

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 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 also 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.

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:

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.

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.

The standard by which members conduct themselves 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 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.Geo.) and sometimes both. The professions are distinct and registration in one does not give a member the right to practise 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 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 (direct or indirect) 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.

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

Conflicts of interest extend 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, 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 recognise 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 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 member's acts.
- (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, and
 - 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.

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.

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 profession 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.

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 parallel 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 that 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.

Engineer 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. Technician B did his best but was out of his field; whenever he tried to get advice from Engineer 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 Engineer 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 Engineer A's partner 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.

Engineer 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.

Engineer 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.

Engineer 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, Engineer A acknowledged the assistance of the logging superintendent in his review of the area but made no mention of 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 Engineer 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 that did not include the “widespread” statement. Engineer 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 was 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 Engineer 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 Engineer 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 15m 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.

Engineer 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 pulpmill being developed by a large forest products company. Engineer 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 Engineer 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.

Engineer 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 delay 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 the 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.

Engineer 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. She undertook the design and prepared the contract documents. When the village advertised for bids, she 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 her 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.

Engineer A was clearly in a conflict of interest by having the construction company she had an interest in bid on the work she had designed. Since there were three local engineers and five contractors she could easily have avoided the conflict by either not doing the design or not doing the construction. She 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 TSX. 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 TSX but no mine resulted.

Engineer 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 travellers 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 Engineer 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. Engineer 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.

Engineer 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 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 mixing 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 Engineer B to make some of these inspections and perhaps attend site himself only monthly.

Having been told of the bad workmanship, Engineer 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. He 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 Engineer 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.

Engineer 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 as primary.

Conflicts of interest can almost always be avoided by not taking an assignment or by withdrawing when a conflict arises. In rare cases conflicts 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 qualified members.

- 4.7 A was an electrical engineer working for a small manufacturing firm owned by B, also an electrical engineer. 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. Engineer A resigned to set up her own firm and designed a more advanced control device in the same field. She phoned the 36 repeat customers to try to get them to switch allegiance to her new firm and her new improved product.

Engineer A behaved unethically by contacting only B's regular customers. Knowledge of who these customers were was available only in B's firm and Engineer A was therefore using confidential information acquired during her time working for Engineer B. She 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. 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.

This practice is strongly discouraged. Engineer 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. She 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.

Engineer 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. Engineer 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, Engineer A refused permission for B to leave early and make up the lost time. He himself only attended branch meetings that were held in his town of residence.

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

- 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. He asked Engineer 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.

Engineer 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 equipment. 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 Engineer A and his wife to join him and his wife for a week holiday in the Bahamas at the manufacturer's expense. He and his wife went.

Engineer A acted incorrectly. He should not have accepted the paid vacation. While not directly involved in purchasing, he certainly could have had some influence in his role as a member of the 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 or her subsequent career he or 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 that was inflated and unsupportable. He simply returned the document to the contractor with a rude expression written across it in large letters.

Engineer 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. Engineer 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.

Engineer A should have spoken to Engineer 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 or 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 be supplied by the pumps. This reservoir had a capacity of 48 hours of 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. Engineer 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. He 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 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 was putting the municipality to unnecessary 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 Engineer B.

Engineer A should have exhausted other avenues before going to the newspaper. Courtesy required her to go to Engineer 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 her that his proposal was right after all). Failing to resolve this with B, A should have tried once more by inviting 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. Members have 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 company. Other engineers doing the balance of the design were less than workman-like 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, Engineer B was not, of course, going to make changes to 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. Engineer 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, Engineer 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 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 to speak. A said he would be very pleased to be there. "A" did not show up to the event and B phoned A the next day to see if he was sick. Engineer 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 alone, 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 Engineer A that is not acceptable conduct. He did not, on the whole, act with the necessary courtesy or faithfulness to the client. As it happened Engineer 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 that 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. Engineer A estimated his fee would be \$2000 but because of the business risk he would want \$3000 if Lawyer 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. Lawyer B paid Engineer A the \$3000.

Engineer A acted incorrectly by accepting 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., as the member's interest in the outcome could well influence the work and the member could suppress unfavourable facts even if unconsciously. In this case "A" should have insisted on the \$2000 fee regardless of the outcome and should probably have asked "B" to pay it up front.

Principle 8

- 8.1 A long established resource-based town was rapidly expanding because of the development of a nearby major mine and pulp mill. The downtown was rapidly changing. The old single storey false front buildings were 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. He 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 Engineer 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 he told the town this and the town insisted on the 2-year design still, he 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. B said that Engineer C was now City Engineer but B did not trust him. A enquired why, and B said that Engineer 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. Engineer A asked how B knew this and B said he had spoken to a disaffected former employee of the developer.

Engineer A took no action to report this to the Association. In this he was wrong. Rumours and hearsay, etc., are usually in generalities and not investigatable but some of them contain tangible statements that can be checked. In this case the statements that “C persuaded council” (presumably in the face of a policy that developer should widen or at least contribute) and that “C received stock” can be checked by perusal of city records and company records. They are thus tangible statements and if checked and found correct then “C” is in trouble. This type of hearsay should be reported.

Engineer A had a duty to report the apparent infraction.

Principle 10

10.1 Engineer A was an executive member of a local bird-watching society. Another executive member was B, who had a poor opinion of engineers, initially formed by a bad experience by the antics of engineering students at university. There was much general chitchat at the executive meetings. One meeting occurred a few days after a spectacular roof collapse and B said “You’ll see, nothing will come of this — no engineer will get disciplined: they will take care of each other and it will all be swept under the carpet.” Engineer A said nothing.

Engineer A had a duty to respond to defend the profession and to counter this clear misrepresentation. A few words about the disciplinary process and perhaps a couple of quick examples of recent cases would help to counter the misrepresentation. He probably would not have convinced B but he may have convinced others present.

Members have a duty to counter misrepresentation.