrowed from organizations in other countries. Some are, as far as is known, unique to this Association. It is intended that the program be the vehicle through which every Engineer-in-Training and Geoscientist-in-Training is given the greatest possible opportunity for professional and personal development as well as the appropriate guidance to achieve it.

Every Association member has a stake in making the program a success. The Code of Ethics states, "Professional Engineers and Professional Geoscientists shall keep themselves informed in order to maintain their competence, strive to advance the body of knowledge within which they practise and provide opportunities for the professional development of their associates." By following these concepts, Professional Engineers and Professional Geoscientists enhance their ability to serve the public and increase their contribution to society.

4.0 THE RECORDING OF EXPERIENCE AND PROFESSIONAL DEVELOPMENT

4.1 General

Each Engineer-in-Training and Geoscientist-in-Training will receive a Log Book in which shall be entered regularly details of work performed and professional development activities, such as courses and seminars. The Log Book entries shall be verified by a supervisor. The candidate must provide the names of the employer and supervisors so that Association expectations may be communicated to them. Entries concerning experience shall be made no less than once per month.

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When a candidate believes that two 'years of suitable experience have been accumulated, an application should be made to the Association office for a mid-term interview. The interview will be conducted by two senior members who practise in the discipline of the candidate. As far as practicable, it will be arranged somewhere near the candidate's residence. Its purpose is to assess the Log Book entries and the candidate's progress to that time so that constructive suggestions can be given to the candidate, employer and supervisors.

Depending upon the results of the interview, a second interview may be called for near the end of the term of required experience. It is also possible that an engineering report, describing in detail one or more projects carried out by the candidate, may be required.

4.2 THE LOG BOOK

The purpose of the Log Book is to provide a chronological written record of the work experience and professional development required to gain professional registration.

Entries should record in detail all the EIT's/GIT's professional and nonprofessional work-related activities to provide a complete history. Personal responsibilities should be clearly documented. Entries should be made at **least** monthly, more often if required. Supervisor(s) for the period must be identified and asked to initial the entry as correct in the space provided.

Besides the work experience, all professional development activities such as courses, seminars and involvement with technical societies or group study should be recorded. These activities will be seriously considered and will have an impact on the candidate's ability to become registered.

Entries are to be made by hand, preferably printed, directly on the Log Book pages.

The Log Book will be requested for review prior to the mid-term interview.

5.0 THE INTERVIEW

Each Engineer-in-Training and Geoscientist-in-Training will submit a Log Book for review and be interviewed at approximately the mid-point of the training period. The main objective will be to ascertain whether or not the experience being gained offers appropriate preparation for professional registration both in technical content and progression of responsibility. Under certain circumstances, candidates may be requested to submit, if available, details of some project which shows their active involvement. This could be a report, project analysis, or design notes.

If, upon the advice of the interviewers, the Association's Applications Committee is satisfied with the candidate's progress, it is likely that no further interview will be required. When the training period is over, the Log Book will again be submitted, references will be sent for and the evaluation of experience will proceed in the traditional way. However, if the Registration Committee is not satisfied with the progress, the candidate, after making application for professional standing, will be expected to submit to another personal interview. The candidate will be told of perceived deficiencies in the experience gained to date and suggestions may be given to the employer as to how the work environment might be restructured to give the candidate better opportunities to gain the necessary experience. In extreme cases, the candidate may be required to submit to a second mid-term interview after a specified period of time.

Interviewers will be appointed by the Association's Registration Committee. Normally, there will be two, one of whom will be a member of the standing Applications Committee to ensure continuity and consistency and the other recruited for a particular series of interviews from the local engineering or geoscience community. Both interviewers will be from the discipline of the applicant or a closely related discipline.

As far as possible, interviews will be arranged to be convenient for the candidate.

Endnotes

1. See Section 4 for definition.
2. See Section 7, Appendix C.
3. CCPE/CEQB GUIDELINES “Professional Engineering Practice in Canada”, 1992
4. See Section 7, Appendix C.
5. CCPE/CEQB GUIDELINES – “Professional Engineering Practice in Canada”, 1992.