



APEGA Recommended Discipline Order

APEGA members and permit holders are required to practise engineering and geoscience skillfully, ethically, and professionally. They must meet all prescribed requirements and follow all applicable legislation and regulations, such as the [Engineering and Geoscience Professions Act, General Regulation, Code of Ethics, and APEGA bylaws](#). Investigation and enforcement—followed by, when necessary, judgment based on a fair hearing of the facts—are requirements of ours in service to the public interest. For more information, please visit www.apega.ca/enforcement/discipline-decisions.

Date: September 30, 2021

Discipline Case Number: 21-012

**IN THE MATTER OF A RECOMMENDED DISCIPLINE ORDER OF THE ASSOCIATION OF
PROFESSIONAL ENGINEERS AND GEOSCIENTISTS
OF ALBERTA**

Pursuant to the *Engineering and Geoscience Professions Act*,
being Chapter E-11 of the Revised Statutes of Alberta 2000
Regarding the Conduct of [A REGISTRANT] and [A PERMIT HOLDER]

The Investigative Committee of the Association of Professional Engineers and Geoscientists of Alberta (APEGA) has investigated the conduct of a Registrant (the Registrant) and a permit holder (the Permit Holder) with respect to a complaint, initiated by a municipality (the Complainant). This matter was investigated pursuant to section 44(1) of the *Engineering and Geoscience Professions Act*, RSA 2000, c E-11 (EGP Act).

A. THE COMPLAINT

The Complainant filed a complaint alleging the Company and the Registrant engaged in unprofessional conduct and/or unskilled practice, as defined at s. 44(1) of the *Engineering and Geoscience Professions Act*, RSA 2000, c E-11 (EGP Act) with respect to their role as sub-consultants providing structural engineering on two pedestrian bridges as part of a Pathway Project, in the Municipality.

The Investigative Committee's investigation focused on three main allegations, which can be summarized as follows:

- (1) Whether the authenticated Issued for Construction design was deficient with respect to the requirements of the Canadian Highway Bridge Design Code, CSA S6-14.
- (2) Whether the Registrant improperly accepted changes to the design at the request of the contractor.
- (3) Whether the Registrant and/or the Company failed to follow the Complainant's Transportation Infrastructure, Design Guidelines for Bridges and Structures 2017 which, in part, state that an Independent Design Review shall be undertaken and that camber shall be incorporated into the bridge design.



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B. AGREED STATEMENT OF FACTS

(i) Background:

1. The Company has been an APEGA Permit Holder since 2005.
2. The Company is located in Nanaimo, British Columbia and specializes in civil and structural engineering projects.
3. The Registrant holds a Bachelor's of Science Degree in Civil Engineering (1997) from the University of Calgary. They were a professional member of Engineers and Geoscientists British Columbia (EGBC) from 2004 to January 2021. They were also a professional member of APEGA from 1997 to December 2020.
4. The Registrant resigned their membership with APEGA effective December 31, 2020 and resigned his membership with EGBC effective January 1, 2021.
5. The Registrant was employed by the Company from 2005 to March 2019.
6. The Registrant's resignation from APEGA and EGBC, and their departure from the Company in March 2019, are not related to his involvement in the design of the pedestrian bridges that are the subject of the Complaint.
7. The Registrant and the Company have fully cooperated with the APEGA investigation.

(i) Facts Relating to Allegation #1:

Whether the authenticated Issued for Construction pedestrian bridge designs were deficient with respect to the requirements of the Canadian Highway Bridge Design Code, CSA S6-14.

8. The Registrant and another professional engineer who was registered with EGBC (hereinafter referred to as "Engineer B") worked in tandem on the pedestrian bridge designs on behalf of the Company. Since only the Registrant was registered with APEGA at the relevant time, the Registrant authenticated the Issued for Construction (IFC) bridge designs in August 2017. Although Engineer B was responsible for completing the detailed design work, the Registrant reviewed and authenticated the designs and as such accepts responsibility for them.
9. The Registrant's bridge designs were compared to the requirements in the Canadian Highway Bridge Design Code, CSA S6-14 (the Bridge Code).



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10. The following deficiencies existed in the Registrant's bridge designs:

a. Cast in Place (CIP) foundation piles:

The Bridge Code, Section 8.8 "Flexural and Axial Load" specifies minimum reinforcement and reinforcement limits. Clause 8.11.2.2 and Table 8.5 prescribe minimum concrete cover for reinforced elements. Clause 8.14.4.2 specifies pitch and anchorage of spiral reinforcement.

As noted on the Registrant's IFC drawings, the pitch of the spiral reinforcing is shown as 300 mm and the vertical reinforcement in the concrete pile is indicated as 8-20M.

Additionally, there was no indication on the IFC drawings that the spiral reinforcement was anchored into the pile cap as per the requirements of Clause 8.14.4.2. However, this deficiency was corrected during the review of the shop drawings by the Registrant and Engineer B. The Registrant provided evidence that the spiral reinforcement was in fact anchored into the pile cap during construction.

The Bridge Code requirements were compared to the design and the as-built condition of the concrete piles. It was found that the amount of vertical reinforcement of the enlarged piles did not comply with the Bridge Code requirements as prescribed in Clauses 8.8.4.3 and 8.8.5.6 ($M_r > 1.2 M_{cr}$; and reinforcement ratio > 0.135).

The as-built amount of vertical reinforcement is 0.039 and M_r is less than $1.2 M_{cr}$. As per the Bridge Code, a minimum amount of reinforcement is necessary to provide resistance to bending, which may occur whether or not indicated by computations, and to reduce the effects of creep and shrinkage.

The Registrant failed to increase the amount of vertical reinforcing bars to comply with the Bridge Code requirements for the 880mm diameter pile (approximately 2 times the original reinforcement amount).

Additionally, the pitch of spiral reinforcement shall not exceed six times the diameter of longitudinal bars or 150 mm center to center spacing, whichever is less, and shall be embedded into the footing by one and one half extra turns (Clause 8.14.4.2). This requirement was contravened on the IFC drawings.



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b. Bridge maintenance and jacking:

The bridge jacking points were designed for factored bridge loading and do not meet the requirements of the Bridge Code which requires the jacking system to be designed for a factor of two on the bridge dead load.

c. Top chord connections at the piers and isolated vertical truss members:

The top chord connections at the piers and isolated vertical truss members were self-identified by the Registrant and Engineer B as being deficient and were reported to the Complainant during the early stages of bridge installation (top chord connection) and during the re-development of the design package (truss verticals).

The Bridge Code prescribes requirements for designing connections of bridge steel structural members. Clause 10.18.1.3 explicitly states that “splices and connections shall be designed for all of the forces, including axial, bending, and shear forces that can occur in the connected components (allowing for any eccentricity of loading).”

The independent design report produced by the Company, as well as third-party reports obtained by the Complainant, all concluded that the top chord connections do not have sufficient capacity to meet all ULS conditions and Bridge Code requirements.

11. The Registrant acknowledges that there were deficiencies in the bridge design and admits that their conduct in issuing the designs with these deficiencies constitutes unskilled practice.

(iii) Facts Relating to Allegation #2

Whether the Registrant improperly accepted changes to the design at the request of the contractor.

12. The Registrant was addressing construction issues as they arose in the project and provided engineering solutions to the contractor.
13. The steel erection phase of the project commenced in March 2018. Although the Registrant provided input into the erection plan, the contractors began the lifting procedures using their own judgement and without an approved erection plan in place.



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14. The contractor advised the Registrant that they were having difficulty landing portions of the steel superstructure onto the anchor bolts and requested permission from the Registrant to enlarge the anchor bolt holes. The Registrant allowed the holes to be enlarged to account for thermal contraction and tolerances related to the placement of the abutments.
15. The Registrant granted the contractor permission to enlarge the bolt holes by up to 6 mm, however the bolt holes were enlarged by 10 – 35 mm unilaterally by the contractor without consulting the Registrant.
16. As a result of the enlarging of the anchor bolt holes, and as stated by the Registrant, the truss top chord connection at the piers was unable to be secured in a flush manner resulting in a large gap in the connection.
17. As an Engineer of Record, the Registrant was in a position to reject any changes that would negatively affect the original design and raise their concerns with the contractor and/or the client. Regarding the enlarging of the anchor rod holes, the contractor elected to proceed with the slotting of the holes to facilitate the erection, however the final size of the enlarged holes far exceeded the value of 6 mm approved by the Registrant. Although the Registrant was in regular contact with the jobsite, and Engineer B conducted field reviews, the Registrant never visited the jobsite.
18. The Registrant accepted the proposal by the contractor to enlarge the pile sizes from 610 mm to 880 mm in diameter, at the early stage of the project in 2017.
19. The decision by the Registrant to accept the pile diameter change was detrimental to truss member forces, anchor rod stresses, and the top chord connection designs. This design change altered the end restraints due to the larger pile making contact with the abutment footing and effectively creating a pinned, end restraint.
20. The Registrant failed to recognize the critical consequences of enlarging the pile which resulted in the pile contacting the abutment footing.
21. The Registrant acknowledges that he improperly accepted changes to the design at the request of the contractor and that his conduct constitutes unskilled practice.

(iv) Facts Relating to Allegation #3:

Whether the Registrant and/or the Company failed to follow the Complainant's,



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Transportation Infrastructure, Design Guidelines for Bridges and Structures 2017 (bridge design guidelines) which, in part, state that an Independent Design Review (IDR) shall be undertaken and that camber shall be incorporated into the bridge design.

22. The Complainant's bridge design guidelines state, in part:

“Data shall be presented on a camber diagram on the drawings that show overall camber as well as net camber values for individual span segments.”

“Steel girders typically are cambered for 100% of dead load effects. Self weight, superimposed dead loads and final roadway grade line shall be considered.”
23. The Complainant's bridge design guidelines state the following regarding an IDR:

“As part of the Quality Management Plan, an independent review of both the design and detailed design drawings are required. A Quality Audit report of the findings shall be submitted to the City for review. A certification letter bearing the signature and seal of the independent design reviewer or alternatively the signature and seal of the independent design reviewer on the Issued for Construction Drawings shall be submitted to the City.”
24. Engineer B's initial role on the project was as the bridge design engineer.
25. The Registrant authenticated the IFC drawings in August 2017.
26. The IFC drawings did not include camber.
27. The Registrant stated the design intentionally did not include camber due to the impracticality of including camber for the bridges' relatively short spans and based upon a previous successful design of a similar bridge in British Columbia. This is understandable, however the Registrant had a responsibility to review and discuss the Transportation Infrastructure Design Guidelines with the Complainant and their associates, and to obtain a waiver from incorporating camber in the design and fabrication of the bridges. This was not done. Although the Complainant did not comment on the camber during its review of the design drawings, this did not relieve the Registrant from his responsibilities to follow the client's specifications and guidelines.
28. The Registrant stated the process in place at the Company was that while Engineer B conducted the detailed design work, the Registrant acted as the



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peer reviewer.

29. The Registrant described the failure to complete an IDR prior to the IFC drawings being issued as an oversight. They did not become aware of the IDR requirement until after construction commenced.

30. The Company's Organizational Quality Management (OQM) procedures were presented during the investigation as the Company's Professional Practice Management Plan (PPMP). The Company's OQM stated the following regarding IDR's:

"Independent reviews of structural designs must be carried out before the related drawings are issued for construction."

31. APEGA's Guideline for Ethical Practice states, in part, in section 4.3.1, "Acting Fairly" that:

"Professionals should faithfully discharge their responsibilities to clients / employers, always acting with fairness and justice to all.

"A client's or employer's interests should be held in high regard. However, the following duties take precedence over the interests of the professional's client or employer:

- The duty to protect the safety of the public;
- The duty to the professions under the Code of Ethics; and
- The duty to act fairly and justly to all parties when administering a contract on behalf of a client or employer.

"In providing services to a client, professionals should consider themselves part of the client's organization or team, with high regard for the client's interests. This is the basis of the professional-client relationship. Professional's duties of care for a client's interests should not supersede the professionals' duties to protect public safety and other duties that may be in conflict with a client's interests. Professionals should put their client's interests before their personal interests."

32. APEGA's Guideline for Professional Practice states, in part, in section 3.3.2:

"Effective procedures should be in place to ensure that an appropriate standard of technical quality is maintained. In any situation which can impact public



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safety, the professional practice should provide for independent confirmation of computations, reports, drawings and specifications, and ensure appropriate documentation of the results. This confirmation may come from within the organization, but it is preferable that there be no direct involvement of the 'checkers' with the project being checked. Individual practitioners will also, at times, need outside verification of critical work."

33. The Registrant and the Company failed to follow their PPMP (OQM) in relation to this allegation.
34. The Company's Responsible Member (RM) could not explain why an IDR was not completed.
35. The IFC design drawing package displayed the Company's APEGA permit number. The appearance of a permit number on professional work products represents an assurance that the Company's quality control procedures have been followed and the design package is ready to be issued for construction. This is an important step and a last opportunity to identify and correct any deficiency with respect to the QA / QC process.
36. The Registrant and the Company had a duty to ensure that the client's requirements were being met and that their own quality control procedures were being followed while executing and delivering their design work. The client's requirements must be followed unless a deviation is sought and an informed approval on waiving this requirement is obtained from the client.
37. The Registrant and the Company acknowledge that they failed to follow the Complainant's bridge design guidelines which, in part, state that an IDR shall be undertaken and that camber shall be incorporated into the bridge design. The Registrant and the Company further admit that their conduct constitutes unskilled practice.

C. CONDUCT BY THE REGISTRANT

38. The Registrant freely and voluntarily admits that at all relevant times he was a professional member of APEGA and was thus bound by the EGP Act and the APEGA Code of Ethics.
39. The Registrant acknowledges and admits that his conduct as described in Section B of this Recommended Order amounts to unskilled practice of the profession as defined in section 44(1) of the EGP Act:

Section 44(1) Any conduct of a professional member, licensee, permit holder,



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certificate holder or member-in-training that in the opinion of the Discipline committee or the Appeal Board,

- a) is detrimental to the best interests of the public,
- b) *contravenes a code of ethics of the profession as established under the regulations,*
- c) *harms or tends to harm the standing of the profession generally,*
- d) *displays a lack of knowledge of or lack of skill or judgement in the practice of the profession, or*
- e) *displays a lack of knowledge of or lack of skill or judgement in the carrying out of any duty or obligation undertaken in the practice of the profession*

whether or not that conduct is disgraceful or dishonorable, constitutes either unskilled practice of the profession or unprofessional conduct, whichever the Discipline Committee or the Appeal Board finds.

40. The Registrant acknowledges that the conduct described above is conduct that is detrimental to the best interests of the public, displays a lack of knowledge or lack of skill or judgement in the practice of the profession and displays a lack of knowledge of or lack of skill or judgement in the carrying out of any duty or obligation undertaken in the practice of the profession.

41. The Registrant acknowledges and admits his conduct was also contrary to Rule of Conduct 4 of the APEGA Code of Ethics, which states:

4. *Professional engineers and geoscientists shall comply with applicable statutes, regulations and bylaws in their professional practices.*

D. CONDUCT BY THE COMPANY

42. The Company acknowledges and admits that its conduct as described in Section B of this Recommended Order amounts to unskilled practice of the profession as defined in section 44(1) of the EGP Act:

Section 44(1) Any conduct of a professional member, licensee, permit holder, certificate holder or member-in-training that in the opinion of the Discipline committee or the Appeal Board,

- a) *is detrimental to the best interests of the public,*



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- b) *contravenes a code of ethics of the profession as established under the regulations,*
- c) *harms or tends to harm the standing of the profession generally,*
- d) *displays a lack of knowledge of or lack of skill or judgement in the practice of the profession, or*
- e) *displays a lack of knowledge of or lack of skill or judgement in the carrying out of any duty or obligation undertaken in the practice of the profession*

whether or not that conduct is disgraceful or dishonorable, constitutes either unskilled practice of the profession or unprofessional conduct, whichever the Discipline Committee or the Appeal Board finds.

43. The Company acknowledges that the conduct described above is conduct that is detrimental to the best interests of the public, displays a lack of knowledge or lack of skill or judgement in the practice of the profession and displays a lack of knowledge of or lack of skill or judgement in the carrying out of any duty or obligation undertaken in the practice of the profession.

E. RECOMMENDED ORDERS WITH RESPECT TO THE REGISTRANT

44. On the recommendation of the Investigative Committee, and by agreement of the Registrant with that recommendation, and following a discussion and review with the Discipline Committee Case Manager, the Discipline Committee hereby orders that:
- a) The Registrant will receive a letter of reprimand, a copy of which will be maintained in the Registrant's APEGA registration file for a period of one year and may be considered at any future date by APEGA.
 - b) Should the Registrant wish to reapply to APEGA in the future, the Registrant shall be required to provide proof to the Director, Enforcement that he has completed the following within one year of his application for reinstatement being accepted:
 - i. Reviewed and will comply with the requirements of the APEGA Practice Standard, Authenticating Professional Work Products (July 2019);
 - ii. Take and pass the National Professional Practice Exam.



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- c) Disclose to all other engineering regulatory bodies to which the Registrant holds membership that he was the subject of a complaint to APEGA and provide each regulator with a copy of this Order. APEGA's Director, Enforcement shall be copied on all disclosures made by the Registrant.
- d) Pay a fine of \$2,500.00.
- e) This matter and its outcome will be published by APEGA as deemed appropriate and such publication will not name the Registrant.

F. RECOMMENDED ORDERS WITH RESPECT TO THE COMPANY

- 45. On the recommendation of the Investigative Committee, and by agreement of the Company with that recommendation, and following a discussion and review with the Discipline Committee Case Manager, the Discipline Committee hereby orders that:
 - a) The Company will receive a letter of reprimand, a copy of which will be maintained in the Company's APEGA registration file for a period of one year and be considered at any future date by APEGA.
 - b) The Company's Chief Operating Officer or designated senior officer shall take the APEGA Permit to Practice seminar in person or online within six months of this RDO being approved and will be responsible for providing the Director, Enforcement with proof of successful completion.
 - c) The Company's Chief Operating Officer or designated senior officer shall provide written confirmation to the Director, Enforcement within thirty (30) days of being notified that the RDO has been approved, that he / she has reviewed the following APEGA publications in consultation with the appointed Responsible Member, and that the Company will comply with the requirements therein:
 - i. Guideline for Ethical Practice (v2.2, February 2013);
 - ii. Guideline for Professional Practice Management Plans (v1.4, February 2013);
 - iii. Guideline for Professional Practice (v1.2, January 2013);
 - iv. Professional Practice Standard, Authenticating Professional Work Products (July 2019).
 - d) The Company shall pay a fine of \$7,500.00 within one year of this RDO being approved.



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- e) The Company's Responsible Member shall successfully complete a course in project management that is satisfactory to the Director, Enforcement, such as Project Management (University of Victoria, TECJ410). The Director, Enforcement may consider an equivalent, non-post-secondary, course which focuses on large scale, multiconsultant, project management. The course shall be completed within one year from the date this RDO has been approved. The course shall be completed at the Company's expense and the Company must provide proof to the Director, Enforcement of successful completion.
 - f) If the above noted orders and their deadlines are not met by the Company's Chief Operating Officer, designated senior officer and/or Responsible Member, unless an extension is granted in accordance with (g) below, the Company's APEGA Permit to Practice shall be suspended until the Company's Chief Operating Officer, designated senior officer and/or Responsible Member completes the specified requirement.
 - g) The Company may apply to the Director, Enforcement for an extension of any of the orders referred to above at paragraphs (b) – (e) by submitting a request for an extension prior to expiry of the deadline. If the Company fails to comply with any of the Orders above, and fails to seek or be granted an extension, the Company's APEGA Permit to Practice shall be suspended until they have complied.
 - h) The Company shall disclose to all other engineering regulatory bodies to which the Company holds a permit to practice that it was the subject of a complaint to APEGA and provide each regulator with a copy of this Order. APEGA's Director, Enforcement shall be copied on all disclosures made by the Company.
 - i) This matter and its outcome will be published by APEGA as deemed appropriate and such publication will not name the Company.
46. Although there is a presumption that Recommended Orders should be published in a manner that identifies the name of the Registrant and /or the Company that are subject of the Recommended Order, publication without name is being recommended in this case. Among the considerations that weighed into the recommendation not to publish the name of the Registrant and the Company was the following:
- a) Both the Registrant and the Company have not been previously subjected to professional disciplinary findings of misconduct;
 - b) Both the Registrant and the Company were cooperative with the investigation;



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- c) The Company and Engineer B have self-reported this matter to EGBC;
- d) Engineer B and the Company recommended to the Complainant to close access to the bridges to ensure public safety. This occurred prior to the complaint being made to APEGA.

IN WITNESS WHEREOF the undersigned agrees with the Agreed Statement of Facts and Acknowledgement of Unskilled Practice in its entirety.

Signed,

[PERMIT HOLDER]

[PROFESSIONAL MEMBER], P. Eng.

MR. PETER BOZIC, P.Eng.
Panel Chair, APEGA Investigative Committee

MR. NEIL JAMIESON, P.Eng.
Case Manager, APEGA Discipline Committee

Date: September 30, 2021