

COUNCIL MEETING

DATE	June 25, 2021
	Virtually Held Via Zoom
LOCATION	Meeting Link Sent Via Outlook Invitation

Meeting Schedule

08:30 – 09:45	Closed Session
09:45 – 10:00	Morning Break
10:00 – 10:35	Closed Session (continued)
10:35 – 11:00	Agenda Overflow Buffer
11:00 – 12:15	Open Session
12:15 – 13:00	Lunch Break
13:00 – 13:50	Open Session (continued)
13:50 – 14:15	Agenda Overflow Buffer
14:15 – 14:30	Break Before In-Camera Session
14:30 – 15:30	In-Camera Session
15:30	Adjournment

For more information, contact Tracy Richards at trichards@egbc.ca or 604.412.6055.



OPEN AGENDA

DATE	June 25, 2021
TIME	11:00 – 13:50 (followed by agenda overflow buffer of 25 mins if needed)
LOCATION	Virtually Held Via Zoom Meeting Link sent via Outlook Invitation

11:00	4.0 OPEN SESSION CALL TO ORDER Chair: Larry Spence, P.Eng., President MOTION: That Council approve the Open Agenda in its entirety.			
11:00 (5 mins)	4.1 Declaration of Conflict of Interest			
11:05 (10 mins)	4.2 Safety Moment			
11:15 (15 mins)	5.0 OPEN CONSENT AGENDA MOTION: That Council approve all items (5.1 to 5.11) on the Open Consent Agenda.			
	5.1 April 23, 2021 Open Minutes MOTION: That Council approve the April 23, 2021 Open Meeting minutes as circulated.	April 23, 2021 Open Minutes		
	5.2 Appointments Approval MOTION: That Council approve the recommended re-appointment to the Discipline Committee as applicable.			

5.3	Appointment of Vice Chair for Credentials Committee MOTION: That Council approve the recommended appointment of Vice Chair to the Credentials Committee as presented. Nomination Committee	
5.4	Appointment of Engineers and Geoscientists BC Director to the Engineers Canada Board MOTION: That Council approve the recommended appointment of Engineers and Geoscientists BC's Director to Engineers Canada as presented. Executive Council Sub-Committee	
5.5	Policy on Review on the Record of a Decision of the Credentials Committee MOTION: That the policy on Review on the Record of a Decision of the Credentials Committee be approved by Council. Gillian Pichler, P.Eng., Advisor to the Director, Registration on behalf of Claudio Arato, P.Eng., FEC, Chair, Credentials Committee	Policy on Review on the Record of a Decision of the Credentials Committee
5.6	AGM Rules of Order MOTION: That Council approves the 2021 Annual General Meeting Rules of Order. Governance Council Sub-Committee	AGM Rules of Order
5.7	In-Camera Session Guideline Update MOTION: That Council approves the updated Guidelines for In-Camera Sessions after the Regular Closed and Open Council Meeting, CG-8. Governance Council Sub-Committee	In-Camera Session Guideline Update
5.8	Professional Practice Guidelines – Seismic Assessment and Seismic Design of Dikes in BC, Version 1.0 MOTION: That Council approves the <i>Professional</i> <i>Practice Guidelines – Seismic Assessment and</i> <i>Seismic Design of Dikes in BC</i> . Version 1.0 for	Professional Practice Guidelines – Seismic Assessment and Seismic Design of Dikes in BC, Version 1.0

5.9	 Professional Practice Guidelines – Structural Engineering Services for Tall Concrete Buildings Projects, Version 1.0 MOTION: That Council approves the Professional Practice Guidelines – Structural Engineering Services for Tall Concrete Building Projects, Version 1.0 for final legal and editorial review prior to publication. Allison DenToom, P.Eng., P.E., Practice Advisor, Professional Practice, Standards and Development 	Professional Practice Guidelines – Structural Engineering Services for Tall Concrete Buildings Projects, Version 1.0
5.10	Policy on Law and Ethics and Professional Engineering and Geoscience in BC Seminars Requirement MOTION: That the revisions to the policy on the Law and Ethics and Professional Engineering and Geoscience in BC Seminars be approved by Council. Jason Ong, Director, Registration on behalf of Claudio Arato, P.Eng., FEC, Chair, Credentials Committee	Policy on Law and Ethics and Professional Engineering and Geoscience in BC Seminars Requirement
5.11	Information Reports	
	5.11.1 CEO Report Heidi Yang, P.Eng., FEC, FGC (Hon.) Chief Executive Officer	CEO Report (Open)
	5.11.2 Professional Governance Act Implementation Update <i>Max Logan, Chief Operating Officer</i>	PGA Update Report
	5.11.3 Continuing Education Program and Annual Reporting Update <i>Stuart Nash, P.Eng., Manager, Professional</i> <i>Practice Development and Outreach</i> <i>Lindsay Steele, P.Geo., Associate Director,</i> <i>Professional Practice</i>	CEP and Annual Reporting Update Report
	5.11.4 Regulation of Firms Update Kelly Dayman, Eng.L., Associate Director, Regulation of Firms	Regulation of Firms Update Report
	 5.11.5 Climate Change Action Plan Update Harshan Radhakrishnan, P.Eng., Manager, Climate Change and Sustainability Initiatives Dr. Malcolm Shield, P.Eng., Chair, Engineers and Geoscientists BC Climate Change Advisory Group 	Climate Change Action Plan Update Report

5.11.6	Update on Implementation of Geoscience Canadian Environment Competencies <i>Michelle Cheng, Manager, Exams,</i> <i>Geoscience, Registration Integrity & Policy</i> <i>Jason Ong, Director, Registration on behalf of</i>	Geoscience Canadian Environment Competencies Update Report
	Claudio Arato, P.Eng., FEC, Chair, Credentials Committee	
5.11.7	30 x 30 Initiative Update	30x30 Initiative Update Report
	Ailene Lim, Acting Director, Programs and Professional Development	
	Marcie Cochrane, P.Eng., 30 by 30 Coordinator	
5.11.8	Selection of Nominees for Election to Council	Report on the Selection of Nominees for
	Lianna Mah, P.Eng., FEC, FGC (Hon.), Chair, Nomination Committee	Election to Council
5.11.9	Engineers Canada Director's Report	EC Director's Report
	Dr. Mike Wrinch, P.Eng., FEC, FGC (Hon.), Engineers and Geoscientists BC representative to Engineers Canada	
5.11.10) Geoscientists Canada Director's Report	GC Director's Report
	Del Ferguson, P.Geo., P.L.Eng., FGAC, FGC Engineers and Geoscientists BC representative to Geoscientists Canada	
5.11.11	Canadian Engineering Qualifications Board Report	CEQB Report
	Dr. Mahmoud Mahmoud, P.Eng., FEC, Chair of the Engineers Canada Qualifications Board	
	Karen Savage, P.Eng., FEC, Engineers and Geoscientists BC representative to the Engineers Canada Qualifications Board	
5.11.12	Canadian Engineering Accreditation Board Report	CEAB Report
	Julius Pataky, P.Eng., Engineers and Geoscientists BC representative to the Engineers Canada Accreditation Board	
5.11.13	PNWER Update on Activities	
	There is no update report included in this agenda package as PNWER has not engaged in much activity since the last meeting of Council.	

	Russ Kinghorn, P.Eng., FEC, FGC (Hon.), Engineers and Geoscientists BC PNWER representative	
	5.11.14 Engineers and Geoscientists BC Road Map for 2020/2021	Council Road Map
	Heidi Yang, P.Eng., FEC, FGC (Hon.), Chief Executive Officer	
	5.11.5 Council Attendance Summary Report Heidi Yang, P.Eng, FEC, FGC (Hon.), Chief	Council Attendance Summary Report
	Executive Officer	
11:30	6.0 OPEN REGULAR AGENDA	
11:30 (20 mins)	6.1 Amendments to the Bylaws of Engineers and Geoscientists BC	Amendments to the Bylaws of Engineers and Geoscientists BC
(20 mm3)	MOTION: That Council approve the attached amended draft Bylaws and authorize staff to forward these amended Bylaws to the Office of the Superintendent of Professional Governance for filing with the Attorney General pursuant to section 37 of the PGA.	
	Efrem Swartz, LLB, Director, Legislation, Ethics and Compliance	
	Laura Wilson, JD, Legal Counsel, Policy and Regulation of Firms	
11:50	6.2 Council Meeting Guidelines & Decision Making Process	Council Meeting Guidelines & Decision
(25 mins)	MOTION 1: That Council approve the Policy on Council Meetings.	Making Process
	MOTION 2: That Council repeal Bylaw 2.4 (3): The rules contained in Robert's Rules of Order must govern the conduct of Council meetings, as applicable, except where Robert's Rules of Order are inconsistent with the Bylaws or any policies, procedures, or rules of order adopted or established by Council pursuant to subsection (2).	
	Governance Council Sub-Committee	
12:15 (45 mins)	LUNCH BREAK	
13:00	6.3 Fee Waiver for Outgoing President	Fee Waiver for
(15 mins)	MOTION: That Council approves the following bylaw to be inserted as the new subsection 6.7 (4): The Council may waive payment of all or part of a fee, either annually or on a permanent basis, including the annual fee and special assessments,	

	for an individual Registrant who demonstrates exemplary service to Engineers and Geoscientists BC in the role of Council President and who the Council accordingly wishes to honour. <i>Governance Council Sub-Committee</i>		
13:15 (15 mins)	 6.4 Vice President Appointment Policy MOTION: That Council approves the Policy for Vice President Appointment. Governance Council Sub-Committee 	Vice President Appointment Policy	
13:30 (20 mins)	 6.5 BC Higher Education Institution Update For information only. Peter Wild, P.Eng., Ph.D, Professor & Acting Dean, Faculty of Engineering, University of Victoria 		
13:50	END OF OPEN SESSION		
13:50 (25 mins)	AGENDA OVERFLOW BUFFER		
14:15 (15 mins)	BREAK BEFORE IN-CAMERA SESSION		
14:30 (60 mins)	IN-CAMERA SESSION		
15:30	ADJOURNMENT		

MINUTES OF THE OPEN SESSION OF THE FIFTH MEETING OF THE 2020/2021 COUNCIL of Engineers and Geoscientists BC, <u>held on April 23, 2021 virtually via Zoom.</u>

Present

Council	
Larry Spence, P.Eng.	President (2020/2021)
Carol Park, P.Eng.	Vice President (2020/2021)
Lianna Mah, P.Eng., FEC	Immediate Past President (2020/2021)
Mark Adams, P.Eng.	Councillor (2020/2021)
Tomer Curiel, P.Eng., FEC	Councillor (2020/2021)
Leslie Hildebrandt, LL.B, ICD.D	Councillor (2020/2021)
Emily Lewis, CPA, CMA	Councillor (2020/2021)
Michelle Mahovlich, P.Eng., P.Geo.	Councillor (2020/2021)
Nathan Ozog, P.Eng., FEC	Councillor (2020/2021)
Jessica Steeves, P.Eng.	Councillor (2020/2021)
Tom Tiedje, P.Eng.	Councillor (2020/2021)
Kevin Turner. P.Eng., FEC, FGC (Hon.)	Councillor (2020/2021)
Jeremy Vincent, P.Geo.	Councillor (2020/2021)
Brent Ward, P.Geo., FGC, FEC (Hon.)	Councillor (2020/2021)
Christine Lambert, P.Geo.	Councillor (2020/2021)
David Wells, JD	Councillor (2020/2021)
Guests	
Jeff Holm, P.Eng., FEC, FGC (Hon.)	Engineers and Geoscientists BC Director to Engineers Canada Engineers and Geoscientists BC Director to
Dr. Mike Wrinch, P.Eng., FEC, FGC, (Hon.)	Engineers Canada Engineers and Geoscientists BC Representative to
Karen Savage, P.Eng., FEC	Engineers Canada Qualifications Board
Dr. Mahmoud Mahmoud, P.Eng., FEC Julius Pataky, P. Eng.	Chair of the Engineers Canada Qualifications Board Engineers and Geoscientists BC Appointee to Canadian Engineering Accreditation Board Engineers and Geoscientists BC Representative to
Russ Kinghorn, P.Eng., FEC, FGC (Hon.)	PNWER
Theresa McCurry, BSc, PMP	Chief Executive Officer, ASTTBC
Caroline Andrewes, P.Eng., FEC, FGC (Hon.)	President & CEO of ACEC-BC
Stella Chiu, P.Eng.	Registrant
Staff	
Jennifer Cho, CPA, CGA	Chief Financial & Administration Officer
Mark Rigolo, P.Eng.	Acting Chief Regulatory Officer
Max Logan	Chief Operating Officer
Efrem Swartz	Director – Legislation, Ethics & Compliance

Peter Mitchell, P.Eng.

Megan Archibald

Deesh Olychick Gillian Pichler, P.Eng. Director - Professional Practice, Standards &

Director - Communications & Stakeholder

Director - Corporate Governance & Strategy

Development

Engagement

Director - Registration

Alicia Tan, CPA, CMA	Associate Director, Finance and Administration
Kevin O'Connell, CPHR	Associate Director, Human Resources
Lindsay Steele, P.Geo.	Associate Director, Professional Practice
Kelly Dayman, AScT, Eng.L.	Associate Director, Regulation of Firms
Jason Ong	Associate Director, Engineering Admissions Acting Director, Programs and Professional
Ailene Lim	Development
Tracy Richards	Executive Assistant to Council and to the Chief Executive Officer & Registrar
Allison Ross	Executive Assistant to the CFAO & CRO

Regrets

Suky Cheema, CPA, CA

Councillor (2020/2021)

OPEN SESSION – CALL TO ORDER

Larry Spence, P.Eng., President and Chair, called the meeting to order at 10:45 a.m.

The Chair began the Open Session by acknowledging the ancestral, traditional and unceded Aboriginal territories of the West Kootenay and Boundary regions Peoples, and in particular, the Sinix, the Syilx, Ktunaxa, and the Secweperc on whose territory he stands.

Deesh Olychick, Director, Corporate Governance and Strategy acted as the Parliamentarian. Councillor Michelle Mahovlich, P.Eng., P.Geo. acted as the EDI Champion.

Then Chair then proceeded to introduce Emily Lewis, CPA, CMA Engineers and Geoscientists BC 's new government appointee to Council. He provided Council with a brief backgrounder on Ms. Lewis' prior employment and volunteer experience and asked the Council to join him in welcoming Emily Lewis.

Guests: The Chair advised that Mike Wrinch, P.Eng., FEC, FGC, (Hon.) and Jeff Holm, P.Eng., FEC, FGC (Hon.) Engineers and Geoscientists BC Directors to Engineers Canada, Karen Savage, P.Eng., FEC, Engineers and Geoscientists BC Representative to Engineers Canada Qualifications Board and Mahmoud Mahmoud, Chair, Engineers Canada Qualifications Board would be joining for the Open Session.

Also in attendance were Russ Kinghorn, P.Eng., FEC, FGC (Hon.) Engineers and Geoscientists BC Representative to PNWER as well as Julius Pataky, P.Eng. Engineers and Geoscientists BC Representative to Canadian Engineering Accreditation Board. Additional guests included Theresa McCurry, BSc, PMP, CEO of ASTTBC, as well as Past President Caroline Andrewes, P.Eng., FEC, FGC (Hon.) President & CEO of ACEC-BC and Stella Chiu, P.Eng. (registrant) who attended as observers.

- CO-21-63 OPEN SESSION CALL TO ORDER
- MOTION It was moved and seconded that Council approve the Open Agenda in its entirety, with the exception of the removal of Items 5.14 and 5.17.6 from the Open Consent Agenda becoming Items 6.8 and 6.9 of the revised Open Regular Agenda.

CARRIED

DECLARATION OF CONFLICT OF INTEREST

None declared.

SAFETY MOMENT

Councillor Mark Adams, P.Eng. provided the Safety Moment for the meeting.

CO-21-64 OPEN CONSENT AGENDA

MOTION It was moved and seconded that Council approve all items (5.1 to 5.17) on the Open Consent Agenda with the exception of the removal of Items 5.14 and 5.17.6.

CARRIED

Motions carried by approval of the Consent Agenda:

5.1 Approval of Previous Minutes

MOTION: That Council approve the February 5, 2021 Open Meeting minutes as circulated.

5.2 Appointments Approval

MOTION 1: That Council approve the recommended re-appointment of the Engineers and Geoscientists BC representative to Pacific Northwest Economic Region (PNWER) as applicable.

MOTION 2: That Council approve the recommended re-appointment to the Credentials Committee as applicable.

MOTION 3: That Council approve the recommended appointment and re-appointments to the Discipline Committee as applicable.

MOTION 4: That Council approve the recommended re-appointment to the Investigation Committee as applicable.

Individual, Designation	Position	Engineers and Geoscientists BC Volunteer Group/Outside Organization	Staff Contact	Start Date	Expiry Date	New/Returning/ * Over 6 Years
N	lew Appoint	ments and Re-Appoi	ntments (ov	er six yea	ars)	
Kevin Allen Riederer, P.Eng., Struct.Eng., FEC	Member	Credentials Committee	Gill Pichler	April 18, 2021	April 17, 2023	Over 6 Years
Jaswinder Bansal, P.Eng.	Member	Discipline Committee	Jesse Romano	April 23, 2021	April 23, 2023	New
Re-appointments (under six vears)						
Russ Kinghorn, P.Eng., FEC, FGC, (Hon.)	Member	Representative to PNWER	Ann English	June 1, 2021	May 31, 2023	Returning
Emily Cheung, P.Eng.	Member	Discipline Committee	Jesse Romano	June 22, 2021	June 22, 2023	Returning

Thomas Morrison, P.Eng., (Non-Practicing)	Member	Discipline Committee	Jesse Romano	April 23, 2021	April 23, 2022	Returning
Douglas Nicol, P.Eng.	Member	Investigation Committee	Jesse Romano	June 22, 2021	June 21, 2023	Returning

5.3 Appointment of Government Appointee to Council Sub-Committee

MOTION: That Council approve the appointment of Emily Lewis, CPA, CMA to the Council Audit Sub-Committee for the term ending October 30, 2021.

5.4 Appointment of Vice Chair for Investigation Committee

MOTION: That Council appoint Robert [Allan] Dakin, P.Eng., FEC, as Vice Chair of the Investigation Committee until April 23, 2022.

5.5 February 28, 2021 Financial Update

MOTION 1: That Council receives the Engineers and Geoscientists British Columbia financial results as at February 28, 2021.

MOTION 2: That Council receives the updated FY 2021 Contingency Plan and Forecast as presented.

5.6 <u>Professional Practice Guidelines - Fire Protection Engineering Services</u> for Building Projects, Version 2.0

MOTION: That Council approves the *Professional Practice Guidelines Fire Protection Engineering Services for Building Projects,* Version 2.0 for final legal and editorial review prior to publication.

5.7 <u>Professional Practice Guidelines - Alteration of Elevating Devices in</u> <u>Existing Buildings, Version 1.0</u>

MOTION: That Council approves the *Joint AIBC/EGBC Guidelines for Professional Responsibilities for the Alteration of Elevating Devices in Existing Buildings,* Version 1.0 for final legal and editorial review prior to publication.

5.8 <u>Professional Practice Guidelines – Local Government Asset Management,</u> Version 1.0

MOTION: That Council approves the *Professional Practice Guidelines – Local Government Asset Management*, Version 1.0, for final legal and editorial review prior to publication.

5.9 <u>Professional Practice Guidelines – Professional Responsibilities for the</u> <u>Design and Installation of Elevating Devices in New Buildings, Version 3.0</u>

MOTION: That Council approves the *Joint AIBC/EGBC Guidelines for Professional Responsibilities for the Design and Installation of Elevating Devices in New Buildings,* Version 3.0 for final legal and editorial review prior to publication.

5.10 <u>Guide to the Letters of Assurance in the BC Building Code 2018 and</u> <u>Vancouver Building By-Law 2019, Version 6.0</u>

MOTION: That Council endorses the document Guide to the Letters of Assurance in the BC Building Code 2018 and Vancouver Building By-Law 2019, Version 6, to be published by the Building and Safety Standards Branch of the Government of BC.

5.11 <u>Application of the Seismic Retrofit Guidelines to all Existing Low-Rise</u> <u>Buildings in BC</u>

MOTION: That Council endorses the SRG2020 - Low Rise Buildings and the Seismic Performance Analyzer 1 version 4.1 as good professional practice in the seismic assessment and retrofit of low-rise buildings in British Columbia.

5.12 Municipal Natural Assets Initiative

MOTION: That Council endorses the Natural Asset Management Considerations for Engineering and Geoscience Professionals document, to be published by the Municipal Natural Asset Initiative.

5.13 Format for the 2021 Annual General Meeting

MOTION 1: That Council rescinds the following motion carried at its June 21, 2019 meeting: "*That Council approve the 2021 Annual General Meeting of Engineers and Geoscientists BC be held at the Whistler Conference Centre in Whistler, BC on October 30, 2021 at 8:30 AM*".

MOTION 2: That Council approve the 2021 Annual General Meeting of Engineers and Geoscientists BC be held by electronic means on October 30, 2021 at 8:30 AM.

5.14 Council Election Policy Revision

This item was pulled into the Open Regular Agenda to become Item 6.8.

5.15 Updated Council Policy CG-7 – The Role of Chief Executive Officer

MOTION: That Council approves the updated Council Policy CG-7 to become effective when the new CEO commences in the role.

5.16 Equity, Diversity, and Inclusion Statement

MOTION: That Council receive the Equity, Diversity and Inclusion statement and that staff be directed to implement the proposed supporting actions.

- 5.17 The following information reports were received by Council:
 - Branch Engagement Report
 - Fairness Panel Annual Report
 - Professional Governance Act Implementation Update
 - Strategic Planning Process Update
 - Council Policy Updates (this item was pulled into the Open Regular Agenda to become Item 6.9).
 - Quality Management Guide to the Standard for Independent Reviews of High-Risk Professional Activities or Work
 - Advocacy Review of Programs
 - Regulation of Firms Update
 - Engineers Canada Directors' Report
 - Canadian Engineering Qualifications Board Report
 - Canadian Engineering Accreditation Board Report
 - Engineers and Geoscientists BC Road Map for 2020/2021
 - Council Attendance Summary Report

CO-21-65 ENGINEERS AND GEOSCIENTISTS BC 2022 DRAFT BUDGET REVIEW

MOTION 1: It was moved and seconded that Council approve that: a) the Professional Practice Examination fee be reduced to \$250 effective the first session in FY2022 and that Schedule C of the Bylaws be updated accordingly; b) the Academic Examination Reread Fee be reduced to \$200 effective immediately and that Schedule C of the Bylaws be updated accordingly; c) the Academic Examination fee be reassessed during FY2022 when the partnering model with other jurisdictions has been finalized; d) that effective July 1, 2021, ancillary fees that contain amounts in cents be rounded to the suggested amount and that Schedule C of the Bylaws be updated accordingly; and e) that all other registration ancillary fees remain unchanged for FY2022.

CARRIED

MOTION 2: It was moved and seconded that Council approve Scenario B of the draft FY2022 Engineers and Geoscientists BC Operating and Capital Budget -\$10 inflationary fee increase and a reduction of the non-practicing fee to 25% of the annual fee.

CARRIED

CO-21-66 REMUNERATION POLICY FOR COUNCIL

MOTION 1: It was moved and seconded that Council approve the following Remuneration Policy Statement:

"Engineers and Geoscientists BC provides remuneration to its Council members in order to:

- 1. Affirm the Councillor's responsibilities and the professional nature of the work that Councillors are expected to perform;
- 2. Attract and retain qualified individuals to serve as Councillors;
- 3. Partially compensate Councillors for their time and lost opportunity costs, and be seen as "value received " for value given;

- 4. Recognize the different levels of time and responsibility associated with President, Vice President, Immediate Past President and Councillor positions, and
- 5. Recognize an element of public service."

CARRIED

- MOTION 2: It was moved and seconded that Council create a subcommittee of Council consisting of the government appointees and the immediate past president, and delegate to them the following duties and decisions:
 - Apply Engineers and Geoscientists BC's Council Remuneration Policy to the options presented in the Watson Report - Advice on Councillor Remuneration, and
 - Establish Engineers and Geoscientists BC's Elected Council compensation approach (quantum, scope and implementation schedule).

CARRIED

CO-21-67 CODE OF CONDUCT FOR COUNCIL MEMBERS

MOTION: It was moved and seconded that Council approve the new Code of Conduct for Council Members and that it take effect beginning with the 2021/22 Council year, replacing Policy CG-6.

CARRIED

CO-21-68 ENGINEERS CANADA STRATEGIC PLAN AND BYLAW AMENDMENTS

MOTION: It was moved and seconded that Council direct their representative to vote in favor of the following two motions at the Engineers Canada meeting of the members on May 29th, 2021:

EC Motion (1) 2022-2024 Strategic Plan: THAT the 2022-2024 Strategic Plan be approved.

EC Motion (2) By-law amendments:

THAT the By-Laws be amended as follows:

1.1 "Per Capita Assessment" means the annual amount to be paid by each Member as determined by its number of Registrants, as further defined in Article 7.

5.8 "The Board shall submit recommendations to the Members on the following matters, by a vote passed by majority of not less than two-thirds of the vote cast, provided that no decision in respect thereof shall have any force or effect until approved by the Members in accordance with section 3.4 of this By-law: (b) The amount of the Per Capita Assessment.

CARRIED

CO-21-69 ADVOCACY REVIEW – AWARDS PROGRAM

MOTION 1: It was moved and seconded that Council direct staff to revise all Engineers and Geoscientists BC awards Terms of Reference to reflect the new program purpose and align with our regulatory mandate and the advocacy framework of the OSPG.

CARRIED

MOTION 2: It was moved and seconded that the Community Service Award be retired from the awards program, effective in 2022.

CARRIED

MOTION 3: It was moved and seconded that the Teaching Award be retired from the awards program, effective in 2022.

CARRIED

MOTION 4: It was moved and seconded that external nominations to the Order of BC, the Order of Canada, and the YWCA Women of Distinction Awards be discontinued, effective in 2022.

CARRIED

MOTION 5: It was moved and seconded that an Equity, Diversity, and Inclusion Award be established, effective in 2022.

CARRIED

CO-21-70 EDITORIAL REVIEW PROCESS FOR INNOVATION MAGAZINE

Megan Archibald, Director, Communications and Stakeholder Engagement provided Council with a presentation on the processes involved for the selection of feature articles for publishing in *Innovation* magazine and addressed any questions from the floor.

There was no motion associated with this item.

CO-21-71 2021 SCIENCE GAMES SUMMARY

Ailene Lim, Acting Director, Programs and Professional Development led Council through a brief presentation of the highlights of the 2021 Science Games which were held virtually this year due to COVID-19.

There was no motion associated with this item.

CO-21-72 COUNCIL ELECTION POLICY REVISION

This item was pulled from the Open Consent Agenda to become Item 6.8 of the Open Regular Agenda, as a councillor requested the opportunity to discuss the content within the report.

MOTION It was moved and seconded that Council approve the revised Election Policy as presented.

CARRIED

CO-21-73 COUNCIL POLICY UPDATES

This item was pulled from the Open Consent Agenda to become Item 6.9 of the Open Regular Agenda, as a councillor requested clarification and the opportunity to discuss the content within the information report.

There was no motion associated with this item.

END OF OPEN SESSION

The meeting ended at 3:35 p.m.



OPEN SESSION ITEM 5.5

DATE	June 10, 2021
REPORT TO	Council for Decision
FROM	Gillian Pichler, P.Eng., Advisor to the Director, Registration on behalf of
	Claudio Arato, P.Eng., FEC, Chair, Credentials Committee
SUBJECT	Review on the Record Policy for Credentials Committee
	Goal 1, Strategy 2: Identify and implement practices, programs, policies,
	bylaws and Act amendments that improve Engineers and Geoscientists BC's
STRATEGIC PLAN	ability to more effectively carry out its duty and objects.
Purpose	To implement and publish a policy that sets out the requirements and procedure
	for a Review on the Record of a Decision of the Credentials Committee in
	accordance with Bylaw 5.22.
Motion	That the Policy on Review on the Record of a Decision of the Credentials

BACKGROUND

The Professional Governance Act (Section 48) and Engineers and Geoscientists BC's bylaws (Section 5.22) set out the requirement for a Review on the Record of a Credentials Committee decision. The Bylaws delegate the responsibility for Reviews on the Record to the Registrar.

Committee be approved by Council.

The Bylaws allow the Council to approve policies and procedures for the conduct of Reviews on the Record pursuant to this section of the Bylaws. Any policies and procedures for the conduct of reviews on the record approved by the Council pursuant to the Bylaws must be published on a public website maintained by Engineers and Geoscientists BC.

DISCUSSION

The Review on the Record is a new process that was initiated by the Professional Governance Act ("the PGA"). It is a quasi-judicial alternative or next step to the process for reconsideration of decisions of the Credentials Committee.

Prior to the EGA's coming into force, reviews of Registration (now Credentials) Committee decisions were conducted under the Policy on The Fairness Panel and Review of Reassessment Requests (recently updated to be compliant with Bylaw 5.21 and renamed as the Policy on Reconsideration of a Decision of the Credentials Committee). The Reconsideration process is a less-restrictive, less expensive alternative to a Review on the Record. An applicant may begin with an application for Reconsideration and then choose to apply for a Review on the Record if not satisfied with the results of a Reconsideration; or may choose to apply directly for a Review on the Record without first applying for a Reconsideration.

The subject policy: the Policy on Review on the Record of a Decision of the Credentials Committee, was developed by Registration staff with consultation from Legislation, Ethics and Compliance, It sets out the requirements and procedure for a Review on the Record of a decision of the Credentials Committee in order to provide additional clarity for applicants, the Committee and the Registrar.

During the development of the Policy, it was identified that the wording of Bylaw 5.22 (5)(a) was difficult to interpret. Proposed changes to this wording of Bylaw 5.22 are before Council at its June 9, 2021 meeting. In anticipation of the approval of the revised bylaw wording, it has been incorporated into the Policy and has been highlighted with a comment in the draft Policy in **Appendix A**.

MOTION

That the Policy on Review on the Record of a Decision of the Credentials Committee be approved by Council.

APPENDIX A –Policy on Review on the Record of a Decision of the Credentials Committee

Engineers and Geoscientists BC Council | June 25, 2021



OPEN SESSION

ITEM 5.6

DATE	June 10, 2021	
REPORT TO	Council for Decision	
FROM	Governance Council Sub-Committee	
SUBJECT	Annual General Meeting Rules of Order	
LINKAGE TO STRATEGIO PLAN	We support effective governance.	
Purpose To rev	iew and approve the rules of order for the 2021 Annual General Meeting.	
Motion That C	That Council approves the 2021 Annual General Meeting Rules of Order.	

BACKGROUND

At its April 23, 2021 meeting, Council determined that the 102nd Annual General Meeting (AGM) will be held on October 30, 2021 by electronic means. The meeting will be held following the format established for the 2020 meeting. The AGM rules of order, which are reviewed by the Governance Sub-committee each year, are intended to facilitate progress at the meeting and outline meeting protocols.

Recognizing that meeting protocols for an electronic meeting are much different than in-person, Council approved new rules in 2020 to support an effective virtual meeting.

DISCUSSION

Bylaw 3.1 (4) authorizes Council to establish policies, procedures, or rules of order, for the purpose of regulating the conduct of a general meeting. The rules used in 2020 have been updated to reflect Council's authority in establishing the rules of order, the ability for trainees to vote, and the CEO's role in receiving registrant motions, as outlined in Bylaw.

The updated rules were reviewed and endorsed by the Governance Sub-committee at its May 25, 2021 meeting and are included as **Attachment A** (track change) and **Attachment B** (clean copy).

RECOMMENDATION

The Governance Council Sub-Committee recommends to Council that the 2021 AGM Rules of Order be approved.

MOTION

That Council approves the 2021 Annual General Meeting Rules of Order.

ATTACHMENT A – 2021 Rules of Order (track change)

ATTACHMENT B – 2021 Rules of Order (clean copy)

Engineers and Geoscientists BC Council | June 25, 2021



ANNUAL GENERAL MEETING RULES

OCTOBER 1730, 20202021

In accordance with the Ministerial Order No. <u>M167Bylaw 3.1 (4)</u>, Council may establish <u>policies</u>, <u>procedures</u>, or rules of order, for the purpose of regulating the conduct of a general meeting. rules and procedures to enable participation in the statutory meeting of persons who are entitled to participate in the statutory meeting. The following Special Rules of Order for the Association were approved by Council on <u>July 29June 25, 2021, 2020</u> to govern the Annual General Meeting.

The Annual General Meeting rules of order set out below are intended to facilitate progress at the meeting, include registrants in orderly debate and decision-making, and ensure fairness, equality and common sense.

General

- Registrants attending the Annual General Meeting (AGM) will be required to pre-register for the AGM by 5 PM on October <u>1225</u>, <u>2020-2021</u> in order to establish secure voting credentials for registrants with voting rights. Log-in credentials will be emailed to participants in advance of the AGM.
- The meeting will be run in accordance with the relevant provisions of the <u>Engineers and</u> <u>GeoscientistsProfessional Governance</u> Act, Bylaws and the <u>Special</u> Rules of Order established by Council. Where the Act, Bylaws and <u>Special</u> Rules of Order are silent, the current edition of Robert's Rules of Order Newly Revised (RONR) will apply.
- 3. The meeting shall conclude by 12:00 pm.
- Only registrants in good standing (Engineers and Geoscientists BC registered practicing, nonpractising or retired professional engineers (P.Eng.), professional geoscientists (, P.Geo,), and/or professional lLicensees (P.L.Eng.L, P.L.Geo.) Geo. L and/or trainees (EIT, GIT) are entitled to make or second motions, comment on motions, and vote.
- 5. The proceedings will be conducted via webcast.
- 6. Registrants will have the opportunity to submit questions online during the meeting.
- 7. Questions will be read on behalf of the registrant during the designated Question Period.

7.

Registrant Motions

- To be considered, registrant motions must be submitted in writing to the <u>Registrar_CEO</u> no later than 5:00 PM on September <u>1829</u>, <u>20202021</u>.
- All submitted motions will be reviewed by the President, the Parliamentarian, and the chair or a member of the Governance CommitteeCEO, to ensure they are in order (as per Robert's Rules)¹ for consideration by the meeting.

¹ In essence, Roberts Rules of Order require that a motion will be considered to be out of order if, amongst other things, it is beyond the objects and business of the Association, or is absurd, discourteous or uses language that reflects on a member's conduct or character.

- 10. All registrant motions must be written as advisory for the consideration of Council.
- 11. The mover and seconder of a registrant motion must be in attendance when the motion is considered.
- 12. Submitted motions may not include a preamble that is part of the motion. However, after the motion, the written statement may include a brief rationale that is not part of the motion.
- 13. If the submitted motion is in order for consideration by the meeting, the registrant making the motion will be provided with an opportunity to pre-record a 2 minute or less <u>audio</u> introduction to their motion in advance of the meeting. The recording will be played during the meeting.

Debate/ Questions

- 14. Registrants may submit questions or make comments during designated Question Periods. A registrant who wishes to submit a question or make a comment during the meeting must type the question or comment by using the Question feature.
- 15. Each Question Period will be allotted 10 minutes.
- 16. Registrants must observe decorum, and must avoid personal attacks in questions submitted.
- 17. Only questions germane to the topic or pending motion will be addressed.
- 18. Questions not addressed at the meeting may be emailed to <u>agmquestion@egbc.ca</u> for follow up after the meeting.

Voting

- Only registrants in good standing (Engineers and Geoscientists BC registered <u>practicing</u>, <u>non-practising or retired professional engineers (P.Eng.)</u>, <u>professional geoscientists (P.Geo,)</u>, <u>professional licensees (P.L.Eng, P.L.Geo.) and/or trainees (EIT, GITP.Eng., P.Geo, and/or Licensee Eng. L, Geo. L.</u>) are entitled to vote on motions.
- 20. Only registrants in good standing (Engineers and Geoscientists BC registered practicing, non-practising or retired professional engineers (P.Eng.), professional geoscientists (P.Geo,), professional licensees (P.L.Eng, P.L.Geo.) and/or trainees (EIT, GITP.Eng., P.Geo, and/or Licensee Eng. L, Geo L.) will be able to access polls to cast their vote on motions, provided they have registered for the AGM by October 1225, 20210.



ANNUAL GENERAL MEETING RULES

OCTOBER 30, 2021

In accordance with Bylaw 3.1 (4), Council may establish policies, procedures, or rules of order, for the purpose of regulating the conduct of a general meeting. The following Rules of Order were approved by Council on June 25, 2021 to govern the Annual General Meeting.

The Annual General Meeting rules of order set out below are intended to facilitate progress at the meeting, include registrants in orderly debate and decision-making, and ensure fairness, equality and common sense.

General

- 1. Registrants attending the Annual General Meeting (AGM) will be required to pre-register for the AGM by 5 PM on October 25, 2021 in order to establish secure voting credentials for registrants with voting rights. Log-in credentials will be emailed to participants in advance of the AGM.
- 2. The meeting will be run in accordance with the relevant provisions of the *Professional Governance Act*, Bylaws and the Rules of Order established by Council. Where the *Act*, Bylaws and Rules of Order are silent, the current edition of Robert's Rules of Order Newly Revised (RONR) will apply.
- 3. The meeting shall conclude by 12:00 pm.
- 4. Only registrants in good standing (Engineers and Geoscientists BC registered practicing, non-practising or retired professional engineers (P.Eng.), professional geoscientists (P.Geo,), professional licensees (P.L.Eng, P.L.Geo.) and/or trainees (EIT, GIT) are entitled to make or second motions, comment on motions, and vote.
- 5. The proceedings will be conducted via webcast.
- 6. Registrants will have the opportunity to submit questions online during the meeting.
- 7. Questions will be read on behalf of the registrant during the designated Question Period.

Registrant Motions

- 8. To be considered, registrant motions must be submitted in writing to the CEO no later than 5:00 PM on September 29, 2021.
- All submitted motions will be reviewed by the CEO, to ensure they are in order (as per Robert's Rules)¹ for consideration by the meeting.
- 10. All registrant motions must be written as advisory for the consideration of Council.
- 11. The mover and seconder of a registrant motion must be in attendance when the motion is considered.

¹ In essence, Roberts Rules of Order require that a motion will be considered to be out of order if, amongst other things, it is beyond the objects and business of the Association, or is absurd, discourteous or uses language that reflects on a member's conduct or character.

- 12. Submitted motions may not include a preamble that is part of the motion. However, after the motion, the written statement may include a brief rationale that is not part of the motion.
- 13. If the submitted motion is in order for consideration by the meeting, the registrant making the motion will be provided with an opportunity to pre-record a 2 minute or less audio introduction to their motion in advance of the meeting. The recording will be played during the meeting.

Debate/ Questions

- 14. Registrants may submit questions or make comments during designated Question Periods. A registrant who wishes to submit a question or make a comment during the meeting must type the question or comment by using the Question feature.
- 15. Each Question Period will be allotted 10 minutes.
- 16. Registrants must observe decorum, and must avoid personal attacks in questions submitted.
- 17. Only questions germane to the topic or pending motion will be addressed.
- 18. Questions not addressed at the meeting may be emailed to <u>agmquestion@egbc.ca</u> for follow up after the meeting.

Voting

- Only registrants in good standing (Engineers and Geoscientists BC registered practicing, nonpractising or retired professional engineers (P.Eng.), professional geoscientists (P.Geo,), professional licensees (P.L.Eng, P.L.Geo.) and/or trainees (EIT, GIT) are entitled to vote on motions.
- 20. Only registrants in good standing (Engineers and Geoscientists BC registered practicing, non-practising or retired professional engineers (P.Eng.), professional geoscientists (P.Geo,), professional licensees (P.L.Eng, P.L.Geo.) and/or trainees (EIT, GIT.) will be able to access polls to cast their vote on motions, provided they have registered for the AGM by October 25, 2021.



OPEN SESSION

ITEM 5.7

DATE	June 10, 2021	
REPORT TO	Council for Decision	
FROM	Governance Council Sub-Committee	
SUBJECT	In-Camera Session Guideline Update	
LINKAGE TO STR PLAN	ATEGIC We support effective governance.	
Purpose	To review and consider updates to the Guidelines for Council In-Camera Sessions.	
Motion	That Council approves the updated Guidelines for In-Camera Sessions after the Regular Closed and Open Council Meeting, CG-8.	

BACKGROUND

As part of the In-camera Session, Council carries out a self-assessment of the overall effectiveness of the Council meeting. Following a suggestion from Council, management developed a Council Meeting Effectiveness Checklist which was shared with Council at their February 2021 meeting.

At the February 2021 In-Camera Session, Council recommended that the Guidelines for In-Camera Sessions be updated to include the Council Meeting Effectiveness Checklist for Councils to consider going forward.

The Governance Sub-Committee reviewed the updated Guidelines and made some further recommendations to the Guidelines, including:

- 1. Ensuring the Meeting Effectiveness Checklist is kept top of mind and used as a guide to facilitate Council's self-reflection of the meeting
- 2. Flexibility in the time allotted, recognizing there may be times when more time is required due to the nature of the items requiring discussion

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3. Referencing the standing items generally reserved for the In-Camera session, which are a post-meeting brief with the CEO, meeting self-assessment and any update/check-in from the President

The track change version of the policy with the checklist appended is included as **Attachment A**. A clean version of the policy is included as **Attachment B**.

RECOMMENDATION

The Governance Sub-committee recommends that Council approve the updated Guidelines for In-Camera Sessions after the Regular Closed and Open Council Meeting, CG-8

MOTION

That Council approves the updated Guidelines for In-Camera Sessions after the Regular Closed and Open Council Meeting, CG-8.

ATTACHMENT A – Guidelines for Council In-Camera Session (track change)

ATTACHMENT B – Guidelines for Council In-Camera Session (clean version)

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POLICY

POLICY	Guidelines for Council In-Camera Sessions after the Regular Closed and Open Council Meeting, CG-8
NUMBER OF POLICY	CO-15-51
DATE OF POLICY	April 17, 2015June 25, 2021
APPROVED BY	Council

- Attendance is limited to all members of Council only except that the CEO will attend the initial
 portion of the meeting to participate in discussions pertaining to staff and/or to follow up on
 requests for information from Council members. <u>The session may be attended by other staff,
 when deemed appropriate by the CEO and Chair.</u>
- The primary purpose of these meetings is for Council <u>reflection</u>, to carry out a self-assessment of the overall effectiveness of Council during the previous closed and open Council meetings and to make recommendations for improvements.
- The Council Meeting Effectiveness Checklist is to be used as a guide to support Council's self-assessment of the Council Meeting. Such sessions can also be used as information sharing amongst the members of Council.

<u>In-CameraSuch</u> sessions can also be used as information sharing amongst the members of <u>Council.</u>

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- Generally, iltems that should be dealt with as a closed or open Council meeting item should not have a substantive discussion at the In-Camera sessions. Any formal Council decisions that should be made at the closed or open Council meetings shall not be made at the In-Camera sessions.
- While no formal agenda is prepared for In-Camera sessions, the format includes a postmeeting brief with the CEO, meeting self-assessment and a general update/check in from the <u>President.</u>
- or<u>M</u>-minutes are <u>not</u> prepared for the In-<u>camera</u> <u>Camera</u> <u>meetingssessions</u>, <u>and</u> any follow up requests should be noted by the Chair (usually the current President) and subsequently conveyed to the CEO at the earliest opportunity.
- In-Camera sessions should are generally not be longer than half an hour<u>30 minutes</u> in duration but there may be times when more time is required due to the nature of the items

being brought forward.since there may be other events planned for some or all members of Council later on that day to capitalize on their physical presence.

COUNCIL MEETING EFFECTIVENESS

CHARACTERISTICS OF AN EFFECTIVE MEETING

Agenda

- 1. Agenda topics are clear, focused, appropriate and reflect the annual work plan
- 2. There is a clear link between agenda items and the organization's strategic priorities
- 3. A consent agenda is used for items that do not require council discussion

4. Adequate discussion time is given to all agenda items with the most critical or strategic items being dealt with first

Materials

5. Meeting materials are provided with enough time to adequately prepare for the meeting6. Meeting materials are clear, concise and help councillors focus on the issues that need to be considered at the meeting

7. Council members have a clear understanding of the objectives for the meeting and for each agenda item

Chair

8. The Chair guides the meeting efficiently and effectively, keeps discussions on track, and encourages participation

Meeting Participation

9. The meeting starts and ends on time

10. All councillors are prepared for the meeting

11. Discussions are focused primarily on strategic/governance matters as opposed to operational items

12. All councillors contribute to, or are encouraged to contribute to, discussions and decisionmaking

13. There is a robust discussion that is respectful and meaningful, and any disagreements are handled appropriately

14. There is a clear unity amongst councillors once decisions are made

Meeting Follow-Up & Effectiveness

15. Follow-up actions and responsibilities are clearly identified and assigned

16. The meeting is effective overall

MEETING EFFECTIVENESS CHECKLIST

- 1. The agenda was clear and realistic for the allotted meeting time.
- 2. Agenda topics were appropriate (reflected Council's terms of reference and annual road map).
- 3. Appropriate information was available to support Council in making informed decisions.
- 4. Time was used effectively and discussions were focused.
- 5. Discussion was respectful and disagreements were handled appropriately.
- 6. We maintained a strategic perspective and avoided getting into administrative/ operational details.
- 7. We held each other accountable for keeping discussions at the right level and practiced "smart trust¹"?
- 8. The chair guided the meeting effectively and encouraged Councillors to share opinions openly.

From your observations today, are there any items that should be considered as reminders to improve meeting effectiveness for the next meeting, or items that should be covered in a "Governance Moment" at the next Council meeting.

¹ Maintaining a respectful balance between strategic oversight and operations, where Councillors ask tough questions and challenge assumptions while sending the message to Management that "we support and trust you"



POLICY

POLICY	Guidelines for Council In-Camera Sessions after the Regular Closed and Open Council Meeting, CG-8
NUMBER OF POLICY	CO-15-51
DATE OF POLICY	June 25, 2021
APPROVED BY	Council

- Attendance is limited to all members of Council only except that the CEO will attend the initial portion of the meeting to participate in discussions pertaining to staff and/or to follow up on requests for information from Council members. The session may be attended by other staff, when deemed appropriate by the CEO and Chair.
- The primary purpose of these meetings is for Council reflection, to carry out a self-assessment of the overall effectiveness of Council during the previous closed and open Council meetings and to make recommendations for improvements.
- The Council Meeting Effectiveness Checklist is to be used as a guide to support Council's self-assessment of the Council Meeting.
- In-Camera sessions can also be used as information sharing amongst the members of Council.
- Items that should be dealt with as a closed or open Council meeting item should not have a substantive discussion at the In-Camera sessions. Any formal Council decisions that should be made at the closed or open Council meetings shall not be made at the In-Camera sessions.
- While no formal agenda is prepared for In-Camera sessions, the format includes a postmeeting brief with the CEO, meeting self-assessment and a general update/check in from the President.
- Minutes are not prepared for the In-Camera sessions, and any follow up requests should be noted by the Chair (usually the current President) and subsequently conveyed to the CEO at the earliest opportunity.
- In-Camera sessions are generally not longer than 30 minutes in duration but there may be times when more time is required due to the nature of the items being brought forward.

COUNCIL MEETING EFFECTIVENESS

CHARACTERISTICS OF AN EFFECTIVE MEETING

Agenda

- 1. Agenda topics are clear, focused, appropriate and reflect the annual work plan
- 2. There is a clear link between agenda items and the organization's strategic priorities
- 3. A consent agenda is used for items that do not require council discussion

4. Adequate discussion time is given to all agenda items with the most critical or strategic items being dealt with first

Materials

5. Meeting materials are provided with enough time to adequately prepare for the meeting6. Meeting materials are clear, concise and help councillors focus on the issues that need to be considered at the meeting

7. Council members have a clear understanding of the objectives for the meeting and for each agenda item

Chair

8. The Chair guides the meeting efficiently and effectively, keeps discussions on track, and encourages participation

Meeting Participation

9. The meeting starts and ends on time

10. All councillors are prepared for the meeting

11. Discussions are focused primarily on strategic/governance matters as opposed to operational items

12. All councillors contribute to, or are encouraged to contribute to, discussions and decisionmaking

13. There is a robust discussion that is respectful and meaningful, and any disagreements are handled appropriately

14. There is a clear unity amongst councillors once decisions are made

Meeting Follow-Up & Effectiveness

15. Follow-up actions and responsibilities are clearly identified and assigned

16. The meeting is effective overall

MEETING EFFECTIVENESS CHECKLIST

- 1. The agenda was clear and realistic for the allotted meeting time.
- 2. Agenda topics were appropriate (reflected Council's terms of reference and annual road map).
- 3. Appropriate information was available to support Council in making informed decisions.
- 4. Time was used effectively and discussions were focused.
- 5. Discussion was respectful and disagreements were handled appropriately.
- 6. We maintained a strategic perspective and avoided getting into administrative/ operational details.
- 7. We held each other accountable for keeping discussions at the right level and practiced "smart trust¹"?
- 8. The chair guided the meeting effectively and encouraged Councillors to share opinions openly.

From your observations today, are there any items that should be considered as reminders to improve meeting effectiveness for the next meeting, or items that should be covered in a "Governance Moment" at the next Council meeting.

¹ Maintaining a respectful balance between strategic oversight and operations, where Councillors ask tough questions and challenge assumptions while sending the message to Management that "we support and trust you"



OPEN SESSION

ITEM 5.8

DATE	June 10, 2021
REPORT TO	Council for Decision
FROM	Amy Fehr, P.Eng., Manager Professional Practice Advice Program, Professional Practice, Standards and Development
SUBJECT	Professional Practice Guidelines – Seismic Assessment and Seismic Design of Dikes in BC, Version 1.0
LINKAGE TO STRATEGIC PLAN	Enhance registrants' awareness and use of professional practice resources.

Purpose	For Council's review and decision.
Motion	That Council approves the <i>Professional Practice Guidelines</i> – <i>Seismic Assessment</i> and <i>Seismic Design of Dikes in BC</i> , Version 1.0 for final legal and editorial review
	prior to publication.

BACKGROUND

The Professional Practice, Standards and Development (PPSD) Department focuses on the proactive regulation of professional engineering and professional geoscience in BC. One of the important ways in which the Department delivers on the proactive regulation of the professions is through the development and revision of Professional Practice Guidelines. These guidelines identify the expectations and obligations that engineering/geoscience professionals have in relation to specific professional activities involving the practice of professional engineering and professional geoscience.

These professional practice guidelines establish a common level of expectation for a variety of stakeholders on what constitutes good professional practice when carrying out activities related to the seismic assessment and seismic design of dikes in BC. These stakeholders include engineering/geoscience professionals, statutory decision makers, clients, the public and a variety of other groups.
DISCUSSION

The Ministry of Forests, Lands, Natural Resource Operations, and Rural Development (MFLNRORD) has a document titled Seismic Design Guidelines for Dikes, 2nd Edition, published in 2014 (the Ministry Guidelines). The Ministry Guidelines outline the technical requirements related to seismic assessment and seismic design of Dikes under the *Dike Maintenance Act*. In 2020 MFLNRORD and Fraser Basin Council approached Engineers and Geoscientists BC to develop practice guidelines that outline the professional practice considerations that must be undertaken when Engineering Professionals follow the Ministry Guidelines. In other words, these practice guidelines are a supplement to the Ministry Guidelines and help clarify how engineering professionals can meet the intent of the Ministry Guidelines while fulfilling their professional practice obligations.

These practice guidelines were developed by five registrant subject matter experts of Engineers and Geoscientists BC, including three geotechnical engineers Upul Atukorala Ph.D., P.Eng., Roberto Olivera Ph.D., P.Eng., and Steve Coulter M.Sc. P.Eng.; one civil engineer Josh Thiessen P.Eng.; and one hydrotechnical engineer Dale Muir P.Eng.

The formal review group was comprised of various Engineers and Geoscientists BC registrants, representatives from various municipalities, representatives from MFLNRORD, and a representative from Fraser Basin Council. In total there were twelve individuals on the formal review group.

The guidelines were then sent for consultation and comment to Engineers and Geoscientists BC's Consulting Practice Advisory Group, Professional Practice Advisory Group, the Municipal Engineers Division, and Fraser Basin Council's Seismic Flood Protection Advisory Committee.

RECOMMENDATIONS

That Council approve the *Professional Practice Guidelines – Seismic Assessment and Seismic Design of Dikes in BC*, Version 1.0 for final legal and editorial review prior to publication.

MOTION

That Council approves the *Professional Practice Guidelines* – *Seismic Assessment and Seismic Design of Dikes in BC*, Version 1. for final legal and editorial review prior to publication.

APPENDIX A – Professional Practice Guidelines -Seismic Assessment and Seismic Design of Dikes in BC, Version 1.0

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OPEN SESSION

ITEM 5.9

DATE	June 10, 2021
REPORT TO	Council for Decision
FROM	Allison DenToom, P.Eng., P.E., Practice Advisor, Professional Practice, Standards and Development
SUBJECT	Professional Practice Guidelines – Structural Engineering Services for Tall Concrete Building Projects, Version 1.0
LINKAGE TO STRATEGIC PLAN	Enhance registrants' awareness and use of professional practice resources.

Purpose	For Council's review and decision.	
Motion	That Council approves the Professional Practice Guidelines – Structural	
	Engineering Services for Tall Concrete Building Projects, Version 1.0 for final legal	
	and editorial review prior to publication.	

BACKGROUND

The Professional Practice, Standards and Development (PPSD) Department focuses on the proactive regulation of professional engineering and professional geoscience in BC. One of the important ways in which the Department delivers on the proactive regulation of the professions is through the development and revision of Professional Practice Guidelines. These guidelines identify the expectations and obligations that engineering/geoscience professionals have in relation to specific professional activities involving the practice of professional engineering and professional geoscience.

These professional practice guidelines establish a common level of expectation for a variety of stakeholders on what constitutes good professional practice when carrying out professional activities related to the structural design of tall concrete buildings. These stakeholders include engineering/geoscience professionals, architects, statutory decision makers, clients, the public and a variety of other groups.

DISCUSSION

In the past few years, two structural engineers were investigated, and in one case disciplined, for professional misconduct in the design of tall concrete buildings. The two buildings in question were relatively regular in form, without any particularly challenging or innovative structural or architectural features. Around this same time, the Vancouver House was being constructed which sparked conversations among the engineering community and the public about building irregularities, and in particular, gravity-induced lateral demand.

Considering the attention that these three buildings were getting in the news, and with the health and safety of the public in mind, the Office of the Superintendent of Professional Governance requested that Engineers and Geoscientists BC prioritize the development and publication of professional practice guidelines which would establish the expectations and obligations for professional practice in relation to structural engineering services for tall concrete buildings projects.

These guidelines were specifically written for normal importance tall concrete core wall buildings and provide guidance for both regular buildings, which can be designed following the prescriptive requirements of the Code, and irregular buildings, which require analysis and design that exceeds the guidance provided in Canadian Codes, specifically buildings that require non-linear dynamic analysis. Topics within the guidelines include, design for gravity loads, design for lateral wind forces, and design for earthquake ground motion. The latter includes guidance on the evaluation of performance using Non-linear Dynamic Analysis.

The guidelines were developed by a working group consisting of 1 lead author, Perry Adebar, Ph.D. P.Eng. 4 primary authors, Armin Bebam Zadeh, Ph.D., P.Eng, Ehsan Dezhdar, Ph.D., James Munro, P.Eng., P.E. and Mehrak Razavi, P.Eng., Struct.Eng. and 3 secondary authors, Anthony El-Araj, P.Eng., Struct.Eng., Josif Golubovic, P.Eng. and John Sherstobitoff, P.Eng.

The document was reviewed by 6 reviewers who are registrants of Engineers and Geoscientists BC and 2 reviewers who are registrants of their respective regulatory bodies in California and Washington. The document was also sent to a variety of industry stakeholders including the Structural Engineers Association of BC, the CSA A23.3 Committee, the City of Vancouver, the City of Burnaby, the City of Langford, the City of Surrey, and the Building and Safety Standards Branch of the Government of BC, as well as the following Engineers and Geoscientists BC Advisory Groups: Professional Practice, Consulting Practice, and Building Codes. Over 375 comments from the reviewers and industry stakeholders were received, reviewed, and incorporated where applicable.

RECOMMENDATIONS

That Council approve the *Professional Practice Guidelines – Structural Engineering Services for Tall Concrete Building Projects*, Version 1.0 for final legal and editorial review prior to publication.

MOTION

That Council approves the *Professional Practice Guidelines – Structural Engineering Services for Tall Concrete Building Projects*, Version 1.0 for final legal and editorial review prior to publication.

Engineers and Geoscientists BC Council | June 25, 2021



OPEN SESSION ITEM 5.10

DATE	June 10, 2021
REPORT TO	Council for Decision
FROM	Jason Ong, Director Registration on behalf of Claudio Arato, P.Eng., FEC, Chair, Credentials Committee
SUBJECT	Transition Policy for Professional Engineering and Geoscience in BC Seminar
LINKAGE TO STRATEGIC PL	 Goal 1, Strategy 2: Identify and implement practices, programs, policies, bylaws and Act amendments that improve Engineers and Geoscientists BC's ability to more effectively carry out its duty and objects.
Purpose	To establish a transition policy for applicants and members-in-training who have completed the current Seminar requirement for registration.
Motion	That the revisions to the Policy on the Law and Ethics and Professional Engineering and Geoscience in BC Seminars be approved by Council.

BACKGROUND

At the September 11, 2020 meeting, Council passed a motion to approve the revisions to the Policy on the Law and Ethics and Professional Engineering and Geoscience in BC Seminars. Contained within the policy were outlined transition provisions that would come into effect when the revised seminar content was launched. At the time this was reviewed by Council, it was anticipated that the Professional Governance Act and new Engineers and Geoscientists BC Bylaws would come into force in November 2020.

As the policy's transition provisions contained key dates that would determine how long completion of the current version of the seminar would be applicable for applicants and trainees, a revision to the policy is being requested to accurately reflect when the revised seminar will be launched and to provide key stakeholders with the appropriate transition time.

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DISCUSSION

Council's Guidelines for Developing and Implementing Registration Policy state in part:

- 1. "The objective of a new policy or revision of an existing policy shall be clearly stated...
- 3. Policies shall be consistent and complementary:
 - a. The effective date of the new policy and the date at which existing policy will cease to apply should be clearly stated;
 - b. Transition procedures must be clearly defined;
 - c. Applicants should be allowed to continue under the existing policy if it was still in effect when they began the application process. Therefore new policies should contain an "adjustment" clause if applicable;
 - d. Applicants affected by the new policy should be notified.
- 4. Policies should consider the perspectives of the applicant..."

RECOMMENDATIONS

The Professional Governance Act and new Engineers and Geoscientists BC Bylaws came into force on February 5, 2021. The development of the seminar revisions was delayed, and it is expected that the revised seminar will now be launched in late June 2021. As this is approximately six months later than anticipated, it is recommended that the transition policy reflect the six-month delay in order to provide adequate notice and transition time for those who have taken the existing seminar as part of the requirements for registration. The revised policy was reviewed by the Credentials Committee at its May 12, 2021 meeting and a motion was passed recommending that Council consider amending the policy as per the changes outlined below. Recommended changes to the transition policy are:

- a. Applicants and <u>Members in TrainingTrainees</u> who have completed a previous version of one of the Seminars prior to the launch of the <u>November 2020June 2021</u> revised Online Seminar content will have their completion of this version accepted as meeting the seminar requirement for registration as a Professional Registrant through <u>December 2021</u> July 2022 and will be offered no-cost access to the revised seminar; and
- b. Applicants and <u>Members-in-TrainingTrainees</u> who have completed a previous version of the Seminars prior to the launch of the <u>November 2020 June 2021</u> revised Online Seminar content and who are not granted registration as a Professional Registrant before <u>January</u> <u>July</u> 1, 2022 be required to complete the current version of the Online Seminar at no cost to themselves prior to registration being granted.

MOTION

That the revisions to the Policy on the Law and Ethics and Professional Engineering and Geoscience in BC Seminars Requirement be approved by Council.

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ATTACHMENT B – Clean version of the Policy on the Law and Ethics and Professional Engineering and Geoscience Practice in BC Seminars

Engineers and Geoscientists BC Council | June 25, 2021



POLICY	Law and Ethics and Professional Engineering and Geoscience in BC Seminars Requirement	
DATE OF POLICY	September 11, 2020June 25, 2021	
APPROVED BY	Council (CO- 20-83<u>2</u>1-XX)	

POLICY STATEMENT

This policy addresses the pre-2016 Law and Ethics Seminar and the Professional Engineering and Geoscience Practice in BC Online Seminar that was implemented in 2016 ("the Seminars").

PURPOSE

The purpose of the Seminars is to provide an overview of the legal and ethical issues that affect both engineers and geoscientists in BC. The Seminars discuss current issues and provide insight into legislation that affects all practising members.

The Professional Engineering and Geoscience in BC Online Seminar ("the Online Seminar") is one of the six qualifying requirements that must be completed before professional registration can be granted.

APPLICATION AND SCOPE

As a condition of eligibility for registration, licensure, or reinstatement of practice rights, all applicants must complete the Online Seminar, except for applicants who:

- i. are applying for registration/licence under an internal trade agreement in Canada the Agreement and are a Professional Engineer, Professional Geoscientist, Professional Geologist, Professional Geophysicist, ingénieur(e),géologue, or hold a restricted scope registration or licence and arein good standing with another Canadian association/ordre;
- ii. have taken a seminar of similar breadth and depth offered by another Canadian Association/ordre;
- iii. are former registrants who are not applying under the terms of an internal trade agreement in Canada and are applying for resumption of practice rights after they have lapsed for less than one year; or
- iv. are non-practising registrants applying for resumption of practice rights after they have lapsed for less than one year;
- v. are former registrants who are not applying under the terms of an internal trade agreement in Canada and whose practice rights have lapsed for more than one year and less than three years; and who have previously completed one of the Seminars; or
- vi. are non-practising members applying for resumption of practice rights after they have lapsed for more than one year and less than three years; and who have previously completed one of the Seminars.

TRANSITION TO THE PROFESSIONAL GOVERNANCE ACT, REGULATIONS AND BYLAWS

The content of the Online Seminar will change significantly when the Professional Governance Act [SBC 2018] CHAPTER 47 and its Regulations and Bylaws that apply to Engineers and Geoscientists BC <u>come_came_into</u> force<u>in November 2020_on February 5, 2021</u>.

The following transition provisions will come into effect when a revised seminar content is launched in <u>November</u> <u>2020June 2021</u>:

- Applicants and Members-in-Training who have completed a previous version of one of the Seminars prior to the launch of the <u>November 2020-June 2021</u> revised Online Seminar content will have their completion of this version accepted as meeting the seminar requirement for registration as a Professional Registrant through <u>December 2021June 2022 and will be offered no-cost access to the revised seminar;</u>
- Applicants and Members-in-Training who have completed a previous version of the Seminars prior to the launch of the <u>November 2020-June 2021</u> revised Online Seminar content and who are not granted registration as a Professional Registrant before <u>January July</u> 1, 2022 be required to complete the current version of the Online Seminar at no cost to themselves prior to registration being granted; and
- Affected Applicants and Members-in-Training will be advised of this transition policy after the revised Online Seminar content is launched.

CROSS REFERENCES

Professional Governance Act [SBC 2018] CHAPTER 47

Engineers and Geoscientists BC Bylaws

REVIEW DATES

Action	Date	Reference
APPROVED BY COUNCIL	November 26, 2002	Minute # CO 03-03
REVISED, APPROVED BY COUNCIL	September 11, 2020	Minute # CO 20-83
REVISED, APPROVED BY COUNCIL	<u>June 25, 2021</u>	Minute # CO21-XX



POLICY	Law and Ethics and Professional Engineering and Geoscience in BC Seminars Requirement
DATE OF POLICY	June 25, 2021
APPROVED BY	Council (CO21-XX)

POLICY STATEMENT

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PURPOSE

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The Professional Engineering and Geoscience in BC Online Seminar ("the Online Seminar") is one of the six qualifying requirements that must be completed before professional registration can be granted.

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- i. are applying for registration/licence under an internal trade agreement in Canada the Agreement and are a Professional Engineer, Professional Geoscientist, Professional Geologist, Professional Geophysicist, ingénieur(e),géologue, or hold a restricted scope registration or licence and arein good standing with another Canadian association/ordre;
- ii. have taken a seminar of similar breadth and depth offered by another Canadian Association/ordre;
- iii. are former registrants who are not applying under the terms of an internal trade agreement in Canada and are applying for resumption of practice rights after they have lapsed for less than one year; or
- iv. are non-practising registrants applying for resumption of practice rights after they have lapsed for less than one year;
- v. are former registrants who are not applying under the terms of an internal trade agreement in Canada and whose practice rights have lapsed for more than one year and less than three years; and who have previously completed one of the Seminars; or
- vi. are non-practising members applying for resumption of practice rights after they have lapsed for more than one year and less than three years; and who have previously completed one of the Seminars.

TRANSITION TO THE PROFESSIONAL GOVERNANCE ACT, REGULATIONS AND BYLAWS

The content of the Online Seminar will change significantly when the Professional Governance Act [SBC 2018] CHAPTER 47 and its Regulations and Bylaws that apply to Engineers and Geoscientists BC came into force on February 5, 2021.

The following transition provisions will come into effect when a revised seminar content is launched in June 2021:

- Applicants and Trainees who have completed a previous version of one of the Seminars prior to the launch of the June 2021 revised Online Seminar content will have their completion of this version accepted as meeting the seminar requirement for registration as a Professional Registrant through June 2022 and will be offered no-cost access to the revised seminar;
- Applicants and Trainees who have completed a previous version of the Seminars prior to the launch of the June 2021 revised Online Seminar content and who are not granted registration as a Professional Registrant before July 1, 2022 be required to complete the current version of the Online Seminar at no cost to themselves prior to registration being granted; and
- Affected Applicants and Trainees will be advised of this transition policy after the revised Online Seminar content is launched.

CROSS REFERENCES

Professional Governance Act [SBC 2018] CHAPTER 47

Engineers and Geoscientists BC Bylaws

REVIEW DATES

Action	Date	Reference
APPROVED BY COUNCIL	November 26, 2002	Minute # CO 03-03
REVISED, APPROVED BY COUNCIL	September 11, 2020	Minute # CO 20-83
REVISED, APPROVED BY COUNCIL	June 25, 2021	Minute # CO21-XX



OPEN SESSION ITEM 5.11.1

DATE	June 7, 2021
REPORT TO	Council for Information
FROM	Heidi Yang, P.Eng., FEC, FGC (Hon.), Chief Executive Officer
SUBJECT	CEO Report to Council
LINKAGE TO STRATEGIC PLAN	To uphold and protect the public interest through the regulation of the professions.
Purpose T	his report highlights some of the activities of the Organization related to policy

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	work, implementation of the Strategic Plan and ongoing Regulatory duties since
	the April 23, 2021 meeting of Council.
Motion	No motion required. For information only.

1. INTERNAL OPERATIONS

a. COMPLIANCE STATEMENT

Engineers and Geoscientists BC has met all of its legal obligations. There are no outstanding lawsuits or other liabilities that would materially modify our financial position.

b. FINANCIAL POLICIES REVIEW & REVAMP PROJECT

As a part of the growth of the organization, the time has come to review and modernize the current financial policies. The goal of the project is to ensure that the organization has the "right-size" policies in place to best serve the organization and to ensure that these financial policies are built so that they can easily be adapted to further growth and change of the organization.

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Current financial policies being reviewed include Sustainable Financial Policy, Procurement Policy, Authorization of Expenditures Policy, Investment Policy, & Reimbursement of Expenditures Policy. Consideration of setting an overarching financial policy that will address setting of fees guidelines, reserves, authorization levels of expenditures etc. is all a part of this process.

An external consultant, MNP, has started work to assist with the review of existing financial policies and will provide an assessment and recommendations by end of June 2021. The recommendations will provide a basis for staff to create a roadmap of next steps to adjust, re-write, or add financial policies in a prioritized sequence. Staff will provide an update to Council on the progress of this project at the September meeting.

2. ONBOARDING UPDATE FROM HEIDI YANG, CHIEF EXECUTIVE OFFICER

It has been a very busy few weeks for me as I onboard with Engineers and Geoscientists BC! I have received divisional overviews from Regulatory, Operations and Finance & Administration, and have received updates on the numerous projects being planned and implemented by staff. I have met many staff through informal meet and greets as well as through additional scheduled meetings. Furthermore, I have (by the time of the publishing of this Council package) met with every Councilor and have asked you all 5 key questions to help me better understand what is important from your perspective, and providing information to help me shape the future vision for Engineers and Geoscientists BC. I am also asking these same 5 questions to a representative number of staff for their input.

I will say I am extremely impressed with the level of engagement of staff, and the amount of work that has been accomplished over the last few years (inside the pandemic!). I feel very fortunate to lead a great group of individuals and look forward to the months ahead. Thank you for choosing me to lead Engineers and Geoscientists BC into the future.

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OPEN SESSION

ITEM 5.11.2

DATE	June 10, 2021
REPORT TO	Council for Information
FROM	Max Logan, Chief Operating Officer
SUBJECT	Professional Governance Act Implementation
LINKAGE TO STRATEGIC PLAN	The Professional Governance Act is implemented in a manner consistent with the organization's mission to serve the public interest as a progressive regulator that supports and promotes the engineering and geoscience professions.

Purpose	To provide Council with a progress report on the implementation of the
	Professional Governance Act.
Motion	No motion. For information only.

BACKGROUND

The *Professional Governance Act*, implemented on February 05, 2021, replaced the individual governing legislation for five professional regulators, including Engineers and Geoscientists BC. The legislation also consolidates oversight of professional regulators in an Office of the Superintendent of Professional Governance (OSPG), which will set consistent governance standards across the five regulators¹. The Architectural Institute of BC will come under the mandate of the PGA in the next 12 months.

Prior to February 5, 2021, the organization's main effort had been the development and drafting of bylaws required to ensure compliance with the PGA, as well as those bylaws required for the organization to continue to operate. Following Council review and approval, the bylaws were approved by the OSPG and Minister. Additional activity to meet the in-force date of February 5 included:

¹ The five regulators include Engineers and Geoscientists BC, Association of BC Forest Professionals (ABCFP), Applied Science Technologists and Technicians of BC (ASTTBC), BC Institute of Agrologists (BCIA), College of Applied Biology (CAB).

- the transition of Council from 17 members to 12,
- recruiting lay persons for statutory committees,
- introducing a merit-based appointment system for statutory committee chairs,
- the introduction of a new online register and annual renewal process,
- development of a mandatory CE program,
- development of policies to support a new audit and practice review program,
- a revised Code of Ethics and guide.

All of these changes were supported by a robust communications plan focused on both registrants and staff.

DISCUSSION

The initial PGA implementation phase – those activities required for the introduction of the PGA on February 5 – is complete. However, there are a number of projects that support the implementation of the PGA and that have an implementation date beyond February 2021. In order to monitor the introduction of the PGA, as well as track and monitor longer term projects, frequent engagement with the OSPG continues, including regular monthly meetings as well as discrete meetings as required. Within the organization, PGA implementation is tracked and monitored as a standing agenda item in monthly Leadership Team meetings.

Following internal review, and feedback from registrants, staff have identified several minor amendments to bylaws. These changes will be addressed as separate agenda items during this and subsequent Council meetings.

OSPG have also formally outlined the audit process for FY 2021 / 2022. The first audit will be considered a 'familiarization' for OSPG to better understand how each regulatory body is interpreting and meeting each of the twenty Standards of Good Regulation. The objectives of familiarization are to:

- Identify regulatory body processes/activities and associated data/performance metrics relevant to each standard
- Identify process owners and subject matter experts within each regulatory body
- Begin aligning regulatory body processes/activities with OSPG requirements and expectations

Four surveys will be issued by OSPG, with the standards grouped thematically and issued throughout the fiscal year. OSPG will follow-up with virtual interviews and document requests and analyse the responses. The outcome will be a private letter from the Superintendent. This letter will not constitute a formal report on a performance review, but the OSPG may publish general results or observations.

Following the familiarization phase, and a review with regulators, the approach to annual formal Performance Reviews, will be developed.

The status of key projects is outlined below. All requirements are either completed or on track.

Implementation Project	Milestone	Status
Standards of Good Regulation - Familiarization	March 2022	On Track
Policies to Support Bylaws	26 June 2021	On Track
Existing Practice Review Program	30 April 2022	On Track
New Practice Review Program	31 Jan 2022	On Track
Individual Audit Program	01 July 2022	On Track
CEP	01 July 2021	On Track
Annual Mandatory Information CE Compliance	30 June 2021 30 June 2022	On Track
Regulation of Firms policies and procedures	01 July 2021	On Track

Outstanding Policy Issues

The most significant of the outstanding policy items remaining is the potential changes to the regulation of engineering technologists.

The OSPG has begun discussions on defining the reserved practice for both the registrants of the College of Applied Biology and registrants of the British Columbia Institute of Agrologists, but there is no timeline yet for discussions on defining the reserved practice for registrants of ASTTBC. Given that Engineers and Geoscientists BC, and our registrants, will be directly impacted by any decisions on a definition of reserved practice for registrants of ASTTBC, the OSPG has committed that Engineers and Geoscientists BC will be directly involved in any discussions on this matter. The timing of discussions between the parties remains unconfirmed but at present are not expected to begin before at least the fall.

SUMMARY

The organization has met the requirement for the implementation of the PGA and continues to monitor and track the longer-term implementation activities.

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OPEN SESSION

ITEM 5.11.3

DATE	June 9, 2021
REPORT TO	Council for Information
FROM	Stuart Nash, Manager, Individual Audits and Practice Reviews Megan Archibald, Director, Communications
SUBJECT	Continuing Education Program and Annual Reporting Update
LINKAGE TO STRATEGIC PLAN	Members and Organizations practice to high professional and ethical standards

Purpose	To update Council on the Continuing Education Program.
Motion	No motion required. For information only.

BACKGROUND

The *Professional Governance Act* requires Engineers and Geoscientists BC to "establish and maintain a continuing competency program to promote high practice standards amongst registrants." To address this requirement, Engineers and Geoscientists BC has developed the Continuing Education Program, which will start on July 1, 2021. The CE Program has a variety of requirements intended to promote the maintenance of competency amongst registrants, including the requirement to take 60 hours of CE activities in each 3-year rolling period, the submission of an annual CE Plan, required ethical and regulatory learning, and annual compliance checking. These requirements apply to all practising registrants; Non-practising registrants and Designated Structural Engineers have modified requirements. Trainees are not required to participate in the CE Program.

DISCUSSION

Continuing Education Advisory Group

The Continuing Education Advisory Group (CEAG) led the development of the CE Program and remains involved in the implementation of the Program. The CEAG meets approximately every 2 months, during which staff give updates about the implementation and communications for the program.

The CEAG continues to provide guidance on registrant inquiries and clarifications about the program. The CEAG has also participated as an early test group for the online reporting system that will be used by registrants to record CE activities under the program.

Development of Tools and Resources

Since the CE Program was developed, Engineers and Geoscientists BC staff have been developing tools and resources, and communications to inform and provide guidance to registrants about the new program.

Completed tools and resources include:

- Guide to the CE Program, the main reference document for registrants
- An optional CE Plan template for registrants
- Exemption request form and process for registrants on approved leaves
- CE Program pages on the website, including an overview page, a resources page, and an FAQ page

Tools and resources in the final stages of development include:

- The online reporting system that all registrants will use to report their CE activities (see below for more information).
- The regulatory module that all registrants will be required to watch during the first year of the program. The module is being produced in coordination with Pathways Training and eLearning, an educational and training consultant that also helped produce the revision to the Professional Practice Online Seminar in 2021.
- CE Plan example templates to help demonstrate how registrants can fill out their CE Plan

These resources are all on track to be available by the July 1 program start date.

Communications

As part of the CE Program implementation, Engineers and Geoscientists BC staff have been preparing communications to help ensure that all registrants are aware of their responsibilities under the program and how to meet them.

Communications initiatives for the program include:

- An article in the January/February Edition of Innovation outlining the key requirements of the program.
- January eNews article announcing the Guide to the Continuing Education Program available for review.
- CE Program Requirements Webinar hosted in February available to all registrants and recorded for future viewing.

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- Website updates including new program resources available and additional FAQs resulting from webinar.
- Email to all registrants announcing the PGA is now in force and includes a mandatory Continuing Education Program.
- Announcement of CE requirements in the Accredited Employer Program newsletter.
- Social Media promotion 2-3 times a month highlighting the key requirements of the program and new resources available.
- Promotional event slides listing CE requirements included in post-secondary presentations, CE courses, branch meetings and other events hosted by Engineers and Geoscientists BC.

Future communications initiatives include:

- Ongoing communication in Engineers and Geoscientists BC's main channels.
- Reminder emails to complete CE activities and reporting in January and leading up to the June 30 deadline each year.
- Webinars on using the CE reporting system and creating a CE Plan.

CE Program Online Reporting System

All registrants will be required to report their CE activities and upload their CE Plan to the online reporting system to allow for compliance checking. The system is currently being tested by staff and registrants to ensure it is user friendly and functional. The work is currently on track to roll-out the new system prior to the July 1 program start date.

Features of the new system will include:

- A simple reporting interface for recording CE activities
- At-a-glance understanding of whether a registrant has met their annual and 3-year CE Program requirements
- Ability to upload supporting documentation for any CE activity (e.g. receipts, notes, confirmation emails)
- Ability to export all CE activities to an excel file to allow easier reporting to other jurisdictions
- Ability to create a PDF report of CE activities for documentation or reporting to another jurisdiction or a registrant's employer

Future features that are anticipated for the reporting system, but will not be ready for July 1, include:

- The ability to bulk upload multiple activities at once, making it easier for registrants to transfer activities in that have already been recorded to another jurisdiction
- Automatic transfer in of CE activities offered by Engineers and Geoscientists BC
- Web-based entry of the CE Plan (currently only uploading of a PDF is allowed)

- Improved mobile interface
- Ability to upload multiple CE Plans throughout the year

Annual Information Reporting

On May 3, 2021 staff launched the Annual Information Reporting process to collect updated personal and professional information from registrants, including contact information, industry and areas of practice, and responses to practice declarations. Registrants were contacted by email and directed to complete the reporting by the June 30 deadline; those registrants who did not have email addresses were sent a letter instead. The process and deadlines were also highlighted in *Innovation,* eNews, and social media channels.

Continued direct communications (i.e., emails and letters) are scheduled for the standard reporting period (May 3 – June 30) and the late reporting period (July 1 – September 30). Additional measures are planned to ensure all registrants receive communications, including sending additional letters and contacting registrants by phone. Program support staff have also been responding to registrants by phone and email continuously since the reporting process opened on May 3; to date approximately 800 emails and calls have been responded to by staff. Registrants will continue to receive notices until they have completed their reporting and the online reporting system will remain active until all registrants have completed their reporting. Due to this being the first year the reporting is required, and the expectation that a large percentage of registrants will fail to meet the June 30 deadline, a proposed bylaw amendment to waive late fees for this year's late reporting period have been included in the June 25 Council meeting package.

As of the end of the day on June 8, 47% of all registrants subject to this requirement have completed their reporting.

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OPEN SESSION

ITEM 5.11.4

DATE	June 10, 2021
REPORT TO	Council for Information
FROM	Kelly Dayman, Associate Director, Regulation of Firms
SUBJECT	Regulation of Firms Update
LINKAGE TO	Members and Organizations practice to high professional and ethical
STRATEGIC PLAN	standards

Purpose	To update Council on the Regulation of Firms
Motion	No motion required. For information only.

BACKGROUND

The *Professional Governance Act* enables Engineers and Geoscientists BC to regulate firms that engage in the practice of professional engineering or geoscience. Firms will be required to register for a Permit to Practice with Engineers and Geoscientists BC beginning in July 2021.

The registration period for firms is July 2, 2021 through September 30, 2021. Effective October 1, 2021 firms are required to have a Permit to Practice.

Update

Since the April 23, 2021 Council update, the following has been completed.

Regulation of Firms Permit to Practice Training

On March 29, 2021, the Regulation of Firms Permit to Practice training went live. As of June 7, 2021 a total of 718 individuals have registered for the training with 99 having already successfully completed the training.

Professional Practice Management Plan Templates

As part of the Regulation of Firms – Permit to Practice requirements, registrant firms must develop and maintain a Professional Practice Management Plan (PPMP)

A registrant firm's Professional Practice Management Plan must be in place no later than 12 months after the date that their Permit to Practice is issued. Standardized PPMP templates have been finalized and posted online for registrants firms to assist them in meeting the requirements. These include,

- Engineering Sole Practitioner PPMP Template for an engineering professional registrant who practises on their own, either in an incorporated or unincorporated organization. They may have non-professionals on staff and up to two trainees and still qualify as a sole practitioner.
- Geoscience Sole Practitioner PPMP Template for a geoscience professional registrant who practises on their own, either in an incorporated or unincorporated organization. They may have non-professionals on staff and up to two trainees and still qualify as a sole practitioner.
- Multi-Professional Firm PPMP Template for small to medium size firms with two or more engineers and/or geoscientists on staff.
- Large Firm PPMP Template for large firms, public sector firms or firms with multiple divisions, business lines, or unique operating groups where the individual groups will have procedures unique to them. It is applicable to firms with engineers and/or geoscientists on staff.

Permit to Practice Application System

The Information Systems Development team has completed the online application system used for Permit to Practice applications and payment. The system is currently being used for early registration by OQM certified firms. Early registration enables a more thorough testing of the system than could be done by internal testing only and has led to a number of small refinements. As of June 8, 2021, 31 firms have completed their online applications for a Permit to Practice. Feedback has been extremely positive, with the key messages being that the system is intuitive and the process much simpler and faster than anticipated.

The issuance of Permits to Practice to the early registrants will commence June 9, 2021, the permits issued will be effective July 2, 2021.

Permit to Practice Program Launch Date

The Regulation of Firms Permit to Practice Program opens for all firms to apply for a Permit to Practice on July 2, 2021. All resource materials and systems are in place ahead of schedule which has allowed for the materials and systems to be reviewed and refined prior to official launch of the program.

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OPEN SESSION ITEM 5.11.5

DATE	June 10, 2021
REPORT TO	Council for Information
FROM	Harshan Radhakrishnan, P.Eng., Manager, Climate Change and Sustainability Initiatives Dr. Malcolm Shield, P.Eng., Chair, Engineers and Geoscientists BC Climate Change Advisory Group
SUBJECT	Climate Change Action Plan Update
LINKAGE TO STRATEGIC PLA	Enhance registrants' awareness and use of professional practice resources $^{\rm N}$
Purpose	To provide an update on the implementation of the Engineers and Geoscientists BC Climate Change Action Plan.
Motion	No motion required. For information only.

BACKGROUND

At the November 2020 meeting, Engineers and Geoscientists BC's Council unanimously approved a Climate Change Action Plan (the Plan). The Council further directed staff and advisory groups to initiate the implementation of the Plan within the current budget for climate change and sustainability initiatives (\$50,000 for 2020/2021 fiscal year), and to identify additional budget and resource needs in the 2022/2023 fiscal year for incorporation in the annual budget process. This memo provides an overview of existing Engineers and Geoscientists BC climate change initiatives underway to support the Plan, actions taken since the release of the Plan, and an update on the long-term direction envisioned by staff with input from the advisory groups.

Over the last decade, Engineers and Geoscientists BC has led and supported several successful initiatives to better address climate change in engineering and geoscience practice. These initiatives include:

- developing professional practice guidelines on both adapting to the impacts of climate change and reducing greenhouse gas (GHG) emissions;
- dedicating core staff resources to climate change initiatives;

- establishing the Climate Change Information Portal, which provides a variety of climate change related resources for registrants;
- engaging with standard-setting bodies; and
- improving access to climate-related continuing education for registrants.

The ten actions outlined in the Climate Change Action Plan build on these activities and identify additional priorities for Engineers and Geoscientists BC.

UPDATE

Since the release of the Plan, significant progress has been made in addressing the action items identified in the Plan, which are outlined in the table below (see attached overview of the Climate Change Action Plan for details on the actions referenced below).

Action	Examples of Existing	Examples of New
	Programs/Initiatives	Programs/Initiatives
1. Leadership	Establishing the greatest number of professional practice resources addressing climate change amongst engineering and geoscience regulatory bodies across Canada.	Presented an Industry Case Study on the Plan at the Canadian Society of Civil Engineers' Annual Conference. Presented the Plan to the federal government's Infrastructure and Buildings Working Group encouraging stakeholders across Canada to follow suit.
2. Collaboration	Engineers and Geoscientists BC collaborates with BC Climate Risk Network, the Professional Association Adaptation Working group, BC Energy Step Code, federal government's Infrastructure and Buildings Working Group, International Building Performance Simulation Association's BC Chapter, BC Housing's Mobilizing Building Adaptation and Resilience Project, and BC Ministry of Environment Climate Action Secretariat's funded Adaptation Learning Network. Engineers and Geoscientists BC routinely participates in the development of codes of standards by CSA and provincial government stakeholders. Engineers and Geoscientists BC supports external events and conferences such as Understanding Risk BC, Adaptation Canada, BC Water and Wastewater Association and others that have	Since the release of the Plan, Engineers and Geoscientists BC has provided support in hosting climate change adaptation related training provided by the Climate Risk Institute and established a collaborative partnership with the Community Energy Association. EGBC is supporting the BC Energy Step Code Council in establishing greenhouse gas emissions intensity targets for buildings and entered into a partnership agreement with BC Hydro to develop training and resources related to deep energy and emissions retrofit of existing buildings. In addition, we assisted Professional Geoscientists of Ontario with the establishment of a Position Statement on Climate and an <i>ad hoc</i> Subcommittee on Climate Change. Engineers and Geoscientists BC was part of the stakeholder review group that helped support the development of BC Ministry of Health's

	programming related to climate change.	Waterworks Design Guidelines and guidelines relating to potable water and yet again sponsored BCWWA conference this year where a presentation on Professional Practice Guidelines on Local Government Asset Management was provided.
3. Applicants	Competency assessments currently include references to climate change to varying degrees. Strengthening the climate change competencies in these assessments would be an effective way to ensure all new registrants meet a minimum standard of knowledge.	Staff are actively exploring options to Incorporate climate change into the Professional Engineering and Geoscience Practice in BC online seminar for applicants.
4. Areas of Practice	Engineers and Geoscientists BC has more than 160+ areas of practice with several existing practice areas like GHG Calculation and Energy Use Assessment that relate to climate change mitigation.	Based on the consultation carried out to develop the Plan, two new areas of practice were added to the Industries of Practice and Areas of Practice Self Declaration Form: "Climate Risk Management" and "Climate Science". In addition, an article in <i>Innovation</i> on this initiative is being prepared.
5. Basic Education	Engineers and Geoscientists BC routinely offers over 30+ continuing education events focused on climate change on a yearly basis.	Engineers and Geoscientists BC participated in the development of courses offered by the Adaptation Learning Network and promoted training and surveys related to BC Energy Step Code through Engineers and Geoscientists BC channels.
6. Advanced Education	Engineers and Geoscientists BC cross promotes training from Climate Change Adaptation Community of Practice, Canada's Adaptation Platform and from Fraser Basin Council on wide variety of climate change topics.	Courses from the Climate Risk Institute on climate risk management, Zero Emissions Buildings Exchange, and BC Housing on adapting building sector to climate change have been posted on the External Events page. Engineers and Geoscientists BC has also engaged international experts to offer training on ISO standards on adaptation. Training developed by the Pacific Climate Impacts Consortium and other Climate Science courses have been promoted via social media platforms.

7. Knowledge Sharing	Engineers and Geoscientists BC routinely hosts panel events in collaboration with the Branches on topics related to climate change and sustainability. EGBC's volunteers provide input into and facilitate knowledge exchange sessions.	Hosted a Sustainability Panel event in April 2021 with the Vancouver Branch and the Sustainability Advisory Group (attended by 175+ registrants) bringing experts from diverse fields and backgrounds to share their knowledge.
8. Practice Guidance	Developing professional practice guidance that address both climate change mitigation and adaptation and ensuring that relevant climate considerations are incorporated when guidelines are revised and updated.	Developed a practice advisory on Electrical Engineering Considerations in the Design of Flood Resilient Buildings. Work is underway to develop a Practice Advisory on Climate Change Considerations for Building Enclosure Engineers.
9. CC Information Portal	The portal is frequently updated with resources relating to adaptation and mitigation as it pertains to the buildings sector. The portal is well utilized and referenced by stakeholders and in other guidelines.	Work is underway to expand the portal to host resources that deal with reduction of greenhouse gas emissions.
10. Support for Firms	The Professional Governance Act introduced the requirement to regulate engineering and geoscience firms in BC. All entities that engage in the practice of professional engineering or professional geoscience in BC are required to register for a Permit to Practice.	The Regulation of Firms Practice Manual has references to the obligations that firm registrants have in relation to considering climate change in practice and linkages to the resources hosted by EGBC. The Code of Ethics guidelines have also been revised to include a reference to climate change related obligations when it comes to environmental protection.

In addition to the activities listed above, Engineers and Geoscientists BC has hired an Intern to carry out stakeholder mapping to delineate climate action initiatives pursued by other stakeholders to further identify areas for partnership and collaboration. Engineers and Geoscientists BC will also be carrying out focus groups to help identify resource development related to integrating sustainability into professional practice.

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NEXT STEPS

Staff will continue to work with the Climate Change Advisory Group to identify additional activities and initiatives which can be carried out to support the actions identified in the Plan. The Climate Change Advisory Group recently met to discuss long range planning to support Plan implementation. Identified below are some of the actions discussed for further consideration over the next three years:

Supporting Knowledge Transfer

Climate change although a well-established phenomenon, is still not well represented in early career support for registrants, either academically or professionally. As such,

 the role of climate-centered mentoring, through the Engineers and Geoscientists BC mentorship program, for those wishing to move into the field will be investigated, as will the establishment of an Engineers and Geoscientists BC establishing a Future Climate Leaders scholarship.

The role of Engineers and Geoscientists BC in further knowledge exchange, beyond the Climate Change Information Portal will be investigated through:

- Consider the development of a Climate Change Community of Practice (similar to the BC Professional Association Adaptation Working Group) in cooperation with Engineers Canada and Geoscientists Canada to focus on registrants' capacity building.
- Have experts present case studies through interactive sessions that are offered to registrants.

Climate Change Presence at the Annual Conference

Recognizing that climate change is a risk that is already present, but that which will run for centuries into the future, it is important that climate change become a fully integrated with the engineering and geoscience professions. As such,

 the nature of a permanent climate change presence at the Engineers and Geoscientists BC Conference every year will be investigated, with the intent to understand if the need is best met through a dedicated climate change Stream, a commitment to a specific number of climate change session, or similar.

Development of Professional Practice Guidelines

Professional Practice Guidelines outline the expectations and obligations of professional practice that all Engineering/Geoscience Professionals are expected to have regard for in relation to a specific professional activity. The group identified that the role of Guidelines in responding to a changing climate is also key. As such, the following will be undertaken:

- Development of an approach to ensuring that Professional Practice Guidelines and other practice resources reflect climate change will be undertaken; with the intent that emergent practices that are not currently captured, or reflected, in guidelines will be developed preferentially. Areas already covered by guidelines will have climate change integrated through their regular update cycle.
- Consult and/or co-develop (through a workshop format) with firms on how climate change should be integrated into a firm's practice.

Communications

Engineers and Geoscientists BC staff are currently developing a specific communication plan to support the Plan, aspects of which are still under refinement. The communication goals of the plan are currently as follows:

- Raise awareness of the Plan and the climate change resources available to registrants through Engineers and Geoscientists BC communication channels.
- Build relationships with key stakeholders by leveraging the Plan and climate change resources available to registrants. Share information, seek collaboration opportunities, and position Engineers and Geoscientists BC as a trusted partner in climate change adaptation and mitigation.
- Raise awareness of the key actions and changes that result from the Plan.

Plan Administration

There are some specific aspects to the delivery of the Plan that were recommended to be prioritized in the year ahead, which are:

- Align the key performance indicators of the Plan to the new Engineers and Geoscientists BC's Strategic Plan to be developed in the coming months.
- Review uptake of climate-relate areas of practice, and trends over time; and explore opportunities for engagement with registrants on a more formal basis.

Staff will work with the advisory groups and provide a yearly update to Council on the Plan implementation activities and identify whether additional budget and resources are needed on a yearly basis.

ATTACHMENT A – Overview of the Engineers and Geoscientists BC Climate Change Action Plan

SUMMARY OF THE CLIMATE CHANGE ACTION PLAN

GOALS

Adapting to Climate Change **Reducing Greenhouse Gas Emissions** Support registrants to develop and implement solutions Support the effective assessment and management of climate risk in the practice of professional engineering and geoscience in BC. to reduce greenhouse gas emissions. **OBJECTIVES AND ACTIONS** Leadership and Collaboration **Registration and Competency Education and Knowledge Sharing Practice Resources** Lead the engineering and geoscience Update the registration process Build registrants' knowledge and Provide registrants with practical and professions' response to climate change for professional engineers capacity to consider climate change relevant practice resources to help them in BC and collaborate with others to in their professional practice. deliver appropriate responses to a changing and geoscientists to incorporate climate and reduce GHG emissions. leverage resources and enhance impact. climate change competencies. Action 1: Leadership Action 3: Applicants Action 5: Basic Education Action 8: Practice Guidance Work with Engineers Canada and Geoscientists Continue to raise awareness and demonstrate Provide free or low-cost continuing education Provide guidance (e.g. practice guidelines, Canada to ensure climate change is adequately sessions on climate change as part of the ethical practice advisories) on adapting to climate the need to act on the impacts of climate change and professional responsibilities. addressed within competency assessments as part and/or regulatory learning offerings established change and/or reducing greenhouse gas of applications for professional registration. through the Continuing Education Program. emissions in a manner that is relevant for specific professional practice applications (e.g. guidance Incorporate climate change into the on specific hazards or emission sources). Action 2: Collaboration Professional Engineering and Geoscience Practice in BC online seminar for applicants. Action 6: Advanced Education Engineers Canada, Geoscientists Canada and other provincial/territorial regulatory bodies: Expand Engineers and Geoscientists BC's course Action 9: CC Information Portal Collaborate on all climate change issues of offerings and offerings through other channels to Action 4: Areas of Practice inter-provincial/territorial and national relevance. Promote and continue to develop Engineers and support registrants in developing more advanced skills and knowledge for adapting to a changing Geoscientists BC's Climate Change Information Portal. **Regulatory and standard-setting bodies:** Explore adding new areas of practice to climate and reducing greenhouse gas emissions. Provide input on the updating of regulations, codes recognize new areas of competency. and standards used by engineering and geoscience professionals to incorporate climate change. Action 10: Support for Firms Action 7: Knowledge Sharing Professional and industry associations: Provide firm registrants and their professional Share relevant guidance and information, and Support and actively encourage registrants employees with guidance and/or training on adapting partner on educational and/or professional events. to climate change and/or reducing greenhouse gas to network and share knowledge on the challenges and opportunities that climate change emissions with respect to the practice of professional Organizations that provide engineering and professional geoscience. brings to professional practice. climate data, expertise and training: Partner to access the latest information, tools and experts for educational events (e.g. Pacific Climate Impacts Consortium).

Note: "GHG" = greenhouse gas "CC" = climate change



OPEN SESSION ITEM 5.11.6

REPORT TOCouncil for InformationFROMMichelle Cheng, Manager, Exams, Geoscience, Registration Integrity & Policy Jason Ong, Director, RegistrationSUBJECTUpdate on Implementation of Canadian Experience Competencies for Geoscience Competency-Based AssessmentLINKAGE TO STRATEGIC PLANGoal 3, Strategy 2: Assess and improve admission processes and tools to facilitate robust and timely assessment of applicants; and Goal 2, Strategy 4. Participate in initiatives that improve national harmonization of regulatory processes.	DATE	June 10, 2021
FROMMichelle Cheng, Manager, Exams, Geoscience, Registration Integrity & Policy Jason Ong, Director, RegistrationSUBJECTUpdate on Implementation of Canadian Experience Competencies for Geoscience Competency-Based AssessmentLINKAGE TO STRATEGIC PLANGoal 3, Strategy 2: Assess and improve admission processes and tools to facilitate robust and timely assessment of applicants; and Goal 2, Strategy 4. Participate in initiatives that improve national harmonization of regulatory processes.	REPORT TO	Council for Information
SUBJECTUpdate on Implementation of Canadian Experience Competencies for Geoscience Competency-Based AssessmentLINKAGE TO STRATEGIC PLANGoal 3, Strategy 2: Assess and improve admission processes and tools to facilitate robust and timely assessment of applicants; and Goal 2, Strategy 4. Participate in initiatives that improve national harmonization of regulatory processes.	FROM	Michelle Cheng, Manager, Exams, Geoscience, Registration Integrity & Policy Jason Ong, Director, Registration
LINKAGE TOGoal 3, Strategy 2: Assess and improve admission processes and tools toLINKAGE TOfacilitate robust and timely assessment of applicants; andSTRATEGIC PLANGoal 2, Strategy 4. Participate in initiatives that improve national harmonization of regulatory processes.	SUBJECT	Update on Implementation of Canadian Experience Competencies for Geoscience Competency-Based Assessment
	LINKAGE TO STRATEGIC PLAN	Goal 3, Strategy 2: Assess and improve admission processes and tools to facilitate robust and timely assessment of applicants; and Goal 2, Strategy 4. Participate in initiatives that improve national harmonization of regulatory processes.

Purpose	To update Council on the subject project.
Motion	No motion required. For information only.

BACKGROUND

In November 2020, the Board of Directors of Geoscientists Canada tasked the Canadian Geoscience Standards Council (CGSC) to establish a working group to explore the development of Canadian Environment Competencies to be incorporated within the existing framework of the <u>29</u> <u>Geoscience Work Experience Competencies</u>.

Geoscientists Canada has partnered with Engineers and Geoscientists BC to leverage our Competency Experience system for the reporting, validation, and assessment of geoscience work experience against the 29 work experience competencies. Competency-based assessment for geoscience was officially launched in November 2020 for Engineers and Geoscientists BC applicants and since then, participating regulators subscribing to the system have had access to allow their applicants to start reporting geoscience experience.

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DISCUSSION

At the May 2021 CGSC meeting, a Canadian Environment Competency Working Group was formed comprised of members of the CGSC as well as admissions officials from various constituents of Geoscientists Canada. The members of the working group are:

- Deborah Spratt, P.Geo. Association of Professional Engineers and Geoscientists of Alberta
- Cliff Stanley, P.Geo. Geoscientists Nova Scotia
- Mark Fewer Professional Engineers and Geoscientists Newfoundland and Labrador
- Greg Finn, P.Geo. Professional Geoscientists Ontario
- Kate MacLachlan, P.Geo. Association of Professional Engineers and Geoscientists of Saskatchewan
- Michelle Cheng Engineers and Geoscientists BC

Previously, Engineers and Geoscientists BC led the Canadian Environment Experience Requirement project in consultation with engineering bodies across Canada, which resulted in the implementation of Canadian Environment Competencies for the engineering profession in November 2020. For the Geoscience Canadian Environment Competencies, representatives from Engineers and Geoscientists BC have, and will continue, to provide subject matter support based on their previous experience with the engineering profession.

The Working Group has had two meetings in May 2021 and has identified six potential Canadian Environment Competencies from among the 29 Work Experience Competencies. These competencies have been identified as being essential for applicants to demonstrate experience and awareness of at an entry-to-practice level.

The draft Canadian Environment Competencies will be presented to the CGSC in October 2021. Following further refinement, a consultation process will take place between October to December 2021 with Geoscientists Canada's constituent associations.

An update on the progress of this project will be provided to Council at a future meeting.

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OPEN SESSION ITEM 5.11.7

DATE	June 8, 2021
REPORT TO	Council for Information
FROM	Ailene Lim, Acting Director, Programs and Professional Development Marcie Cochrane, P.Eng., 30 by 30 Coordinator
SUBJECT	30 by 30 Initiative Update
LINKAGE TO STRATEGIC PLAN	To promote and protect the professions of engineering and geoscience

Purpose	To provide an update on the 30 by 30 Initiative
Motion	No motion required. For information only.

BACKGROUND

In April 2020, staff provided council with an update on the status of the 30 by 30 initiative, including the introduction of a detailed 30 by 30 Action Plan. This report will provide a status update on the work being done to advance the 30 by 30 Action Plan in support of the 30 by 30 initiative.

Council endorsed the organization's 30 by 30 strategy as part of Engineers and Geoscientists BC's commitment to diversity and inclusion and as part of the organization's participation in Engineers Canada 30 by 30 initiative. This strategy leverages current programs, builds relationships and partnerships in support of shared gender diversity goals, and supports women and girls at every step along their career path. The Action Plan operationalizes the strategy and is comprised of projects and tasks that involve many existing programs at Engineers and Geoscientists BC, including continuing education, communications, and career awareness, as well as actions that are specific to 30 by 30, including the continuous engagement with Engineers Canada and the engagement of a provincial 30 by 30 Champions network.

The action plan provides details on priority, effort, duration, resource allocation, and a timeline for execution and guides the 30 by 30 program at Engineers and Geoscientists BC. It is a working document that continues to be reviewed on a regular basis so it can be updated as actions are complete, new initiatives are identified and activities reassessed.

DISCUSSION

Since the development of the Action Plan in April 2020, modifications have been made over the past year because of several factors, including:

- Impacts of COVID-19 and the ability to deliver on some planned actions, especially any that involved in person activities;
- Opportunities that have arisen from Engineers Canada initiatives;
- Expanded scope of work and integration into other programs and a broader scope of focus on equity, diversity and inclusion.

As the action plan advanced, three main areas of focus emerged. These three areas of focus, identified as top priority themes, were defined and used to maximize efforts and impact of the 30 by 30 program. These three priority themes include data and metrics, connection and leadership.

The action plan currently includes fifty-one actions items. As of May 2021, 42 of the 51 action items have been completed, are in progress or are ongoing.

Key actions that have been advanced in the past year include:

- The development of a successful International Women in Engineering Day (INWED) campaign for June 2020, which included a partnership with UBC's Geering Up. A second annual INWED campaign has been launched for June 2021. This year we are profiling local engineering heroes and celebrating the work that women are doing across the province. This campaign aims to raise the profile of women in engineering and bring attention to the career opportunities available. In addition to the social media campaign, branches and the Women in Engineering and Geoscience division are hosting online events and a continued partnership with UBC's Geering Up is planned.
- EDI Communications Plan: In coordination with the Communications department an EDI communications plan has been developed. The goal of this plan is to raise the profile of how Engineers and Geoscientists BC supports equity, diversity and inclusion. The plan outlines the objectives, strategies and tactics to support this goal.
- An EDI statement has been developed and communicates the organization's values and commitment to EDI and provides the foundation for the development of EDI initiatives and policies for Engineers and Geoscientists BC, its volunteers, and its employees. Five key action areas have been identified to advance the goals of this statement.
- A revision to the Human Rights and Diversity Guidelines is in progress. This intensive project has involved engagement of individual registrants as well organizations that represent diverse registrant groups. This revision is extensive and will bring the guideline forward to current expectations regarding equity, diversity, and inclusion practices.

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- Data Demographics Project
 - Revisions have been made to the gender question that is asked of registrants and applicants. Although the changes may appear to be minor the changes in language as well as the answer options signal an important shift in inclusive practices.
 - Additional optional diversity demographic data questions will be added to the annual renewal and application processes.
- A variety of Professional Development offerings have been offered over the past year covering a range of EDI topics including a free series on leading remote teams with a focus on EDI, an Anti-Racism webinar series, an Inclusive Leadership Program and a Women in Leadership series.
- A Diversity and Inclusion professional development stream was hosted at the 2020 Annual Conference and a key focus on EDI was part of the keynote program.
- The development of a new module focused on EDI has been incorporated into the revised version of the Professional Practice in BC online seminar and a review of all the content through an EDI lens has been conducted.
- Participation in several initiatives led by Engineers Canada, including:
 - Regular participation in all four 30 by 30 working groups,
 - Participation in the Gender-Based Analysis (GBA+) of National Engineering Licensure Assistance and Employer Awareness Programs,
 - Participation in a research project conducted to better understand the barriers faced by women in engineering,
 - o Participation in the Equity, Diversity, and Inclusion Training Task Force, and
 - Participation in a national pilot survey of Indigenous engineers.

To support continuous improvement and ensure that the organization's resources are focused where they can have the greatest impact, an action plan verification project is also underway. This project involves targeted outreach to key stakeholders to seek feedback on the current action plan, confirm priority actions and make adjustments to improve the plan.

The comprehensive review process and input gathered has come from engagement with the Engendering Success in STEM (ESS) research group, feedback from Engineers and Geoscientists BC's 30 by 30 Champions group, Catalyst (an organization specialized in supporting inclusive workplaces), analysis of findings from the development of the Human Rights and Diversity Guideline project. A preliminary analysis has identified some key actions and the project will be complete by the end of this fiscal year.

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OPEN SESSION

ITEM 5.11.8

DATE	June 10, 2021
REPORT TO	Council for Information
FROM	Lianna Mah, P.Eng., FEC, FGC (Hon) Chair, Nomination Committee
SUBJECT	Selection of Nominees for Election to Council
LINKAGE TO STRATEGIC PLAN	We support effective governance.
	provide an overview of the merit-based selection process and the nominees

Purpose	To provide an overview of the merit-based selection process and the nominees
	selected for election to Council.
Motion	No motion required. For information only.

BACKGROUND

The Nomination Committee is charged with selecting a list of candidates for Engineers and Geoscientists BC Council that they believe best demonstrate the qualities needed for strong governance of the organization. All candidates standing for election must be approved by the Nomination Committee using a merit-based selection process.

The 2021 Nomination Committee comprises the following members:

- Lianna Mah, P.Eng., FEC, FGC (Hon), Immediate Past President, Chair
- Dr. Brian Guy, P.Geo., Committee Member
- Jamie Malthus, P.Eng., FEC, Branch Representatives Chair, Committee Member
- John Turner, P.Ag. (Retired), Former Councillor, Lay Committee Member
- Tim Watson, P.Eng., Former Councillor, Committee Member
- Guangbin Yan, Lay Committee Member

At the conclusion of the Nomination Committee's work, the *Professional Governance Act* (PGA) Regulation requires a report be produced for the current Council specifying:

- 1. How the selection of nominees meets the requirements of the Act, any other applicable Act, the regulation and any other applicable bylaws, and
- 2. How the nominees meet the criteria set out in the call for nominations.

REQUIREMENT OF ACT, REGULATION & BYLAWS

As directed by the *PGA*, only candidates approved by the Nomination Committee may stand for election to Council. Candidates must be selected in accordance with merit-based selection principles prescribed in the Regulation. The merit-based selection process established by Council and administered by the Nomination Committee is fully compliant with the requirements of the PGA, the Regulation and applicable bylaws.

As Council transitions to the reduced size required under the PGA, for the 2021 Council election, there is one vacancy for the office of President and two vacancies for the position of Councillor. The Vice President is to be selected from the elected Councillors by Council.

The PGA requires that the Nomination Committee make a reasonable attempt to nominate at least one more nominee than the number required to fill the current or expected vacancies.

CANDIDATE SELECTION CRITERIA

The selection of registrant councillors is conducted in accordance with the following two selection principles:

- 1. Merit: A nomination committee selects candidates based on merit, evaluating the skills and experience of a nominee(s) that are determined to best meet the needs of the regulatory body, and
- 2. Integrity: A nomination committee considers information about the nominee(s) that may support, affect or compromise the nominees' capacity:
 - a. To perform and uphold the duties and functions of a registrant councillor with objectivity and honesty, and
 - b. To act ethically without seeking improper personal or corporate gain that would not normally be accepted as compensation by the nominee as a professional.

In support of these selection principles, Council has established a merit-based selection framework to ensure that candidates selected are highly qualified to fulfill their roles and responsibilities. The candidate selection framework includes:

- Conducting a gap analysis to prioritize the desired skills, competencies, and experience for the upcoming year, including consideration of diversity;
- Evaluating all prospective nominees against the desired skills and competencies; and
- Interviewing prospective nominees to confirm experience and competencies before the Nomination Committee selects its final list of candidates.

The candidate selection framework seeks qualified candidates with diverse experience, skills and expertise in the following areas:

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- Leadership
- Financial Literacy
- Risk Management
- Human Resources
- Strategy
- Regulatory Understanding
- Governance
- Technical Proficiency

Considering the gap analysis and the strengths of the continuing members of Council, two priority areas were identified for the upcoming year: leadership and strategy.

To support the Committee in its selection process, an external consultant, Watson Advisors, with extensive experience supporting organization and board recruitment was retained. To further strengthen its process, the Nomination Committee introduced a new methodology to help reduce any unintentional bias in its selection process. In the first phase of the evaluation process, select information, including personal identifiers were redacted in the Committee's review of applications, ensuring the review and evaluation, to the extent possible, was based on each candidate's skills and experience. In the second phase of evaluation, diversity information was provided to support the Committee in incorporating diversity in its decision-making. Further, leading practices were also adopted to reduce bias in the selection process (e.g. use of a standard evaluation guide, scheduled break to reduce recency effect).

CALL FOR NOMINATIONS

The call for nominations opened on February 4, 2021 and closed on April 5, 2021. The opportunity was communicated to registrants through the following channels:

- Association website
- E-news articles
- Innovation article
- Direct emails to Chairs of branches, committees, advisory groups and divisions

In addition, the Chair contacted Councillors whose terms are completing in 2021 to assess their interest in running for election and serving on Council or as President.

To support our commitment to promoting diversity and inclusion, all eligible registrants were encouraged to apply and the following organizations were contacted directly to promote this opportunity:

- Association of Chinese Canadian Engineering Professionals and Technologists
- Bangladeshi Engineers and Applied Scientists in BC
- Iranian Engineering of BC Association
- Society of Internationally Trained Engineers in BC
- Society of Punjabi Engineers and Technologists of BC

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All prospective nominees were asked to provide the following:

- 1. Written summary of their interest to serve on Council (up to 250 words)
- 2. Current CV
- 3. Details of their experience related to the desired skills and competencies in 2–3 sentences for each applicable area (maximum 100 words)
- 4. Answers to supplementary conflict of interest and declaration questions
- 5. Three References

As part of the declaration questions, prospective nominees were asked to identify any circumstances that may place the candidate in a real or potential conflict of interest and disclose any circumstances that could have a potential impact on their duty to Engineers and Geoscientists BC or on the credibility of the Association. EGBC staff confirmed all candidates to be registrants in good standing and not the subject of any disciplinary action.

CANDIDATE SELECTION

At the close of nominations, a total of seven candidates submitted applications for the position of Councillor and two candidates applied for the position of President. All candidates received a first interview.

The Nomination Committee reviewed and assessed all prospective nominees against the desired skills and competencies using a two-step process (redacted profiles to reduce unintentional bias, and then unredacted profiles). The Committee then shortlisted six candidates for Councillor, and two candidates for President to advance to a second interview.

All members of the Nomination Committee participated in the interviews, which occurred over two days. Key objectives for the interviews included consistency and equal treatment of all candidates. These were achieved by conducting all interviews using Zoom video conferencing technology and asking a prescribed set of questions designed to ascertain the motivations underlying a candidate's interest to serve Engineers and Geoscientists BC and self-assessments of their skills and experience against the prioritized competencies. All interviews lasted approximately 45 minutes to ensure all candidates had the same opportunity to answer and ask questions. Among the considerations of the interview panel were:

- Examples of specific skills and experiences in the key areas identified for this election cycle (Leadership, Strategy)
- Defined rationale, including values and personal motivators, for wanting to serve as President or Councillor of Engineers and Geoscientists BC, as applicable
- Confirmed willingness and commitment to dedicate the time required to serve
- Confirmation of their employer's understanding and willingness to grant the time required to serve
- Demonstrated comprehension of the key strategic issues facing Engineers and Geoscientists BC in the next few years
- Approach to supporting a new CEO
- Experience in either leading or being a significant contributor to change management

The Committee's deliberations included the consideration of the role requirements, the prioritized skills of leadership and strategy, and the Committee's assessment of the candidate's skills, competencies, and experience. Throughout the process, the Nomination Committee ensured the process adhered to the following procedural principles outlined in the Regulation:

- **Fairness**: selection procedures were objective and impartial, applied consistently, promoted equality, and free from discrimination, harassment and victimization;
- **Transparency**: advertisements were designed to attract qualified and diverse field of suitable nominees, included information about positions and election process, and were published on a publicly accessible website;
- **Accountability**: selection procedures were consistent with applicable laws and designed to promote public confidence in the governance of the regulatory body; and
- **Independence**: the Nomination Committee and its members were free from influence by the Council, registrants of the regulatory body, the government or other parties.

Following a comprehensive and rigorous process for selecting the candidates for the 2021 election to Council, the Nomination Committee nominated four candidates for the position of Councillor and one candidate for the position of President.

While providing registrants with a choice in candidates for both the categories of Councillor and President was important, guided by the merit-based selection process, this year, only one candidate was selected for President. As mandated by the PGA, the Nomination Committee is charged with selecting qualified candidates with the skills and experience that best meet the needs of the organization. All candidates were assessed against the desired skills and competencies, including the prioritized skills of leadership and strategy, and the requirements of the roles for which they applied. Upon completion of its comprehensive and rigorous merit-based selection process, the Nomination Committee determined that only one of the prospective nominees for President met the required criteria.

President Candidate	Discipline	Location		
Carol Park, P.Eng.	Biomedical	Vancouver		
Councillor Candidates	Discipline	Location		
Mark Adams, P.Eng.	Mining	North Vancouver		
Tomer Curiel, P.Eng., FEC	Mechanical	Vancouver		
Nathan Ozog, P.Eng., FEC	Electrical	Vancouver		
Jens Weber, P.Eng.	Software	Victoria		

The following candidates were approved by the Nomination Committee to stand for the 2021 Engineers and Geoscientists BC Council election.

The list of nominees will be published on the Engineers and Geoscientists BC website and included in the July issue of E-news.

NOMINATION COMMITTEE OBSERVATIONS

Following the close of the selection process, the Nomination Committee debriefed on the process and were satisfied with the strength, rigor, and fairness of the process in selecting qualified candidates to stand for election to Council. The following observations were shared, some of which will be discussed in further detail by the Nomination Committee before commencing next year's candidate selection process.

- The Committee welcomed the addition of the redacted profiles and felt it strengthened the selection process and worked well to reduce unintentional bias.
- The reduced size of the Committee worked very well, allowing all committee members to participate in the candidate interviews. The new composition will also provide for better continuity going forward.
- Inclusion of a past Councillor and past President added value to the Committee, providing insight on the roles, responsibilities, and commitment required for those positions.
- The addition of two independent lay persons and their perspectives added value to the process
- The area of diversity needs more consideration; while active outreach to various external organizations and directly to individuals was conducted, more needs to be done to encourage applications from underrepresented groups
- There is a desire to provide sufficient choice to registrants; more work is needed to attract candidates, in particular the role of President
- The 2021 Nomination Committee was a completely new committee, with no members of
 previous nomination committees. The Committee suggests future nomination committees
 include at least one member from the previous year for continuity. The 2022 Nomination
 Committee will have at least two returning members and the staggering of terms is now
 built into the appointment process.

The Chair recognizes and thanks the Nomination Committee for their comprehensive and thoughtful evaluation of nominees for the 2021 Engineers and Geoscientists BC Council Elections, and for their considerable volunteer time and effort.

The Nomination Committee also thanks Engineers and Geoscientists BC staff and Watson Advisors for the very well organized and rigorous process that was established for candidate selection for Council.

Respectfully submitted,

Jamie Mc

Lianna Mah, P.Eng., FEC, FGC (Hon), Chair, Nomination Committee



ITEM 5.11.9

DATE	June 12, 2021
REPORT TO	Council for Information
FROM	Engineers and Geoscientists BC Directors to Engineers Canada
SUBJECT	Engineers Canada Update
LINKAGE TO STRATEGIC PLAN	To uphold and protect the public interest through the regulation of the professions

Purpose	General Update.
Motion	No motion required. For information only.

Engineers Canada (EC) is the national federation owned by the 12 Canadian engineering regulators. Engineers and Geoscientists BC currently appoints 2 directors to the 23 person national Board. Engineers Canada annual budget is approximately \$13M which is generated primarily by contributions from affinity programs and regulator assessments. Currently Engineers and Geoscientists BC past presidents Dr Michael Wrinch, P.Eng. and Jeff Holm, P.Eng. are serving as Directors.

Annual Meeting of Members

Engineers Canada Held its Annual Meeting of Members on May 28th, 2021. The organization remains in good financial standing with 2020 revenue at \$13.5M and expenses at \$9.2M. Expenses were lower primarily due to the pandemic limitations and this can be considered a highly unusual year. A report on the organization's four strategic priorities was issued and all have had acceptable progress though the pandemic has limited some activities. These strategic priorities are:

- 1. Accreditation Improvement
- 2. Accountability in Accreditation
- 3. Recruitment, retention and professional development of women in the profession
- 4. Competency Based Assessment

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National Volunteer Week

For this year's National Volunteer Week, themed "the value of one, the power of many", we prepared a <u>thank you to all of our volunteers</u> without whom our work would not be possible.

Upgraded website launched

In March, we launched a refreshed version of <u>www.engineerscanada.ca</u>. The relaunch was part of a necessary upgrade to the content management system of the site. The upgrade provides us with advantages and improvements in security, performance, content management, accessibility, and translation management. Site navigation remains the same, but you will see a refreshed look and feel that better aligns to our brand style.

Engineers Canada Board

At the April meeting, the Engineers Canada Board approved the 2020 audited financial statements and reviewed and adopted the new corporate risk profile. The Board also confirmed a decision to hold the Board-only strategic workshop virtually, on June 14 and 15, 2021.

In March, Changiz Sadr, one of our Board members from PEO, resigned his position as a director with Engineers Canada. Changiz has been a great contributor to the Board and the committees on which he has served over the past two years, and we extend our thanks and best regards as he settles into retirement.

The Governance Committee held its final meeting of the committee year, where it completed a review of various Board policies, considered a proposed new strategic performance reporting approach for implementation in 2022, and reviewed the results of the governance effectiveness survey.

Accreditation Board

The CEAB Required Visit Materials Working Group launched a consultation on their recommended changes to the materials that a program is required to submit to a visiting team for accreditation purposes. The working group was struck to envisage how the required materials could be amended to respond to feedback from Higher Education Institutions (HEIs) (who note the significant work effort to collect and present materials) and from visiting team members (who require information in order to adequately assess the curriculum content and quality). The consultation closes on June 4, 2021.

The CEAB conducted their final virtual visit of the 2020/2021 visit cycle. As next steps, the Task Force on Virtual Visits will reflect on the virtual visit experience, Engineers Canada staff will debrief with the institutions visited, and this data will be analyzed and presented to the CEAB at their June meeting. Lessons learned will be reflected in the 2021/2022 Guide to Virtual Evaluation of

Engineering Programs which will inform the approach to the next visit cycle which will be conducted using a virtual format.

The CEAB's Definition of Engineering Design Task Force continued discussions about stakeholder feedback collected during the consultation on the definition of engineering design. Their report was finalized for consideration at the April meeting of CEAB's Policies and Procedures Committee and at the June meeting of the CEAB.

Accreditation staff met with ABET staff to exchange learnings about virtual visits from their most recent visit cycle. The teams will continue to engage in collegial information exchange as we approach the fall visit cycle.

The 2021 Enrolment and Degrees Awarded Survey cycle was launched in April. This is an annual survey of Canada's undergraduate and postgraduate engineering programs to assess trends in enrolment and degrees awarded over a five-year period. The aggregated data is presented in <u>Canadian Engineers for Tomorrow.</u>

The Accreditation Improvement Program (AIP) System Advisory Committee participated in their second of five demos of the Tandem accreditation management software, as it's being configured to support our accreditation needs. The focus of the demo was on the calculation and display of the minimum path, Graduate Attribute Curriculum maps, and other aggregated views of data submitted by the institution.

The CEAB Task Force to Respond to the Engineers Canada 30 by 30 initiative continued their work to finalize a report with recommendations that will be presented to the CEAB at their June meeting.

On April 22, Bob Dony, Chair of the CEAB, and Stephanie Price, Executive Vice-President, Regulatory Affairs, attended and presented at Engineers and Geoscientists BC's Council Forum on Accreditation.

On April 24, the CEAB held a workshop on the 2022-2024 proposed accreditation strategic priority. The session sought to keep the CEAB informed on the strategic priority and to obtain CEAB expertise to inform planning.

Qualifications Board

Engineers Canada held meetings with bidders interested in submitting proposals for the CEQB's Guideline on Indigenous consultation and engagement. After receiving substantial interest, from more than a dozen firms submitting bids, the RFP was awarded to Urban Systems. The Practice Committee's internal meeting kicked off in April, and the Committee will hold an external meeting with Urban Systems in May.

The CEQB has started promotion of the new Guideline on Risk Management, which was approved by the Board in December 2020. The CEQB recently published an article on the guideline and its content and is now reaching out to members to gauge interest in developing a webinar or presentation to further share the work.

The CEQB Secretariat issued a request for proposal for a consultant to support its work on a feasibility study concerning alternative methods of academic assessment for non-CEAB applicants. The RFP sought a consultant or firm with expertise in the legal considerations, regulatory constraints, psychometric validity, cost and effectiveness of implementation, and related factors surrounding existing and potential methods of academic assessment. After consideration, the consultant Keith Johnson was selected. The Task Force will kick off work with him in May.

The draft general direction for the Guideline on Workplace Gender Equity was presented at the April 10, 2021 meeting and the CEQB approved to proceed to regulator consultation. The practice officials and 30 by 30 network will be asked for feedback, in addition to all regulators

International Institutions and Degrees Database (IIDD)

The new International Institutions and Degrees Database (IIDD) went live on March 31, 2021. A demo with a Q&A session was provided to NAOG as part of their meeting. Following this session, credentials to access the system were distributed to all end-users with instructions for training.

Mobility

The new International Mobility Advisory Group met for the first time. This group, which was created as part of our new sub-strategy on international mobility, will review the documentation related to activities and decisions of the International Engineering Alliance and guide our actions at their annual meeting in June.

National Discipline and Enforcement Officials Group

The National Discipline and Enforcement Officials Group met to discuss issues currently facing the regulators and provided advice and support to one other in addressing these challenges.

National Practice Officials Group

The National Practice Officials Group met to exchange information about current issues and challenges, and to make decisions regarding options for the development of equity, diversity and inclusion training for engineers. In April, regulators were invited to provide input on this training.

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Equity, Diversity, and Inclusion

Engineers Canada published <u>Indigenous Engineering in Canada</u>, an analysis of secondary data to estimate the participation of Indigenous engineers in the profession. The report was prepared for us by Big River Analytics.

Engineers Canada convened the monthly meetings of the Decolonizing and Indigenizing Engineering Education Network. The February meeting featured a presentation from Chloë Ryan and Emily Peters, co-creators of the McGill student-run interdisciplinary sustainability case competition, BRIDGE, which brings together students from diverse academic backgrounds (mainly engineering and business) to tackle a dynamic sustainability challenge. They presented on this year's project and partnership with the Hesquiaht First Nation and the Barkley Project Group in BC.

Engineers Canada participated in the virtual meeting of the Canadian Indigenous Advisory Council (CIAC) to the American Indian Science and Engineering Society (AISES). CIAC is one of Engineers Canada's strategic partners. Key outcomes included details regarding the AISES in Canada National Gathering and monthly AISES student webinars for Canadian members.

On March 18, the fourth annual National Gathering of the American Indian Science and Engineering Society (AISES) in Canada (formerly known as .caISES) was held virtually. Engineers Canada was among the sponsors and participants in the event. We led a discussion on "Improving Indigenous access to engineering," which included a presentation on our sub-strategy on Indigenous access to engineering. AISES in Canada is one of our strategic partners.

Engineers Canada attended the Equity and National Urbanism Leads virtual meeting. Key outcomes included a decision to collaborate on a joint event for Indigenous History Month in June 2021. The group is focusing on a virtual national film screening event and a panel discussion with Indigenous professionals from across the different professions. Participants in planning the event include Canadian Institute of Planners, Canadian Society of Landscape Architects, National Trust for Canada, the Royal Architectural Institute of Canada, and the Urban Development Institute.

Engineers Canada attended the board meeting of the Canadian Coalition for Women in Engineering, Science, Trades and Technology (CCWESTT). A portion of the meeting was dedicated to discussing the virtual panel on which Engineers Canada collaborated with CCWESTT during Black History Month; the panel was CCWESTT's most successful virtual members' forum event to date. CCWESTT is one of our strategic partners.

Engineers Canada participated in a virtual panel discussion, "Women in Engineering and work integrated learning", part of the celebration of the 40th anniversary of Concordia's Institute for Co-operative Education.

Additionally, in collaboration with Elaine Gillespie, 30 by 30 Champion for the Northwest Territories Association of Professional Engineers and Geoscientists (NAPEG), Engineers Canada presented on 30 by 30 at the NAPEG "Powering the North of the Future" virtual symposium.

Engineers Canada met with Professional Engineers Ontario to discuss the 30 by 30 scorecard and discovery report that was developed as part of the "Gender-based analysis (GBA+) of national engineering licensure assistance and employer awareness programs" project. Meetings with all regulators have been scheduled.

Government Relations

Engineers Canada made a <u>submission to the House of Commons Standing Committee on Human</u> <u>Resources, Skills and Social Development and the Status of Persons with Disabilities</u> regarding their study on the Review of the Employment Insurance Program. A draft version of this submission was shared with regulators in March. The Association of Professional Engineers and Geoscientists of Alberta, Engineers Nova Scotia, Engineers and Geoscientists New Brunswick, Professional Engineers and Geoscientists Newfoundland and Labrador, and members of the 30 by 30 Regulator Champions group responded with comments and suggestions that were included in the final submission.

The Honourable Chrystia Freeland, Canada's Deputy Prime Minister and Minister of Finance, tabled Budget 2021: A Recovery Plan for Jobs, Growth, and Resilience. We published a <u>media</u> <u>release</u> on our website, and also released a <u>detailed analysis of the budget</u> and its implications to the engineering profession.

Due to the current federal government focus on vaccine procurement and distribution, Engineers Canada will postpone our annual Hill Day. We will share any updates once more information becomes available. In the interim, Engineers Canada continues to engage with parliamentarians and senior officials to link our policy priorities to the federal budget, as well as set the stage for a larger federal advocacy push following the summer recess or a potential election.

In celebration of National Engineering Month (NEM) 2021 and International Women's Day, the Honourable Steven Blaney, who is one of the few MPs who are also engineers, <u>provided remarks</u> to the House of Commons highlighting both events and the importance of diversity in the engineering profession.

Engineers Canada held meetings with various government and opposition officials. Each of these invitations to meet arose from correspondence we sent as a result of Ministers' supplemental mandates or new opposition critic appointment:

- The Minister of Labour, Filomena Tassi, to discuss Engineers Canada's priorities to support her supplemental ministerial mandate to launch a review of the *Employment Equity Act* to further advance equity, diversity, and inclusion in hiring practices.
- Nicholas Kang, Director of Policy, and Kelly Bryant, Senior Policy Advisor, to Carla Qualtrough, Minister of Employment, Workforce Development and Disability Inclusion to discuss Engineers Canada's work to attract, retain, and support professional development opportunities for women and to work with the federal government to increase equality and access within Canadian workplaces.

- MP James Cumming, the opposition critic for COVID-19 Economic Recovery to discuss Engineers Canada's priorities and how the engineering profession has been contributing, and can continue to contribute in the future, to strengthen Canada's economic recovery.
- Within Engineering Matters, we are publishing a series of interviews to showcase the work of engineers on Parliament Hill. To date, we have published interviews with MP Steven Blaney, MP Marilyn Gladu, and MP Sukh Dhaliwal.

National Engineering Month

March was National Engineering Month. This year's all-digital campaign focused on different topics for each week of NEM. Below are a few highlights:

- Week one focused on interdisciplinary professions. Professional Engineers Ontario (PEO) led a panel discussion on the importance of lifelong learning for the engineering and technology community.
- Week two focussed on equity, diversity and inclusion where an open discussion about diversity and inclusion was led by Professional Engineers & Geoscientists Newfoundland & Labrador.
- Week three focused on the next generation of engineers. We arranged an interview with two Canadian Federation of Engineering Students (CFES) leaders, Matthew Tutty and Sierra Sparks, which was published in an insert in The Globe and Mail. The CFES is one of our strategic partners.
- The fourth and final week of NEM 2021 rolled out with events and activities on engineering the future. As part of the theme, Engineers Geoscientists Manitoba (EGM), l'Ordre des ingénieurs du Québec (OIQ) and Professional Engineers Ontario (PEO) held webinars discussing licensure and ethics.

In addition, students from across Canada participated in a live reading of the children's book "*If: Ball, Then: Catch*" followed by a coding activity. This initiative was led by the Association of Professional Engineers and Geoscientists of Alberta (APEGA) on behalf of our Digital Engagement Working Group Outreach.

Engineers Canada met with the incoming and outgoing leadership of the Canadian Federation of Engineering Students (CFES). On the agenda were presentations and discussions about each organization's strategic priorities, the mentorship program, and a presentation on the Canadian Engineering Accreditation Board. CFES is one of our strategic partners.

Engineers Canada attended two CFES events in this period, including the Conference on Sustainability in Engineering and the Canadian Engineering Competition:

• The Conference on Sustainability featured several speakers including David Suzuki and Senator Rosa Galvez, the only Canadian senator who is an engineer.

 The Canadian Engineering Competition (CEC) was hosted virtually this year by the University of New Brunswick and brought together more than 200 students across Canada. Engineers Canada had roles as both judges and panelists. At the CEC's awards ceremony, President Boudreau presented the award for Innovative Design on behalf of Engineers Canada.

CFES IT Commissioner, student Alex Stojda, led a session for Engineers Canada staff on "Zoom in Action, How the CFES has been using Zoom to manage all their Conferences". The session covered how CFES leveraged different features to try and re-create the conference experience digitally.

Engineers Canada worked with Ontario Tech University and Engineers of Tomorrow to organize a live Q&A for the Future City program. The event focused on this year's Future City theme, Living on the Moon. The one-hour Q&A session drew over 200 questions and saw over 450 registrants. This is an estimated reach of over 1,000 students from classrooms across Canada given that, in some cases, one registration equalled an entire classroom of students.

Engineers Canada participated in the DiscoverE Persist Series Thought Leaders meeting. Updates on the past three sessions were given by the organizers, and planning for May to September sessions has begun.

Engineers Canada Directors from Engineers and Geoscientists BC,

Jeff Holm, P.Eng, FEC and Dr. Michael Wrinch, P.Eng, FEC

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OPEN SESSION ITEM 5.11.10

DATE	June 10, 2021
REPORT TO	Council for Information
FROM	Engineers and Geoscientists BC Director to Geoscientists Canada
SUBJECT	Geoscientists Canada Update
LINKAGE TO STRATEGIC PLAN	To uphold and protect the public interest through the regulation of the professions.

Purpose	Geoscientists Canada 24 th AGM update.
Motion	No motion required. For information only.

BACKGROUND

Geoscientists Canada ("GC") held their 24th Annual General Meeting and 69th Board Meeting on June 4, 2021.

To celebrate their **25**th **Anniversary**, Geoscientists Canada has created a video on their history, which will shortly be posted for viewing on their website. The meeting was well attended by constituent association ("CA") directors, presidents and CEOs as well as affiliate organizations, both national and international, and former directors and past presidents.

HIGHLIGHTS

- Report by CEO shows a projected decline in Geoscientist-in-Training/Member-in-Training registrants across Canada.
- Several of GC's website publications provide CA resources for GIT and professional applicants including:
 - Framework for Assessment in the Licensing of Professional Geoscientists in Canada
 - GIT Program Information Guide
 - Geoscience and Canada

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- The revised and updated Your Professional Career & Public Reporting: A Short Course for Students was approved for use and for distribution to CAs. This short course was originally developed several years ago as a joint project of the Geoscientists Canada Securities Committee and the Canadian Securities Administrators. The course is designed to facilitate informing geoscience students and early career geoscientists about the National Instruments and about their professional responsibilities when acting as a Qualified Person under the National Instruments as a P.Geo. The day-long short course is available to all geoscience regulators to facilitate presentations on this topic.
- New 21 tenet draft Statement of Ethics and companion guidance document has been developed. The draft document will shortly be provided to the CAs for review and input.
- New Equity, Diversity and Inclusion (EDI) statement was developed and approved in April.
- New Principles for development of a regulatory regime for granting geoscience technologists independent practice rights was approved in March. Both position statements are available on Geoscientists Canada's website.
- > New position statement on the Licensing of Geoscience Practitioners was approved.

Respectfully Submitted,

Del W. Ferguson, P.Geo., P.L.Eng., FGAC, FGC

Engineers and Geoscientists BC Director to Geoscientists Canada

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ITEM 5.11.11

DATE	June 10, 2021
REPORT TO	Council for Information
FROM	Engineers and Geoscientists BC Representatives to the Engineers Canada Qualifications Board
SUBJECT	Engineers Canada Qualifications Board Update
LINKAGE TO STRATEGIC PLAN	To uphold and protect the public interest through the regulation of the professions.

Purpose	To provide an update on CEQB activities that have happened since the last council meeting.
Motion	No motion required. For information only.

BACKGROUND

The Canadian Engineering Qualifications Board (CEQB) develops national guidelines, Engineers Canada papers, and examination syllabi that serve the needs of regulators, engineering licence holders, and applicants for licensure by enabling the assessment of engineering qualifications, fostering excellence in engineering practice and regulation, and facilitating mobility.

DISCUSSION

The CEQB has completed consultation on proposed items for its 2022 Work plan, seeking regulator input which will now be considered in the development of a draft plan for this September. Notably, in addition to documents scheduled for review, the CEQB consulted on three priorities for new documents: a public guideline on fitness to practice, a public guideline on whistleblowing, and a research paper on engineers working internationally. It may also be of particular interest to Engineers and Geoscientists BC that among the documents scheduled for review in 2022 is the 2016 Public guideline on sustainable development and environmental stewardship for professional engineers.

Since the previous council meeting, the CEQB has also made significant progress on work items in its 2021 Work plan:

- The CEQB Task Force on Workplace Gender Equity has completed consultations on its draft general direction for a guideline and will be working over the summer to finalize the general direction.
- The new Task Force on Alternative Methods of Academic Assessment for Non-CEAB Applicants has completed work on an environmental scan and will be holding a national workshop to solicit perspectives for its feasibility study in early July.
- The CEQB Practice Committee has engaged an Indigenous-led team from Urban Systems to support the creation of a new guideline for engineers and engineering firms on Indigenous consultation and engagement. The consultants have begun planning for a national gathering to be held in September and presented to the Practice Committee on June 11.
- The CEQB Task Force on Software Engineering has been working to develop a survey that will support its revision to the 2014 Engineers Canada paper on software engineering.

In addition to this major work, the revised Syllabus for software engineering was approved by the CEQB at its April meeting. Review work has continued on several CEQB syllabi:

- New Aerospace and aeronautical engineering syllabus
- 2004 Agricultural/biosystems/bioresource/food engineering syllabus
- 2010 Metallurgical engineering syllabus (likely to be changed to Materials engineering to reflect changes in this area)

As a final note, the CEQB welcomed two new members-at-large following approval by the Engineers Canada Board in May:

- Kamran Behdinan: Founding director of the University of Toronto Institute for Multidisciplinary Design and Innovation and current NSERC Design Chair in "Multidisciplinary Design and Innovation – UT IMDI"
- **Marcie Cochrane:** Subject matter expert in diversity and inclusion within the engineering sector, and Chair of Engineers and Geoscientists BC 30 by 30 Champions Committee

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ITEM 5.11.12

DATE	June 8, 2021
REPORT TO	Council for Information
FROM	Julius Pataky, BC & Yukon Engineers and Geoscientists Representative to the Engineers Canada Accreditation Board
SUBJECT	Engineers Canada Accreditation Board Update
LINKAGE TO STRATEGIC PLAN	To uphold and protect the public interest through the regulation of the professions.

BACKGROUND

The Canadian Engineering Accreditation Board (CEAB) is a committee of the Board of Engineers Canada. The Accreditation Board accredits Canadian Engineering programs in order to assure Canada's engineering education system remains amongst the best in the world; to set national standards for engineering education; and to provide expertise and efficiency in assessing engineering education on behalf of provincial and territorial engineering regulatory bodies. The CEAB also supports the Engineers Canada in ensuring alignment between Canadian engineering education and accreditation and international standards.

The CEAB (also referred to as the AB) deploys well-established process employing both paper review elements and site visits and interviews. The AB issues accreditation decisions on the basis of recommendations from the visiting team and after review of the recommendation by the AB.

Programs are reviewed and assess on the basis of explicit criteria - including Accreditation Units based on exposure to learning time: lectures, labs, tutorials, etc.. These criteria include 12 Graduate Attributes and the supporting Continuous Improvement processes of the specific institutions. For Higher Education Institutions (HEI) in British Columbia, the AB reviews the engineering programs of UBC, SFU, UVic, UNBC and BCIT.

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DISCUSSION

The CEAB participated in a workshop with Engineers Canada (EC) staff in April to discuss the CEAB's views on moving forward with the EC's Strategic Initiative of conducting a third party assessment of the Canadian Accreditation System. EC staff is developing a work plan for this initiative.

The CEAB held its usual spring meeting on June 4-5, 2021, the 170th meeting of the Board.

• Reports to the Board

Reports include presentation by EDC: topics of note included those raised by the EDC in the EGBC Council Forum of April with particular emphasis on the definition of Engineering Design and scope creep of accreditation as it relates to CEAB's work on EC's 30 by 30 initative and EDI mandate.

Presentation from the Canadian Federation of Engineering Students (CFES) on the impacts of remote and on-line learning particularly as it relates to awareness of self in the context of mental health, social isolation and collaborative learning.

Presentation by Chair of CEQB on its activities (see ECQB report to Engineers and Geoscientists BC Council).

Presentation from CEAB members on EC Board, regarding EC Board activities. Of particular note is the Accreditation System risk, identified as the greatest risk in the EC Organizational Risk Report. (refer EC report to Engineers and Geoscientists BC Council)

Accreditation Matters

The CEAB deliberated on Program accreditation for nine HEIs; all these visits and assessments were conducted virtually during the COVID restriction. There were no significant limitations to deliberations or decisions because of the virtual nature of the visits. The CEAB is on track to conduct all 79 program visits at 17 institutions for 2021/22 virtually.

• Policy Matters

The Policy and Procedures Committee provided an update on the activities to address EDC concerns specifically: AU requirements for accreditation is deemed closed; those that are still work in progress (i) removal of limitation on AUs claimed per single course, (ii) onsite documentation requirements for visits, (iii) response to the AU white paper and (iv) interpretive statements as shadow regulation; and those that are outside the scope of the CEAB: (i) increased scope of accreditation (ex: 30by30 and EDI), (ii) on-boarding of new faculty, (iii) independent review of the accreditation system and (iv) barriers to international exchange. After significant consultation input of the proposed changes to limitations of AU claimed per single course, the final report and recommendations were presented to and accepted by the CEAB.

Accountability in Accreditation Committee provided an update on its work, which included solicitation of input from HEIs receiving recent accreditation decision, regulators and those participating in recent visits. Data submission continues to be slow believed to be because of pandemic priorities and the deferral of the 2020/21 accreditation visits. The Committee plans to prepare its draft report of findings over the summer of 2021.

The Task Force on the definition of Engineering Design submitted its final report and recommendations after extensive consultations (90 pages of input from 43 sources). The CEAB accepted the findings and agreed to submit the report and recommendations to the EC Board for final decision.

The Task Force on Virtual Visits completed its report, which included recommended guide for conducting virtual visits. The CEAB accepted the guide and agreed to follow the approach for 2021/22 virtual visits. The Report will also be posted on the CEAB public web-site. All CEAB members will participate in a training workshop in July on the process of virtual visits and the roles in leading and participating in virtual visits.

Required Visit Materials Working Group, circulated the final draft recommendations for consultation. Institutions' participated with 59 participants, in 4 webinars regarding the recommendations. Consultation input closed on June 4th.

Task Force to support the 30 by 30 initiative presented its final report after considering Board feedback on an earlier draft. It should be noted the terms of reference for this task force was expanded to include EC's EDI (Equity, Diversity and Inclusiveness) mandate. The recommendations fall into the categories of: CEAB criteria and procedures; interpretive statements; encouraging recruitment and retention to the profession; volunteer management; and general accreditation activities. Given the extent of the recommendations, expansion of the its mandate and the continued concerns of the EDC regarding accreditation scope creep, the CEAB decided to ask the Task Force to solicit broader consultation input on its findings and recommendations.

Task Force to review of the Terms of Reference for the Policy & Procedures Committee will finalize its report after receiving the input from CEAB members on the leadership models presented at the previous meeting.

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International Engineering Alliance update: The monitoring visit of Engineers Canada under the Washington Accord (WA) is to occur in this accreditation cycle. The CEAB is awaiting finalization of protocols and procedures from the WA team. The CEAB reviewed the WA Signatory Application of Chile and submitting findings to the EC delegation to the Washington Accord.

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ITEM 5.11.14

DATE	June 10, 2021	
REPORT TO	REPORT TO Council for Information	
FROM	Heidi Yang, P.Eng., Chief Executive Officer	
SUBJECT	2020/2021 Workplan	
LINKAGE TO STRATEGIC PLAN	To uphold and protect the public interest through the regulation of professions.	
Purpose To	provide Council with the current status of the actionable items listed on the	

Purpose	To provide Council with the current status of the actionable items listed on the
	Council Road Map for 2020/2021.
Motion	No motion required, for information only.

BACKGROUND

The attached document summarizes the expected agenda items that are planned to be brought forward to Council during the 2020/2021 Council Year. The items are aligned with the Strategic Plan and assist Council in seeing the progress on elements of the Strategic Plan. This road map is not exclusive and other additional items may be added throughout the year but will serve as a focus for this year's meetings.

Please note the following changes to the Work Plan as at June 25, 2021:

- The Contingency Budget update has been removed from the workplan for the June 25th meeting as there have been no further updates since the last report provided at the April 23rd meeting. Furthermore, no update will be provided given it is the last reporting period in the current fiscal year and a report will come to Council along with the 2020/2021 audited financial statements at the September meeting.
- At the April 23, 2021 Council meeting, Council received an update on the timeline for the Strategic Plan development. The new timeline has the plan development initiating in September 2021 and concluding in June 2022.

This revised timeline will provide for a period of onboarding and familiarization of the new CEO, allowing them to contribute fully to the plan's development. As such, the June forum has shifted to the fall when the new CEO will be in a better position to participate and lend their vision.

• Due to competing work priorities, the Council Appointment Policy will be brought forward to Council for review and approval at the September 24, 2021 meeting.

Please note that the item on the Work Plan noted below has been carried forward indefinitely and will be revisited at a future date:

• June 24 Induction Ceremony: By order and direction of the Provincial Health Officer, all events and social gatherings are currently suspended to significantly reduce COVID 19 transmission related to social interactions and travel.

ATTACHMENT A – Council Road Map (as of June 25, 2021)

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Engineers and Geoscientists BC Council Road Map for 2020-2021

	Strategies	November 20, 2020 (Council Meeting)	December 11, 2020 / January 15, 2021 (Tentative Meeting)	February 4, 2021 (Full Day Council Forum)	February 5, 2021 (Council Meeting)	March 26, 2021 (Special Meeting of Council)	April 22, 2021 (Full- Day Council Forum)	April 23, 2021 (Council Meeting)	June 24, 2021 (Full Day Council Forum)	June 25, 2021 (Council Meeting)	September 23, 2021 (Full Day Stretgic Planning Session)	Sept (Co
		Professional Governance Act Update/Decision Making		Separate Advocacy Body Review	Professional Governance Act Update/Policies for Approval		Strategic Plan Overview (Deferre to fall 2021)	d Professional Governance Act Update/Policies for Approval		Professional Governance Act Update/Policies for Approval		Professional Gove
							Executive Committee/Governance Review					
	Clarify the association's regulatory role and responsibilities through ongoing communication and engagement with members and other	Code of Ethics Guide (Informational Update)		Reserved Practice			(Deterred to 2022)	AGM Motion	Cancelled			
	stakeholders.						(Deferred to fail 2022)					
Goal 1 To uphold and protect the public interest through the regulation of the		Advocacy Review Update			Advocacy Review Update		CAD Accreditation Process Review (NEW	Fairness Panel Annual Report (up				
professions.								to implementation to the PGA if needed)		Report of the Neminstine Committee on		
	Identify and implement practices, programs	Bylaw Approvals	Bylaw Approvals		Approval of Review on the Record Procedure			Code of Conduct for Council Members		its Selection of Nominees		
	policies, bylaws, and Act amendments that improve Engineers and Geoscientists BC's ability to more effectively carry out its duty and objects.	Policy on Transparency of Council Meetings			Approval of Rejection of Application for Indictable Offence Policy (To be approved by Credentials Critte vs. Council)					Process for Selecting VP		
		Approval of Fees Prior to incorporation in the Bytaws								Council Appointment Policy (Deterred to September 2021)		
		Approval of Edits to Credentials Committee Terms of Reference with respect to Non-Contentious Decisions										
Goal 2												
Establish, maintain and enforce qualifications and professional standards.		Professional Practice Guidelines - Seismic Retrofit, Version 4.0			Guide to the Letters of Assurance			Protection Engineering Services for Building Projects		Seismic Assessment of Design of Dikes In BC		
		Professional Practice Guidelines - Professional Engineering Services for Temporary Structures: Formwork, Falsework and Reshore, Version 1.0			Professional Practice Guidelines: Asset Management					Professional Practice Guidelines: Tall Concrete Buildings		
	Enhance members' awareness and use of professional practice resources.				Professional Practice Guidelines: Alterations							
		ABC/Engineers and Geoscientists BC Joint Professional Practice Guidelines – Encapsulated			of Elevating Devices in Existing Buildings					Camate Change Action Plan Update		
		Mass Timber Construction up to 12 Storeys, Version 1.0								Continuing Education Program Opcare		
		Quarterly IBD and Enforcement Reports			Quarterly I&D and Enforcement Reports			Quarterly I&D and Enforcement Reports				Year End I&D
	Deliver timely, outcomes-focused complaints and enforcement processes.				Update on High Profile Discipline Files							
	Develop a system for corporate regulation that demonstrates enhanced public protection.	Regulation of Firms - items for information						Regulation of Firms Update				Regulat
					Update on Pan-Canadian Geoscience							Update on Pan-Car Based J
					Competency based Assessment Proceducy							
	Participate in initiatives that improve national harmonization of regulatory processes.				Update on Pan-Canadian Engineering Competency Based Assessment Project							Update on Pan-Car
					Update on Professional Placement Pliot Program							
	Implement the new brand and increase awareness of			Induction Ceremony -					Induction Ceremony			
	BC must meet.			Cancelled due to COVID-19	Registration/Admissions Report for Calendar				Cancelled due to COVID-19	Hodate on Implementation of Canadian		
Goal 3	Assess and improve admission processes and tools to facilitate robust and timely assessment of applicants.				2020					Environment Competencies		Registration/Adm
professions of engineering and geoscience (subject to goals 1 & 2).										BC Higher Education Institution (H.E.1) Updates		
	Implement processes that support Engineers Canada's 30 by 30 program for improving the number of women in the professions.				Division Activity Update					30x30 Initiative Update		Divisi
	Clarify the association's regulatory role and responsbilities through ongoing communication and engagement with members and other stakeholders.											
Sustaining Operations		Strategic Operating Plan Update			Budget Guidelines			2022 Budget				
		Risk Register Return to Work Program Overview			Risk Register KPI Update			Risk Register		Risk Register		1 2021 Audite
		CEO Search Task Force Update Contingency Budget Update			CEO Search Task Force Update Contingency Budget Update	CEO Search Task Force Update		CED Search Task Force Update Contingency Budget Update		CEO Onboarding Update Contingency Budget Update		Mandatory Re Conting



5.11.14 - ATTACHMENT A

September 24, 2021	November 1, 2021
(Council Meeting)	ົ2021/2022 Term)ິ
sional Governance Act Update/Policies for Approval	Appointment of Councillors to Council Sub-Committees
aar End I&D and Enforcement Reports	
Regulation of Firms Update	
on Pan-Canadian Engineering Competency Based Assessment Project	
on Pan-Canadian Geoscience Competency Project	
tration/Admissions Report for Fiscal 2021	
Division Activity Update	
KPI Update	Approval of Auditors
Risk Register	
2021 Audited Financial Statements	
andatory Registrant Reporting Results Contingency Budget Update	



ITEM 5.11.15

REPORT TOCouncil for InformationFROMHeidi Yang, P.Eng., Chief Executive OfficerSUBJECTCouncil Attendance Summary (as at June 10, 2021)LINKAGE TOTo uphold and protect the public interest through the regulation of the professions.	DATE	June 10, 2021
FROMHeidi Yang, P.Eng., Chief Executive OfficerSUBJECTCouncil Attendance Summary (as at June 10, 2021)LINKAGE TOTo uphold and protect the public interest through the regulation of the professions.	REPORT TO	Council for Information
SUBJECTCouncil Attendance Summary (as at June 10, 2021)LINKAGE TOTo uphold and protect the public interest through the regulation of the professions.	FROM	Heidi Yang, P.Eng., Chief Executive Officer
LINKAGE TO TO uphold and protect the public interest through the regulation of the professions.	SUBJECT	Council Attendance Summary (as at June 10, 2021)
	LINKAGE TO STRATEGIC PLAN	To uphold and protect the public interest through the regulation of the professions.

Purpose	To provide updates on the Council attendance summary.
Motion	To motion required. For information only.

BACKGROUND

The Council Attendance Summary is used to track individual attendance at the Council meetings and other Council related events as well as the meetings of Council Sub-Committees that Councillors are assigned to (e.g. the Executive Sub-Committee, the Governance Sub-Committee and the Audit Sub-Committee). Each Councillor is assigned a column which is regularly updated.

At the end of the Council term, each Councillor's column will be tallied and a percentage applied. The intent in curating this summary is to provide information that will assist with future correspondence relating to things such as the election; this will enable staff to display the high level of dedication that is required of candidates. The Council Attendance Summary will also provide a clear visual of the number of mandatory (and a select few strongly recommended) Council related meetings that the average Councillor is required to attend.

ATTACHMENT A – Council Attendance Summary (as at June 10, 2021)

Engineers and Geoscientists BC Council | June 25, 2021

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Attendance Mandatory (counts towards final tally) Attendance Strongly Encouraged (does not count towards final tally) Attendance for Partial Meeting





ITEM 6.1

DATE	June 10, 2021					
REPORT TO	Council for Discussion and Decision					
	Efrem Swartz, LLB					
FROM	Director, Legislation, Ethics and Compliance					
	Laura Wilson, JD					
	Legal Counsel, Policy and Regulation of Firms					
SUBJECT	Amendments to the Bylaws of Engineers and Geoscientists BC					
LINKAGE TO STRATEGIC PLAN	PGA Implementation					

Purpose	Council is requested to review and approve the proposed amended draft Bylaws.
Motion	That Council approve the attached amended draft Bylaws and authorize staff to
	forward these amended Bylaws to the Office of the Superintendent of Professional
	Governance for filing with the Attorney General pursuant to section 37 of the PGA.

BACKGROUND

As part of the transition to the *Professional Governance Act* (the "PGA"), new Bylaws were developed to replace the existing Bylaws that had been in place under the *Engineers and Geoscientists Act*. The new Bylaws were approved and brought into force by a motion of Council on February 5, 2021.

In the process of implementing the new Bylaws, a number of potential amendments have been identified. If these proposed amendments are approved by Council, the amended Bylaws will be sent to the OSPG for filing with the Attorney General pursuant to the procedure set out in section 37 of the PGA. The OSPG has already conducted a full review of the proposed amended Bylaws and have confirmed that their office is in agreement with the proposed amendments.

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DISCUSSION

The amendments that are proposed at this stage are limited in scope. They include: corrections to typographical errors; addition of citations to the *Engineers and Geoscientists Regulation*; minor revisions to wording for clarity; and targeted amendments to address specific, narrow issues that have been identified since the Bylaws were passed.

The complete draft amended Bylaw package with redline showing the proposed amendments can be found at **Appendix A**. A clean copy of the final draft amended Bylaws can be found at **Appendix B**.

Enclosed as **Appendix C** is a table which sets out the details and explanation for each proposed amendment.

RECOMMENDATIONS and MOTION

That Council approve the attached amended draft Bylaws and authorize staff to forward these amended Bylaws to the Office of the Superintendent of Professional Governance for filing with the Attorney General pursuant to section 37 of the PGA.

APPENDIX A – Final Draft Amended Bylaws with Redline Revisions

APPENDIX B – Clean Final Draft Amended Bylaws

APPENDIX C – Table of Proposed Amendments to Bylaws

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ITEM 6.2

DATE		June 10, 2021		
REPORT TO		Council for Discussion		
FROM		Governance Council Sub-Committee		
SUBJECT		Policy on Council Meetings and Decision-Making Model		
LINKAGE TO ST PLAN	RATEGIC	We support effective governance.		
Purpose	To review	v and approve the Policy on Council Meetings		
Motion 1 That Council approve the Policy on Council Meetings.				

Motion 2	That Council repeal Bylaw 2.4 (3): The rules contained in Robert's Rules of Order
	must govern the conduct of Council meetings, as applicable, except where
	Robert's Rules of Order are inconsistent with the Bylaws or any policies,
	procedures, or rules of order adopted or established by Council pursuant to
	subsection (2).

BACKGROUND

Currently, the rules and procedures for how Council meetings are conducted are set out in Bylaw and various policies. In our effort to continually improve our governance policies and resources, a comprehensive policy for Council meetings has been developed with the following objectives in mind:

- To provide for a comprehensive and clear set of rules, practices and guidelines that will provide a common basis for all meeting participants, and be an accessible reference for Councillors
- To incorporate current rules and practices that are serving Council well, and to consider opportunities to refine or evolve how Council meetings run or to address potential gaps, with consideration for leading practices

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While many of these practices currently exist, they are not housed in one, easy to access document. A more comprehensive policy for Council meetings has been designed to provide a framework to support effective and engaging meetings and act as a key resource for future onboarding.

In its consideration of this new policy, the Governance Sub-committee reviewed the <u>Board Meeting</u> <u>Guidelines</u> developed by the BC College of Nurses and Midwives (BCCNM) and agreed to model the policy on this example.

DISCUSSION

Based on the Act, Bylaws, policies and current practice, a new Policy on Council Meetings has been reviewed and endorsed by the Governance Sub-committee and is attached as Appendix A. The Policy includes a departure from Robert's Rules of Order (RRO) for Council meetings and other changes that are different from current practice - those changes are described below:

 Decision-Making Process – A key component of the new policy is an alternative decisionmaking process. Currently, the rules of order that govern a meeting of Council are Robert's Rules. RRO are rules of order originally intended to be adopted as parliamentary authority for use by a large deliberative assembly and many boards have moved away from RRO for board meetings.

RRO set rules that offer a sense of order and provide a clear record of decisions. The rules are intended to promote fairness, equality and common sense, while balancing the need for efficiency (order and timeliness) with the need for democratic decision-making (a reasonable opportunity for all sides to debate the issue before a vote is taken).

While the rules are intended to facilitate progress, they can sometimes have the opposite effect. Some criticisms of RRO are:

- Unnecessarily cumbersome for average sized boards
- Can stifle conversation, where the focus is put on procedure and not fostering dialogue
- Volume and complexity of the rules can be difficult to understand,
 - not all participants are familiar, requires specific training and can lead to misinterpretation or misapplication of the rules

Considering the challenges, many boards are adopting alternative approaches to decisionmaking and moving to establishing a basic set of rules of procedure, while maintaining similar fundamental concepts: motions, amendments, voting. While RRO continues to be appropriate for a large meeting (e.g. the AGM), its suitability for meetings of Council has been re-examined by the Governance Sub-committee, particularly, as we move to a smaller Council size.

The Governance Sub-committee discussed the use of RRO and its efficiency for Council meetings. While there were some benefits of Roberts Rules noted by the Sub-committee, such as structure and formality, there was agreement that the emphasis on procedure can have drawbacks, particularly in drawing out diverse viewpoints and fostering dialogue.

The Governance Sub-committee supports an alternative model for consideration by Council, as outlined below, providing for a simplified, straightforward process of moving from discussion to decision.



Following the BCCNM model, motions would not need to be seconded. Only new motions that have not been placed on the written agenda and not considered by staff, require a seconder.

The new decision-making process is intended to provide for a more straightforward and simplified process for decision-making. The proposed process relies on the President as Chair to facilitate debate, draw out different perspectives and keep the decision focused. The process also provides more discretion to the President/Chair in managing the agenda and the meeting.

While Bylaw 2.4 (2) provides Council with the authority to establish policies, procedures or rules of order for the purpose of regulating the conduct of a Council meeting, Bylaw 2.4 (3) states that Robert's Rules of Order must govern the conduct of Council meetings, as applicable, except where Robert's Rules of Order are inconsistent with the Bylaw, or any policies, procedures, or rules of order adopted or established by Council. Although the bylaws permit Council to adopt other policies and procedures, to avoid confusion, it is recommended that Bylaw 2.4 (3) be repealed.

2. Permission for guests to speak – Under RRO, guests require permission of Council to speak. Our Bylaw requires a majority vote. In practice this rule has not been applied to members of our "extended Council". To address this discrepancy, our representatives to the Engineers Canada, Geoscientists Canada boards and PNWER are being considered standing observers in the new policy, that is observers that attend every meeting. The policy reflects that they may speak at the discretion of the Chair, which matches our current practice of prioritizing Council and allowing members of the extended Council to speak, time permitting.

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Open meetings are also open to registrants and members of the public. In a given year, one to two registrants attend (not including guests from other organizations, e.g. ACEC-BC). In reviewing the practice of other regulators, it seems that many other regulators permit registrants and members of the public to attend as observers only (see example from <u>College of Physicians and Surgeons of BC</u>).

As Council has a separate policy that permits registrants to present to Council (through an advance submission process) and that registrants also have the opportunity to connect with Council through the president's email, the policy reflects that only standing observers (extended Council) may be permitted to speak during a Council meeting.

3. Agendas – Our current practice allows for Councillors to propose an agenda item for consideration in advance of the meeting by completing the Agenda Item Request Form. In special cases, where an emerging issue may warrant a new agenda item to be considered at the meeting, the current practice requires a vote of Council to add the item. The new policy provides discretion to the President/Chair, in consultation with Council and management, to determine whether the item will be added.

Similarly, if a new motion is proposed at the meeting, which has not been considered by staff and is not supported with a briefing note, discretion lies with the President/Chair on how best to deal with the proposed resolution.

In addition, discretion has been provided to the President/Chair to modify the agenda order to accommodate certain circumstances such as a guest or speaker being late or if a member of Council must leave early. Our current practice requires a vote of Council, and it is recommended that this process be simplified.

RECOMMENDATION

The Governance Sub-committee reviewed the Policy on Council Meetings at its May 25th meeting and made some recommendation to improve the document, which have been incorporated into the policy.

The Governance Sub-committee recommends that Council approve the Policy on Council Meetings and that Bylaw 2.4 (3) be repealed.

MOTION

Motion 1: That Council approve the Policy on Council Meetings

Motion 2: That Council repeal Bylaw 2.4 (3): The rules contained in Robert's Rules of Order must govern the conduct of Council meetings, as applicable, except where Robert's Rules of Order are inconsistent with the Bylaws or any policies, procedures, or rules of order adopted or established by Council pursuant to subsection (2).

APPENDIX A – Policy on Council Meetings

Engineers and Geoscientists BC Council | June 25, 2021



ITEM 6.3

DATE	June 9, 2021
REPORT TO	Council for Decision
FROM	Governance Sub-Committee
SUBJECT	Fee Waiver for Outgoing Presidents
LINKAGE TO ST PLAN	RATEGIC We support effective governance.
Purpose	To consider a new bylaw on an interim basis to enable Council to award a permanent fee waiver in recognition of exemplary service by an outgoing President.
Motion	That Council approves the following bylaw to be inserted as the new subsection 6.7 (4): The Council may waive payment of all or part of a fee, either annually or on a permanent basis, including the annual fee and special assessments, for an individual Registrant who demonstrates exemplary service to Engineers and Geoscientists BC in the role of Council President and who the Council accordingly wishes to honour.

BACKGROUND

Council has had a history of recognizing outstanding contributions to the professions through a fee waiver. This was previously awarded through the Honorary Life Membership and Honorary Membership categories defined in our bylaws. Registrants were also awarded Life Membership based on certain qualification criteria. An overview of these former categories of membership is provided below.

Honorary Life Membership was traditionally awarded to the outgoing President upon completion of their term, as well as outgoing CEOs. Individuals awarded Honorary Life membership were entitled to enjoy the rights and privileges of membership or licensure in the association without further payment of fees.

Honorary Membership in the association was awarded to any non-member who had made an outstanding contribution to the professions of engineering or geoscience.

Life Membership was awarded to individuals if they were 70 years of age, had been practising for 35 years or more, had been a member in good standing for 20 years or more, and were retired from all gainful employment. Individuals awarded Life Membership were entitled to membership or licensure in the association without further payment of fees.

In 2018, the bylaws for Honorary Life Membership and Honorary Membership were repealed at the same time the Life Membership bylaw was repealed. The Life Membership bylaw was repealed due to a legal challenge (qualifying language likely contravened the BC Human Rights Code).

Although there was no legal challenge to the Honorary Life Membership and Honorary Membership categories, following consultation with registrants and alignment with our shift from an association to a regulatory body, Council made the decision to also remove these two categories of membership.

Notwithstanding this change, the *Professional Governance Act* (PGA) retains the ability for Council to waive fees for unique circumstances. If Council wishes to maintain this practice, a bylaw is required to provide Council with this authority.

At its February 5, 2021 meeting, Council asked the Governance Sub-committee to consider this policy matter and passed the following motion:

The Governance Sub-Committee consider a policy(s) regarding recognition (such as a fee waiver for registration) for meritorious service of staff and bring a recommendation forward to Council. This should be considered in conjunction with a similar policy for meritorious service of volunteers and/or Past Presidents.

DISCUSSION

The *PGA* permits the council of a regulatory body to make bylaws to waive payment of all or part of a fee, including the annual fee or special assessment, for a person who the council wishes to honour. While the *Act* provides this authority, there is no bylaw that enables it. As such, should Council wish to waive fees for meritorious service, a bylaw would need to be developed.

For a regulatory body, a broad-based application of a fee waiver is not recommended; however, there may be special circumstances where Council may want to recognize exemplary service. The following information was provided by staff to the Governance Sub-committee as it considered this policy matter.

 Recognition of past president – Council has approved a policy whereby upon completion of their term as President, all future annual fees be waived. This policy is to be in place until such time that a policy for honoraria to recognize the service of the President is approved by Council.

Council approved a renumeration philosophy at its April 23, 2021 meeting and delegated the decision on the scope, quantum and implementation schedule to a sub-committee of Council. Should a fee waiver be part of the compensation awarded to the outgoing President, a bylaw would be required.

 Recognition of meritorious service of volunteers – Though a recognition program currently exists for volunteers, the need to develop a more comprehensive, proactive volunteer recognition, recruitment and succession program has been identified as a strategic priority.

While recognition will be a prominent part of the strategy, awarding fee waivers is not being considered. First, the contributions of all volunteers are highly valued and it would not be practical to objectively evaluate which contributions may be worthy of a fee waiver and which would not. In addition, waiving licensure fees is more in keeping with a member association than a regulatory body. Instead, exemplary service to the organization would be recognized in other ways, such as awards.

 Recognition of meritorious service of staff – Engineers and Geoscientists BC has a systematic approach to staff recognition. For staff, fees waivers do not form part of our recognition program; this is in part due to the staff complement which includes both registrants and non-registrants and the need to ensure fairness and equity in any staff recognition program.

It has been a standing practice to waive fees for outgoing CEO's, but with the split of the CEO and Registrar roles, future CEO's may not be registrants of Engineers and Geoscientists BC. If Council wants the flexibility to recognize an outgoing CEO that is a registrant, then a bylaw will be required.

While the PGA permits an annual fee waiver, in contemplating recognition of meritorious the Governance Sub-committee considered the following questions:

- Is it appropriate for a regulatory body to waive fees for service recognition?
- Is waiving fees consistent with our move away from a member-driven association to a regulatory body?
- Are there other ways to recognize the outstanding contributions of the president, volunteers and staff?

The practice of comparable regulatory bodies was provided to the Sub-committee to support its discussion (Attachment A).

Having reviewed the practices of comparable organizations and reflecting on our role as a regulatory body, the Governance Sub-committee does not support a fee waiver in recognition of meritorious service for volunteers and staff, noting that recognition can be provided in other ways, such as fellowships through Engineers Canada and Geoscientists Canada. The difficulty of quantifying contribution levels of various volunteers throughout the organization was raised as an issue.

Recognizing that Council has approved remuneration for councillors and that the policy may not cover the current President, the Governance Sub-committee supports a bylaw on an interim basis for any president that would not be receiving an honorarium, similar to what has been provided to other past presidents.

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RECOMMENDATION

While Council has an established policy to waive fees for the outgoing President, under the PGA a bylaw would need to be developed to support this waiver. The Governance Sub-Committee recommends to Council that a bylaw be developed on an interim basis for any outgoing President not covered under the Remuneration Policy

It is recommended that Council approve the bylaw as drafted below. Once a Remuneration Policy is in effect, Council would then repeal the bylaw.

The Council may waive payment of all or part of a fee, either annually or on a permanent basis, including the annual fee and special assessments, for an individual Registrant who demonstrates exemplary service to EGBC in the role of Council President and who the Council accordingly wishes to honour.

MOTION

That Council approves the following bylaw, to be inserted as the new subsection 6.7(4):

The Council may waive payment of all or part of a fee, either annually or on a permanent basis, including the annual fee and special assessments, for an individual Registrant who demonstrates exemplary service to EGBC in the role of Council President and who the Council accordingly wishes to honour.

ATTACHMENT A – Practice of Comparable Regulatory Bodies

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PRACTICE OF COMPARABLE ORGANIZATIONS

The table below summarizes the practice of other regulators in providing fee waivers for outgoing Presidents/Chairs, CEO's and Volunteers.

Organization	President/Chair	CEO	Volunteers	Comments
BC College of Nurses and Midwives	No	No	No	
Law Society of BC	No	No	No	 Fee waiver only for financial hardship
Chartered Professional Accountants of BC	No	No	No	 Fee waiver/reduction for financial hardship. Fee waiver for Long-term member
Real Estate Council of BC	No	No	No	
Architectural Institute of BC	No	No	No	 Honorarium is provided to President Have an Honorary Membership category
APEGA	Yes	No	No	 Honorarium is provided to President. In addition, presidents are awarded "Honorary Life Membership Award" which exempts annual fees
APEGS	No	No	No	 Have a life membership category for retired members
Engineers Geoscientists Manitoba	No	No	No	 Have an honorary life member designation for meritorious achievement – it is not automatically given to outgoing presidents/ only very select members receive this designation
PEO	Yes	No	No	President is designated as Life Member


OPEN SESSION

ITEM 6.4

DATE	June 7, 2021	
REPORT TO	Council for Decision	
FROM	Governance Council Sub-Committee	
SUBJECT	Policy for Vice President Appointment	
LINKAGE TO STRAT	TEGIC We support effective governance.	
Purpose To	Purpose To review and consider approving the process for appointing the Vice President	
Motion Th	tion That Council approves the Policy for Vice President Appointment.	

BACKGROUND

Under *Professional Governance Act*, the composition of Council will change. To support a more consistent staggering of Council terms under the new composition, Council approved a governance structure whereby the Vice President is selected by Council from amongst the elected registrant councillors. This process will begin with the start of the 2021/22 Council year.

DISCUSSION

Many regulatory bodies in BC have a governance structure whereby the board selects the board chair and the board vice chair. Drawing on the practice and experience from the BC College of Nurses and Midwives and the Architectural Institute of BC, a proposed selection process was developed by staff and reviewed by the Governance Sub-committee.

The Governance Sub-Committee made some adjustments to ensure the process is collegial and harmonious as possible, including that the process be Chaired by the Immediate past president and that the vote tally be kept confidential. As the Immediate past president is a non-voting member of Council, they would serve as a neutral facilitator of the process. Having the Immediate past president Chair the process, allows the President to vote as any other member of Council, rather than voting only in the event of a tie.

The proposed Policy for Vice President Appointment is included as Attachment A.

For information, a document that identifies the needs assessment of the VP role is included as **Attachment B**, which is based on the Council approved VP role profile. It is intended that the needs assessment document will be reviewed by the Governance Sub-committee prior to the initiation of the selection process and any recommended changes would be brought forward for Council's consideration.

For information, a draft timeline of the proposed process is provided below:

Timeline

June 25, 2021	Council approval of process
By September	Governance Sub-committee to review and make any changes to the VP needs assessment
October 15, 2021	Council election closes, invite Council to nominate someone or themselves for the VP position
October 22, 2021	Deadline for nominations
October 25, 2021	Circulate briefing note as part of inaugural meeting package
November 1, 2021	Inaugural meeting

RECOMMENDATION

The Governance Sub-Committee recommends that Council approves the Policy for Vice President Appointment.

MOTION

That Council approves the Policy for Vice President Appointment.

ATTACHMENT A – Proposed Policy for Vice President Appointment

ATTACHMENT B – Vice President Needs Assessment



POLICY FOR VICE PRESIDENT APPOINTMENT

OVERVIEW

Beginning with the 2021/22 Council term, Council will select one of its elected Councillors to serve as Vice President for a one-year term. The following outlines the process for appointing the Vice President at the inaugural meeting of Council.

PRE-MEETING

Prior to the inaugural meeting, the process is to be initiated.

- The Governance Sub-committee to discuss and recommend any changes to the Vice Chair needs assessment and role profile for the Council's consideration
- The President to invite Council members to nominate another Council member or themselves for the role of Vice President on or before a specified date. Councillors nominating another member should have a conversation with the member to confirm their interest and willingness to be nominated.
- The President to collect the nominations received by the deadline and prepare a briefing note for the Council that will include:
 - Vice President Election Process
 - Vice President Needs Assessment
 - List of Nominated Council Members
- The briefing note will be included in the material ahead of the meeting at which the election is due to take place.

DURING THE INAUGURAL COUNCIL MEETING

The Immediate Past President will Chair this section of the inaugural meeting and facilitate the Vice President appointment process.

STEP 1: REVIEW THE PROCESS

• Review and confirm understanding of the process approved by Council

ATTACHMENT A - POLICY FOR APPOINTING THE VICE PRESIDENT

STEP 2: ARTICULATE NEEDS

• Council discussion to identify the most important attributes/ competencies at this point in time for the Vice President

STEP 3: VICE PRESIDENT NOMINATIONS

- Review the list of names of those who were nominated for the role of Vice President
- Chair to ask if there are any additional names to put forward

STEP 4: VOTE

- If only one candidate is nominated, the position will be filled by acclamation. Council will proceed to approve a motion to appoint the candidate as Vice President for the Council year.
- If more than one candidate is nominated, each will be given the opportunity to say why they feel they would meet the attributes/competencies articulated. Candidates should limit their comments to no more than five minutes.
 - If two candidates are nominated, the Council will then vote for their preferred candidate by secret ballot. The successful candidate needs approval from more than 50% of the voting Councillors present at the meeting.
 - If more than two candidates are nominated, the Council will then vote for their preferred candidate by secret ballot. The successful candidate needs approval from more than 50% of the voting Councillors present at the meeting. Voting will take place in rounds: at the end of each round, if over 50% is not achieved by any one candidate, the candidate with the fewest votes will be removed from the ballot, and another round of voting will continue until a candidate has achieved the required threshold.
- In the event of a tie, the Council will continue to deliberate, giving the candidates another opportunity to speak, and call for another vote. An individual candidate may also resolve the tie by withdrawing from consideration. If there continues to be tie, the Chair must hold a random draw to determine the successful candidate.
- The Chair will announce the successful candidate without providing the specific count.

STEP 5: MOTION

• The Council approves a motion to appoint the selected candidate as Vice President for the Council year.

At this point, a short recess is taken to determine the impacts of the election on the appointments of Councillors to its sub-committees. Any required updates will be brought to the immediate attention of Council, so that any required adjustments can be made and approved.



VICE PRESIDENT NEEDS ASSESSMENT

The fundamental responsibility of the Vice President is to support and advise the President in providing effective leadership to the Council. The Vice President provides leadership in managing the Council's work in the absence of the President.

The following is a high-level summary of challenges and opportunities for the upcoming Council year.

CHALLENGES AND OPPORTUNITIES

- Regulation under the Professional Governance Act and change management
 - Independent Practice Rights for Technologists
 - New obligations for registrants: regulation of firms, continuing education
 - Assessing impact on volunteerism
- Transition to a smaller council, review of its sub-committee structure
- Continued onboarding of new Chief Executive Officer
- Approval of a new strategic plan to guide the organization forward

VICE PRESIDENT'S ROLE AND RESPONSIBILITIES

OVERVIEW

The Vice President of Engineers and Geoscientists BC plays an important leadership role supporting the organization to fulfill its mandate and live its values. The Vice President makes a key contribution to the protection of the public and the integrity of the professions of engineering and geoscience in BC.

The Vice President provides leadership in managing the Council's work in the absence of the President and acts as a sounding board for the President.

The Vice President should have a strong understanding of Engineers and Geoscientists BC's operations; a commitment to good governance; strong inter-personal and communications skills; and the time and energy to commit to the role. Specific leadership competencies and attributes that are important to this role are set out below.

ATTACHMENT B - VICE PRESIDENT NEEDS ASSESSMENT

Solid Business Experience: The Vice President should bring board leadership experience including, a degree of financial literacy, knowledge of the profession, together with analytical thinking, strategic perspective and mature business judgment. The Vice President, and the Council as a whole, should have credibility with the profession and broader stakeholder group.

Communication and Relationships: The Vice President must have excellent interpersonal and communications skills and be able to establish and maintain an excellent working relationship with Councillors, President, management, and all stakeholders, including registrants.

Time, Energy and Commitment: It takes time, energy and commitment to carry out the expectations of good governance as Vice President. The Vice President must be passionate about Engineers and Geoscientists BC, committed to the role of Vice President and have the time, energy and flexibility to do all that is required and expected.

ACCOUNTABILITY

The Vice President is accountable to the Council, as a whole.

TERM

The Council appoints the Vice President to serve for a one-year term.

KEY RESPONSIBILITIES

In addition to the key expectations and responsibilities outlined in the Councillor Position Description and Role Profile, the fundamental responsibility of the Vice President is to support and advise the President in providing effective leadership to the Council. Within this context, specific responsibilities include:

KEY COUNCIL PROCESSES

- Assist the President, as appropriate, in fulfilling the responsibilities described within the President Position Description and Role Profile, whether in the broadest sense or specifically delegated by the President to the Vice President
- Act as an additional key point of contact with the CEO and Registrar in the President's absence or incapacity, and perform the responsibilities of the President when the President is unavailable

MEETINGS

• Collaborate with the President to develop and implement processes and practices that support the deliberations of the Council in order that the Council may diligently fulfil its duties and conduct its work and affairs effectively and efficiently

ATTACHMENT B - VICE PRESIDENT NEEDS ASSESSMENT

COMMITTEES

• Member of Executive Sub-Committee

RELATIONSHIP WITH THE PRESIDENT

- Establish a close relationship of trust with the President; providing support and advice
- Meet regularly with the President to discuss respective roles and progress in furthering the work of the Council

EVALUATION AND FEEDBACK

• Mentor new appointees to the Council, and provide oversight, coaching and advice with a view to ensuring quality, consistency and accountability

OTHER

• Lead special projects and initiatives as assigned by the President or the Council, such as policy development or implementation

ATTRIBUTES/EXPERIENCE/SKILLS

BASIC ATTRIBUTES

In addition to the attributes required as a Councillor and those set out in Section A (Overview) of this Position Description and Role Profile, the Vice President should:

- Commit to the protection of the public interest within the mandate of Engineers and Geoscientists BC
- Have a high level of credibility with fellow Councillors, the CEO and Registrar, registrants at large and key stakeholders
- Have a desire and ability to commit to the Vice President role for 1 year
- Have a desire and ability to be accessible to the President, Councillors, as required or necessary

EXPERIENCE

The Vice President should have:

ATTACHMENT B - VICE PRESIDENT NEEDS ASSESSMENT

• Former chair experience, and/or committee leadership, with proven experience successfully managing the work of the council/committee

SKILLS

The Vice President should have:

- Ability to manage complex relationships effectively
- Politically astute, with the ability to grasp relevant issues and understand relationships between interested parties

TIME COMMITMENT

The Vice President should expect to spend a minimum of 120 hours per year on Council work for mandatory activities, plus preparation time (approximately 50 hours per year). Council meetings and Council sub-committee meetings are held in the Lower Mainland and travel time to attend meetings should be considered. The Vice President is also encouraged to participate in other Council activities and may do so based on availability.



APPENDICES – Open Agenda

- Item 5.5 Appendix A
- Item 5.8 Appendix A
- Item 5.9 Appendix A
- Item 6.1 Appendix A
 - Appendix B
 - Appendix C
- Item 6.2 Appendix A



POLICY	Review on the Record of a Decision of the Credentials Committee	
DATE OF POLICY	June 25, 2021	
APPROVED BY	Council (CO-21-XX)	

DEFINITIONS

"Applicant" means the same as set out in section 1(1) of the *Professional Governance Act* (PGA) [Definitions and interpretation].

"Bylaws" means the bylaws of Engineers and Geoscientists BC (EGBC).

"Credentials Committee" means the credentials committee established pursuant to section 44(1) of the PGA [Credentials committee].

"EGBC" means the Association of Professional Engineers and Geoscientists of the Province of British Columbia, also operating as Engineers and Geoscientists BC.

"Registrar" means the individual appointed by the Council as registrar pursuant to section 31(1) of the PGA [*Registrar and register for regulatory body*], who may also be the Executive Director.

PURPOSE

To outline eligibility and other requirements of:

- an Applicant when submitting a request to the Registrar of EGBC for a review on the record of a decision
 made by the Credentials Committee; and
- the responsibilities of the Registrar and the process to be followed when conducting a review on the record.

SCOPE OF APPLICATION

This policy is not intended to fetter the discretion of the Registrar when carrying out their duties and powers pursuant to the PGA and the Bylaws.

POLICY

OVERVIEW

A review on the record is aimed to ensure fairness and integrity of the review process. In accordance with Bylaw 5.22(4), a review on the record must be conducted in writing unless otherwise directed by the Registrar of EGBC. A review on the record may only occur after an individual Applicant receives notice about a decision made by the Credentials Committee on:

- an application for registration; or
- an application for reconsideration of a decision of the Credentials Committee.

A review on the record re-evaluates only the application and documents the Applicant provided for the initial decision. However, in special circumstances an Applicant may request that the Registrar consider evidence not previously submitted for decision of the Credentials Committee. By comparison, under Bylaw 5.21 Reconsideration of a Decision of the Credentials Committee, the Credentials Committee reconsiders the decision that was previously made, and special circumstances are not required for an Applicant to submit evidence that was not previously before the Credentials Committee (see Process A: Reconsideration and Review on the Record of a Decision of the Credentials Committee).

While not required, an Applicant is entitled to be represented by legal counsel throughout the review on the record process.

For clarity, this policy does not apply to a decision(s) made by the Audit and Practice Review Committee.

POLICY | MAY 3, 2021

APPLICATION REQUIREMENTS

An application for a review on the record must be conducted in writing unless otherwise directed by the Registrar and be submitted within 30 days of receiving notice of a decision(s) of the Credentials Committee. As outlined in section 5.22(2) of the Bylaws, the application must set out all the following:

- (a) a clear indication of initial decision(s) of the Credentials Committee;
- (b) the position of the Applicant suggesting the decision was flawed; and
- (c) the relief requested by the Applicant.

Per section 5.22(3) of the Bylaws, an application for a review on the record must be accompanied by all applicable fees.

If the request for a review on the record is not submitted within 30 days of receiving notice of the Credentials Committee's decision, the decision made by the Credentials Committee stands. An Applicant is considered to have received notice on the date the decision is emailed to the email address provided at the time of application. It is the responsibility of the Applicant to ensure that their email address is kept up to date.

REVIEW ON THE RECORD

A review on the record may consist of:

- records submitted by the Applicant in the application for registration or application for reconsideration to the Credentials Committee;
- the decision(s) of the Credentials Committee, along with any reasons if applicable;
- the request for a review on the record as submitted by the Applicant; and
- any new evidence as allowed by the Registrar in accordance with the criteria set out section 5.22(5) of the Bylaws.

The Registrar may request information from the Credentials Committee about the original application, related policy, or other information as required by the Registrar. Information requested by the Registrar is shared with the Applicant who is then given an opportunity to respond. The Registrar may also seek advice from internal or external legal counsel as required.

NEW EVIDENCE

If the Applicant wants the Registrar to consider new evidence that was not previously before the Credentials Committee, it should be included with the submission request for a review on the record. Bylaw 5.22(5) requires the Applicant to set out and prove how the evidence meets all of the following special circumstances in order for it to be considered by the Registrar:

- the evidence is such that the Applicant, through the exercise of reasonable due diligence, could not have discovered and submitted it prior to the decision of the Credentials Committee;
- the evidence is relevant in the sense that it bears upon a decisive or potentially decisive issue in the matter;
- the evidence is credible in the sense that it is reasonably capable of belief; and
- the evidence is such that, if believed, it could reasonably be expected to have affected the initial decision
 had it been before the Credentials Committee.

If the Registrar decides that the grounds for new evidence are met, and the Applicant has not already provided it, the Applicant must submit it within at least 30 days of request by the Registrar. In exceptional circumstances, the Registrar retains the discretion to allow an Applicant additional time to submit new evidence.

NO NEW EVIDENCE

If the Applicant does not wish to submit new evidence for consideration of the Registrar, or the above special circumstances are not met, the Registrar must only consider the records provided by the Applicant in the original decision. The Registrar will review the records to determine if the original decision made by the Credentials Committee was both reasonable and administratively fair.

WRITTEN NOTICE

If the Applicant no longer wishes to continue with a review on the record, the Applicant must provide written notice to the Registrar.

POLICY NUMBER X.X | JUNE 25, 2021 2 **Commented [GP1]:** This is the revised wording for the Bylaw which currently reads: "the evidence was not discoverable by reasonable due diligence before the Credentials Committee..., made the decision" The proposed new wording makes it clear that the onus is on the applicant to have provided the information.

CONCLUSION OF A REVIEW ON THE RECORD

A review on the record typically concludes within 90 days calendar days of receipt of an application in full, including any new evidence the Registrar considers. The Registrar is not bound by any previous decisions of the Credentials Committee. After reaching a decision, the Registrar will, with written reasons:

- (a) confirm the decision of the Credentials Committee; or
- (b) substitute the decision of the Credentials Committee, including any conditions or limitations on the registration of the Applicant.

PROCESS

A. Reconsideration and Review on the Record of a Decision of the Credentials Committee



B. Review on the Record Process



REFERENCES

Section 48, Professional Governance Act, S.B.C. 2018, c. 47.

Engineers and Geoscientists BC Bylaws:

Section 5.3 Powers of the Registrar

Section 5.18 Decisions Regarding Applications for Enrolment, Admission, and Reinstatement

Section 5.21 Reconsideration of a Decision of the Credentials Committee

Section 5.22 Review on the Record

POLICY NUMBER X.X | JUNE 25, 2021

Section 6.3(1) Reconsideration and Review on the Record Fees, and

Section 6.7 Exemption, Reduction, Deferral, or Refund of Fees.

Engineers and Geoscientists BC Policy on Reconsideration of a Decision of the Credentials Committee

REVIEW AND APPROVAL DATES

Action	Date	Reference
APPROVED BY COUNCIL	June 25, 2021	Minute # CO-21-XX
REVIEWED BY CREDENTIALS COMMITTEE	June 9, 2021	Minute # CC-21-89
Reviewed by Staff	May 27, 2021	

POLICY NUMBER X.X | JUNE 25, 2021 5

5.8 - APPENDIX A

CIVIL AND TRANSPORTATION INFRASTRUCTURE PROFESSIONAL PRACTICE GUIDELINES

SEISMIC ASSESSMENT AND SEISMIC DESIGN OF DIKES IN BC

PUBLISHED [MONTH], [DAY], 2021

[**Note:** The Published date will be the date the guidelines are posted on the website and officially available to registrants.]



[Include this table if the guideline is officially endorsed by another organization, or if official funding was received from, for example, a government body; delete the table if it is not required.

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PREFACE

These *Professional Practice Guidelines – Seismic Assessment and Seismic Design of Dikes in BC* were developed by Engineers and Geoscientists British Columbia to guide professional practice related to seismic assessment and seismic design of Dikes in BC.

These guidelines were developed to address issues that the Ministry of Forests, Lands, Natural Resource Operations, and Rural Development (MFLNRORD) was seeing from Engineering Professionals regarding application of their Seismic Design Guidelines for Dikes, 2nd Edition, published in 2014 (the Ministry Guidelines). The Ministry Guidelines outline the technical requirements related to seismic assessment and seismic design of Dikes under the *Dike Maintenance Act*, whereas these practice guidelines outline the professional practice considerations that must be undertaken when Engineering Professionals perform this work.

Included in **Chapter 3 Guidelines for Professional Practice** is background information on the Ministry Guidelines and developments since they were published in 2014. Next, there is a list of the required input data for seismic Dike projects including climate change considerations, and an outline of both the performance-based design approach and the probabilistic-based design approach, including discussion of which is appropriate based on the project-specific circumstances. Finally there is discussion around appropriate documentation of decision making throughout the process and an outline of reporting requirements.

These guidelines clarify the expectations for professional practice, conduct, and competence to be followed at the time they were prepared. However, this is a living document that is to be revised and updated as required in the future, to reflect the developing state of practice.

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ABBREVIATIONS

ABBREVIATION	TERM
вс	British Columbia
MFLNRORD	Ministry of Forests, Lands, Natural Resource Operations, and Rural Development
QM	Quality Management
Table text	Table text
Table text	Table text

DEFINED TERMS

The following definitions are specific to these guidelines. These words and terms are capitalized throughout the document.

TERM	DEFINITION
Act	Professional Governance Act [SBC 2018], Chapter 47.
Bylaws	The Bylaws of Engineers and Geoscientists BC made under the Act.
Coordinating Engineering Professional	The Engineering Professional undertaking multi-discipline coordination of all design and field reviews for a project that includes seismic assessment and seismic design of Dikes.
Design Team	The Professionals of Record representing the various disciplines that apply on a Dike assessment and Dike design project.
Dike	A Dike is defined in the <i>Dike Maintenance Act</i> as "an embankment, wall, fill, piling, pump, gate, floodbox, pipe, sluice, culvert, canal, ditch, drain, or any other thing that is constructed, assembled, or installed to prevent the flooding of land." In some cases, Dikes are located near or along riverbanks, lakes, or coastal waters; in other cases, they are set back some distance from the source of potential flooding. Dikes are designed and constructed to meet engineering standards, taking into account the design flood level
Dike Reach	Dike systems are often divided into reaches that may be a few hundred meters to a few kilometers in length. A reach (Zimmaro et al., 2017) is defined herein as a continuous length of dike of similar distribution of geotechnical materials, hydrological demand, consequences of failure, and potentially other parameters relevant to a flood hazard assessment.
Dike Segment	A Dike Segment is a short segment within a Dike Reach for which the soil properties and seismic vulnerability can be considered uniform.
Dike System	A Dike System is considered a structure providing flood protection for a specific region, and often consists of many kilometers of contiguous Dike and appurtenance structures or a series of Dikes.
Document(s)	Includes any physical or electronic record, including but not limited to a report, certificate, memo, specification, drawing, map, or plan, that conveys a design, direction, estimate, calculation, opinion, interpretation, observation, model, or simulation that relates to engineering or geoscience.
Engineering/Geoscience Professional(s)	Professional engineers, professional geoscientists, professional licensees engineering, professional licensees geoscience, and any other individuals registered or licensed by Engineers and Geoscientists BC as a "professional registrant" as defined in Part 1 of the Bylaws.

Engineers and Geoscientists BC	The Association of Professional Engineers and Geoscientists of the Province of British Columbia, also operating as Engineers and Geoscientists BC.
High Consequence Dike	A High Consequence Dike is a flood protection Dike where the economic and/or life safety consequences of failure during a major flood are very high. These Dikes typically protect urban or urbanizing areas, and failure could result in large economic losses and/or significant loss of life. Dike consequence categories are determined by the province and a list can be found at the following website: <u>https://www2.gov.bc.ca/gov/content/environment/air-land-water/water/drought-flooding-dikes-dams/integrated-flood-hazard-management/dike-management</u> . The consequence categories are subject to change at the discretion of MFLNRORD.
Inspectors	Public officials including the inspector of dikes and any acting, deputy, or assistant inspectors of dikes, who have general supervision of Dikes and oversee the operation of diking authorities relative to the construction and maintenance of Dikes as per the <i>Dike Maintenance Act</i> .
Liquefaction	A phenomenon whereby a saturated soil loses significant portion of strength and stiffness in response to a sudden change in stress and/or pore pressure condition which causes the soil to behave like a viscous fluid.
Liquefaction Potential	Liquefaction Potential is a reference to the resistance of a deposit to liquefaction as a result of a sudden change in stress level and/or pore pressure condition due to cyclic loading.
Liquefaction Susceptibility	Liquefaction Susceptibility is a reference to the ability of the soil deposit to liquefy and depends on the soil type. For example, a dry or unsaturated granular deposit does not have the ability to liquefy due to the absence of saturated conditions. Cohesive deposits are also not susceptible due to the particle structure of the deposits and the interstitial forces that hold the clay molecules together (cohesion).
Ministry Guidelines	Seismic Design Guidelines for Dikes, 2 nd Edition, published in 2014 by MFLNRORD.
Moment Magnitude	Moment Magnitude is a measure of the amount of energy released during an earthquake which is not dependent on ground shaking levels or level of damage (i.e., Wood & Neumann (1931)), but reflects factors that are characteristic to the rupture of the fault that produces the earthquake.
Professional Letter of Commitment	A letter outlining the commitment for Engineering Professionals related to the design and/or field review of Dike works subject to approval under the <i>Dike Maintenance Act</i> .
Professional of Record	The Engineering Professional who is professionally responsible for professional work, professional activities, or Documents related to the engineering practice.
Registrant	Means the same as defined in Schedule 1, section 5 of the <i>Professional Governance Act</i> .

Seismic Dike Report	Report written by the Professionals of Record on the Design Team to outline the result of the seismic Dike assessment or seismic Dike design work that was completed. This can be a stand-alone document or part of a larger document.

VERSION HISTORY

VERSION NUMBER	PUBLISHED DATE	DESCRIPTION OF CHANGES
1.0	Month, DD, YYYY	Initial version.

1.0 INTRODUCTION

Engineers and Geoscientists British Columbia is the regulatory and licensing body for the engineering and geoscience professions in British Columbia (BC). To protect the public, Engineers and Geoscientists BC establishes, monitors, and enforces standards for the qualifications and practice of its Registrants.

Engineers and Geoscientists BC provides various practice resources to its Registrants to assist them in meeting their professional and ethical obligations under the *Professional Governance Act* (the *Act*) and Engineers and Geoscientists BC Bylaws (Bylaws). Those practice resources include professional practice guidelines as outlined in Bylaw 7.3.1.

Each professional practice guideline clarifies the expectations for professional practice, conduct, and competence that all Engineering Professionals are expected to meet when professionally engaged in the relevant professional engineering work. Engineers and Geoscientists BC publishes professional practice guidelines on specific professional services or activities where additional guidance is deemed necessary. Professional practice guidelines are written by subject matter experts and reviewed by stakeholders before publication.

These *Professional Practice Guidelines* – *Seismic Assessment and Seismic Design of Dikes in BC* provide guidance on professional practice for Engineering Professionals who carry out design or assessment of Dikes in BC and are utilizing the Ministry of Forests, Lands, Natural Resource Operations and Rural Development's (MFLNRORD's) Seismic Design Guidelines for Dikes, 2nd Edition (the Ministry Guidelines). The Ministry Guidelines provide technical requirements related to seismic assessment and seismic design of Dikes under the *Dike Maintenance Act*. These practice guidelines are a supplement to the Ministry Guidelines and help clarify how Engineering Professionals can meet the intent of the Ministry Guidelines while fulfilling their professional practice obligations.

1.1 PURPOSE OF THESE GUIDELINES

This document provides guidance on professional practice to Engineering Professionals who perform seismic assessment and seismic design of Dikes in BC under the *Dike Maintenance Act*, which therefore requires adherence to the Ministry Guidelines. This document also provides assistance to others involved in designing and planning flood protection systems. The purpose of these guidelines is to provide a common approach for meeting the intent of the Ministry Guidelines.

Following are the specific objectives of these guidelines:

- 1. Clarify the expectations for professional practice, conduct, and competence that Engineering Professionals should follow when practicing within the scope and applicability of these guidelines by:
 - Specifying the required tasks and/or services that Engineering Professionals should complete; and
 - Specifying professional obligations under the *Act*, Bylaws, other regulations/legislation, and the
 established norms of practice in this area, including the primary obligation to protect the safety,
 health, and welfare of the public and the environment.

- Describe the roles and responsibilities of the various participants/stakeholders involved in these
 professional activities. The document should assist in delineating the roles and responsibilities of the
 various participants/stakeholders, which may include the Professional of Record, owner, diking
 authorities, and Inspectors.
- 3. Define the skill sets that are consistent with the training and experience required to carry out these professional activities.
- 4. Provide guidance on the use of assurance documents, so the appropriate considerations have been addressed (both regulatory and technical) for the specific professional activities that were carried out.
- 5. Provide guidance on how to meet the quality management requirements under the *Act* and Bylaws when carrying out the professional activities identified in these professional practice guidelines.

1.2 ROLE OF ENGINEERS AND GEOSCIENTISTS BC

These guidelines form part of Engineers and Geoscientists BC's ongoing commitment to maintaining the quality of professional services that Engineering Professionals provide to their clients and the public.

Engineers and Geoscientists BC has the statutory duty to serve and protect the public interest as it relates to the practice of professional engineering and professional geoscience, including regulating the conduct of Engineering Professionals and Geoscience Professionals. Engineers and Geoscientists BC is responsible for establishing, monitoring and enforcing the standards of practice, conduct, and competence for Engineering Professionals. One way that Engineers and Geoscientists BC exercises these responsibilities is by publishing and enforcing the use of professional practice guidelines, as per Bylaw 7.3.1.

Guidelines are meant to assist Engineering Professionals in meeting their professional obligations. As such, Engineering Professionals are required to be knowledgeable of, competent in, and meet the intent of professional practice guidelines that are relevant to their area of practice.

The writing, review, and publishing process for professional practice guidelines at Engineers and Geoscientists BC is comprehensive. These guidelines were prepared by subject matter experts and reviewed at various stages by a formal review group, and the final draft underwent a thorough consultation process with various advisory groups and divisions of Engineers and Geoscientists BC. These guidelines were then approved by Council and, prior to publication, underwent final editorial and legal reviews.

Engineers and Geoscientists BC supports the principle that appropriate financial, professional, and technical resources should be provided (i.e., by the client and/or the employer) to support Engineering Professionals who are responsible for carrying out professional activities, so they can comply with the professional practice expectations provided in these guidelines. These guidelines may be used to assist in the level of service and terms of reference of an agreement between an Engineering Professional and a client.

1.3 INTRODUCTION OF TERMS

For the purposes of these guidelines, the Professional of Record is referred to as the Engineering Professional who is professionally responsible for professional work, professional activities, or Documents related to the engineering practice.

The term Design Team is used to refer the Professionals of Record representing the various applicable disciplines on a Dike assessment and Dike design project. The makeup of the Design Team will depend on the specific requirements of the project.

See the **Defined Terms** section at the front of the document for a full list of definitions specific to these guidelines.

1.4 SCOPE AND APPLICABILITY OF THESE GUIDELINES

These guidelines provide guidance on professional practice for Engineering Professionals who carry out seismic assessment and design of Dikes in BC in accordance with the *Dike Maintenance Act*, and they also provide guidance to others involved in overall flood protection management. For minor repairs and routine maintenance of Dikes, seismic work is not generally applicable; however the applicability of the Ministry Guidelines and these practice guidelines should be discussed with the Inspector prior to undertaking any work. It is recognized that not all Dikes in BC vulnerable to seismic impacts fall under the *Dike Maintenance Act* such as Dikes on federal land, but in the absence of other legislation or guidance, the local authority may choose to implement these practice guidelines.

These guidelines are not intended to provide technical or systematic instructions for how to carry out seismic assessment and design of Dike activities; rather, these guidelines outline considerations to be aware of when carrying out these activities. Engineering Professionals must exercise professional judgment when providing professional services; as such, application of these guidelines will vary depending on the circumstances.

Although these guidelines may provide thresholds above which professional involvement is specified as being required, Engineering Professionals must always use their professional knowledge, experience, and judgment to provide the appropriate level of service that is commensurate with the risk of their professional activities to public safety and/or the environment.

An Engineering Professional's decision not to follow one or more aspects of these guidelines does not necessarily represent a failure to meet professional obligations. For information on how to appropriately depart from the practice guidance within these guidelines, refer to the *Quality Management Guides* – *Guide to the Standard for the Use of Professional Practice Guidelines* (Engineers and Geoscientists BC 2021a), Section 3.4.2.

It should be noted that just because an Engineering Professional follows these practice guidelines, this does not guarantee approval of their application under the *Dike Maintenance Act*.

1.5 ACKNOWLEDGEMENTS

This document was reviewed by a group of technical experts, as well as by various advisory groups and divisions of Engineers and Geoscientists BC. Authorship and review of these guidelines does not necessarily indicate the individuals and/or their employers endorse everything in these guidelines.

[Use this paragraph when the guideline is being formally endorsed by another organization.] The **[name of** other organization] reviewed these guidelines and provided their official endorsement.

[Use this paragraph when another organization provided input but not official endorsement.] Engineers and Geoscientists BC would like to thank [insert name of supporting organization here, e.g., AIBC] for their input to these guidelines.

2.0 ROLES AND RESPONSIBILITIES

The principal legislation in BC pertinent to operation and maintenance of flood protection works is the *Dike Maintenance Act*. The *Dike Maintenance Act* establishes public officials known as Inspectors, which means the inspector of dikes and includes any acting, deputy or assistant inspectors of dikes. These Inspectors have general oversight and authority over all Dikes under the *Dike Maintenance Act* and the operation of all diking authorities relative to the construction and maintenance of these Dikes. Seismic design and seismic assessment of Dikes are reviewed and must be accepted by an Inspector as part of the *Dike Maintenance Act* approval process. Construction cannot proceed without a *Dike Maintenance Act* approval.

2.1 COMMON FORMS OF PROJECT ORGANIZATION

Project organization and makeup of the Design Team related to seismic assessment and seismic design of Dikes will vary according to the needs of the project and the parties involved. Typical projects include a Design Team made up of Engineering Professionals in the geotechnical, coastal, hydrotechnical, and civil disciplines, however this does not preclude other disciplines and expertise from being involved, including Geoscience Professionals or others.

It is recommended that a Coordinating Engineering Professional be utilized on any multi-disciplinary project in order to adequately coordinate between disciplines (see **Section 2.2.3 Coordinating Engineering Professional**). Coordination includes confirmation that the various professionals are using the same design parameters and assumptions, that the appropriate disciplines are communicating with each other, and that any projects with utilities or other structures within, or in proximity to, the Dike are given appropriate oversight (see **Section 3.4.1 Utilities and Other Structures**).

Project types can generally be split into the following categories:

- an existing Dike
- a new Dike

In both instances, seismic work is generally a component of a scope of work on a Dike, except possibly for minor repairs and routine maintenance as discussed in Section 1.4.

Both project types can be split into various stages, of which some or all stages may apply:

- High level feasibility study
- Preliminary design
- Detailed design
- Construction or Implementation

Regardless of the type or stage of a project, these practice guidelines provide context for how to apply the Ministry Guidelines.

When a *Dike Maintenance Act* approval is required, applications to the Inspector are required to be accompanied by a Professional Letter of Commitment. High level feasibility and planning studies may not require *Dike Maintenance Act* approval.

Many projects have multiple disciplines involved in the application process. In these instances, each Engineering Professional taking responsibility for a discipline on a project will be a called a Professional of Record (see **Section 2.2.2**) and all of the Professionals of Record together will be referred to as the Design Team. Each Professional of Record must sign and seal the Professional Letter of Commitment for their discipline to confirm that they will:

- Undertake design and field review within their area of expertise;
- Obtain approval prior to modifying a project already approved; and
- Provide documentation as required by the Inspector, including appropriately authenticated (sealed with signature and date) completion reports and drawings for the area of work prepared by them or by someone under their direct supervision.

When each Professional of Record authenticates the Professional Letter of Commitment, they are confirming that they are including seismic considerations within their scope of work on the project, as appropriate. The Coordinating Engineering Professional has a role in confirming that all Professional Letters of Commitment are submitted, and if there is a change of professional during a project, a new Professional Letter of Commitment from the incoming Professional of Record will need to be submitted in support of the Dike Maintenance Act approval application.

2.1.1 COMMUNICATION AND COORDINATION

Communication between all disciplines on the Design Team is essential for the successful completion of a seismic assessment and seismic design of a Dike. The various Professionals of Record must communicate and coordinate with each other appropriately, as well as with other technical specialists, to ensure the project needs are met and the appropriate professional practice requirements are met. The role of the Coordinating Engineering Professional is key in making sure communication and coordination is taking place in an effective and efficient manner.

As outlined and elaborated on in Section 3 of these practice guidelines, there is a two-tiered approach presented in this document to meet the intent of the Ministry Guidelines. Tier 1 is a performance-based design approach and is outlined in **Section 3.6 Performance-Based Design**, while Tier 2 is a probabilistic-based design approach and is outlined in **Section 3.7 Probabilistic-Based Design**. Tier 1 must be undertaken and approval received from the Inspector before moving to Tier 2 as outlined in **Section 3.1.2 Design Approach Summary**. The makeup of the Design Team may change throughout this process as the expertise required for a probabilistic-based design is specialized. Communication with the Inspector regarding the design approach and subsequent approvals is key to ensuring a project continues to move ahead in a timely manner.

2.2 RESPONSIBILITIES

The following responsibilities of various project participants ensures the seismic assessment and seismic design of a Dike meets the appropriate standards of public safety and the appropriate regulatory requirements.

2.2.1 OWNER

The owner of a Dike is often a diking authority, which is defined under the Dike Maintenance Act as:

"(a) the commissioners of a district to which Part 2 of the Drainage, Ditch and Dike Act applies,

(b) a person owning or controlling a dike other than a private dike,

(b.1) if the final agreement of a treaty first nation so provides, the treaty first nation in relation to dikes on its treaty lands,

(c) a public authority designated by the minister as having any responsibility for maintenance of a dike other than a private dike, or

(d) a regional district, a municipality or an improvement district"

Per the Memorandum of Understanding (MOU) between the Province of BC and the City of Vancouver, the City of Vancouver is considered the owner of any Dikes built within the city's boundaries as defined under the Vancouver Charter. This MOU addresses the roles of the Province and the City of Vancouver beyond Dike ownership.

Regardless of who the owner of a Dike is, owner responsibilities, as outlined in this section, remain the same.

Before undertaking a seismic assessment or seismic design of a Dike and to manage the cost of professional services, the owner should be knowledgeable about and gather the following information:

- Inspector requirements as well as any processes or procedures within the area of jurisdiction
- Legal description of the property on which the Dike is located or proposed to be located
- A survey of the alignment or proposed alignment of the Dike
- Foundation soil characteristics
- If work is on an existing Dike:
 - Material types and degree of compaction of the Dike
 - Methods used to construct the Dike
 - Alterations that may have been undertaken on the Dike
 - Changes that may have happened over time including scouring, vegetation, animal burrows, and adjacent land use changes, and how they may impact reliability and performance.
- Information regarding accessibility and any restrictions to accessibility at the Dike location
- Information on water levels adjacent to the Dike

As indicated in **Section 2.1 Common Forms of Project Organization**, the seismic aspect of Dike works is typically one aspect of a project scope, although it could be a stand-alone scope. Either way, the owner should enter into a professional services agreement with the appropriate Professionals of Record, as required, to complete the scope of the entire project; prior to undertaking work on the project. The owner can rely on the Coordinating Engineering Professional to confirm the appropriate disciplines required for the project. See **Section 5.0 Professional Registration & Education, Training, and Experience** for information related to who is appropriately qualified to undertake this work. If work proceeds to a probabilistic-based approach as per **Section 3.7 Probabilistic-Based Assessment/Design** of these practice guidelines, an owner should exercise additional caution when selecting design professionals since this approach requires special expertise.

In order to protect both parties, the professional services agreement should be based on a proven standard agreement such as the Master Municipal Construction Documents (MMCD) Client-Consultant

Agreement, or Canadian Construction Documents Committee Document 31 Service Contract Between Owner and Consultant. It would be prudent for the owner to confirm that the Professionals of Record for the project are aware of and will meet the intent of the Ministry Guidelines and the *Dike Maintenance Act* in their professional work.

Some specific points for consideration regarding the professional service agreement are as follows:

- Confirm the scope of services to the extent known at the time of agreement. This should include all commitments required under the Ministry Guidelines, the *Dike Maintenance Act*, and the Professional Letter of Commitment.
- Establish appropriate limits of liability.
- Establish a budget estimate, either for hourly services, lump sum, or otherwise (recognizing that modifications to scope will typically impact the budget).
- The budget should reflect the need for an independent review as outlined in Section 4.1.8 Documented Independent Review of High Risk Professional Activities or Work (see also Section 3.1.2 Design Approach Summary).

After receiving the Seismic Dike Report from the Design Team, the owner should consider completing the following activities:

- Review the Seismic Dike Report and understand the limitations and qualifications that apply
- Discuss the Seismic Dike Report with the Design Team and seek clarification, if desired
- Discuss the findings of the Seismic Dike Report with the Inspector for acceptance prior to proceeding to the detailed design phase

If the owner is applying for *Dike Maintenance Act* approval, they should submit the Seismic Dike Report as part of that application. If the Design Team is submitting the application for *Dike Maintenance Act* approval on behalf of the owner, the owner may want to consider reviewing the Seismic Dike Report with the Inspector prior to the Design Team moving forward with the application.

If the Design Team has been retained by a developer, prior to submitting the Seismic Dike Report for *Dike Maintenance Act* approval, the developer should obtain approval from the appropriate diking authority.

2.2.2 PROFESSIONAL OF RECORD

A Professional of Record is an Engineering Professional taking on the overall responsibility for the seismic assessment and seismic design of a Dike within their discipline. The Professional of Record, by signing the Professional Letter of Commitment, confirms that they are taking into consideration the seismic aspects of the work associated with the Dike project and committing to undertake field reviews related to that work, as appropriate. For Dikes that are not subject to *Dike Maintenance Act* approval, the Professional of Record should consider the professional practice considerations outlined in these practice guidelines. Refer to Section **1.4 Scope and Applicability of These Guidelines** for more information.

The Professional of Record should refer to the expectations and obligations outlined in **Section 3.0 Guidelines for Professional Practice** when undertaking seismic assessment and seismic design of a Dike. Each Professional of Record on a project must ensure that the requirement for independent review as outlined in Section 4.1.8 of these practice guidelines has been completed before their work is submitted to those who will be relying on it.

2.2.3 COORDINATING ENGINEERING PROFESSIONAL

A Coordinating Engineering Professional is one of the Engineering Professionals working on a seismic Dike project who agrees to coordinate the various disciplines on the project. The suitable person for this role may require some discussion and agreement amongst the participants of the Design Team.

The responsibilities of the Coordinating Engineering Professional include:

- Confirming that the appropriate disciplines requiring Professionals of Record are included on the Design Team
- If the scope of the project changes at any time and additional disciplines are required, obtaining new Professionals of Record to fill those gaps
- Coordinating the communication between disciplines to make sure the same design parameters and assumptions are being used by all Design Team participants
- Facilitating communication between Design Team participants
- Providing oversight and facilitating coordination in relation to any utilities or other structures within or in proximity to the Dike
- Coordinating the writing of a Seismic Dike Report
- If a project is being submitted for *Dike Maintenance Act* approval, confirming that all the Professionals of Record have signed the Professional Letter of Commitment for their discipline
- If there is a change of Professional of Record due to personnel changes within firms or for other reasons, ensuring a new Professional of Record is brought in and signs a Professional Letter of Commitment to take over for the individual who left the project

2.2.4 INSPECTOR

The Inspector, under powers conferred by the *Dike Maintenance Act*, is responsible to establish provincial standards for the design, construction, operation and maintenance of Dikes through the provincial "Dike Safety Program". The provincial "Dike Safety Program" is delivered through the Inspector in each region. Provincial responsibilities include:

- approval of all works in and about Dikes;
- monitoring and auditing the owner's Dike management program;
- issuance of orders to protect public safety (where necessary); and
- regulating diking authorities.

Section 2(4) of the *Dike Maintenance Act* provides that works in and about flood protection Dikes shall be subject to written approval by the Inspector. This includes:

- Anything that may lower or decrease the size and/or integrity of the cross-section of a Dike;
- Installations of flood boxes, culverts, pipes or any structure through a Dike;
- Construction of works over or on a Dike right of way;
- Alterations to the foreshore or stream channel adjacent to a Dike; and
- Construction of a new Dike.

This list is not exhaustive and the Inspector may include for other works in and about flood protection. The *Dike Maintenance Act* empowers the Inspector to make orders under the *Dike Maintenance Act* and take measures in the interests of public safety if there is failure to comply. In relation to these practice guidelines, the Inspector receives the Seismic Dike Report as part of the *Dike Maintenance Act* application and determines if the report is accepted. Acceptance of the Seismic Dike Report is only a part of the application and does not invoke approval of the application as a whole.
3.0 GUIDELINES FOR PROFESSIONAL PRACTICE

3.1 OVERVIEW

This section sets out the professional responsibilities for Engineering Professionals who undertake seismic assessment and seismic design of Dikes in BC. There may be situations where Dike construction activities could be considered nominal or of a maintenance nature, and could be exempt from the Ministry Guidelines and these practice guidelines. Any exemption is subject to Inspector approval and therefore should be discussed with the Inspector prior to undertaking the work. The intent of this section is not to provide detailed technical procedures for conducting the various components of an assessment and design, but to provide considerations that go into the technical work. It is up to the professional to be proficient in any technical work they undertake, including keeping informed of advances in their area of practice.

3.1.1 DIFFERENCE BETWEEN ASSESSMENT AND DESIGN

Note that for the remainder of **Section 3 Guidelines for Professional Practice**, the term "design" will be used to refer to both "assessment" and "design." This is being done to avoid repetition and for ease of reading. However, a brief explanation of the differences between a seismic assessment and a seismic design is outlined below.

These practice guidelines deal with the seismic assessment and seismic design of Dikes. An assessment is traditionally carried out to evaluate the expected performance of an existing Dike in its current conditions under seismic and hydraulic loads. A design implies a set of engineering analyses needed for the construction of a new Dike or for modifying or adding components to an existing Dike to achieve a given level of performance.

The potential behaviour of an existing Dike is determined by the geometry, material types and degree of compaction of the Dike as it was originally constructed, along with such alterations as it may have been subjected to since construction (including the effects of deterioration over time). In contrast, a designer has the ability, within reason, to modify the behaviour of the Dike to follow provisions in the Ministry Guidelines to confirm that the performance objectives will be achieved across all expected levels of loading.

The result is that in an assessment, the performance expectations in the Ministry Guidelines may not be met, so upgrades or improvements could be required. In contrast, design procedures for new Dikes, or alterations of an existing Dike, aim to deliver Dikes that can be expected to meet or exceed the performance expectations outlined in the Ministry Guidelines.

Gaining an understanding of the expected mode of failure and physical consequences of failure are important considerations for an assessment. An assessment requires the characterization of material properties and the expected seismic behaviour of an existing Dike.

In all of the above, Engineering Professionals should not simply assume that anything that predates current design standards will perform adequately or that the codes of the day would necessarily have been interpreted as intended or complied with, as historically, many Dikes in the province have been constructed without any engineering design input.

3.1.2 DESIGN APPROACH SUMMARY

As outlined in **Section 1.1 Purpose of These Guidelines**, these practice guidelines aim to provide a common approach for meeting the intent of the Ministry Guidelines. This is accomplished by outlining a two-tiered approach for seismic design of Dikes in BC as shown below.

Tier 1: Performance-based approach (see Section 3.6 Performance-Based Design)

If it can be shown by completing a thorough performance-based analysis that the performance-based criteria in the Ministry Guidelines cannot practicably be met, and after discussion with the owner and approval from the Inspector, then the Engineering Professionals may continue to Tier 2.

Tier 2: Probabilistic-based approach (see Section 3.7 Probabilistic-Based Design)

Engineering practice has evolved over the years and evaluating the flood hazard of a Dike using a probabilistic-based framework is a newer approach to seismic assessment and seismic design.

It is important to note that both the performance-based and probabilistic-based analyses outlined in these practice guidelines require a documented independent review to be undertaken, and that these independent reviews are required to be a Type 2 independent review. This means that the individual undertaking the independent review cannot be employed in the same firm as the Engineering Professional undertaking the work (see Section 4.1.8 Documented Independent Review of High Risk Professional Activities or Work). The requirement for independent review is in addition to the regular documented checking process required of all engineering activities (see Section 4.1.5 Documented Checks of Engineering and Geoscience Work).

3.1.3 CONSIDERATION OF UNCERTAINTY AND ASSOCIATED RISK

Engineer Professionals have a professional responsibility to uphold the principles outlined in the Engineers and Geoscientists BC Code of Ethics, including protection of public safety and the environment. As such, Engineering Professionals must use a documented approach to identify, assess, and mitigate risks that may impact public safety or the environment when providing professional services.

In relation to seismic design of Dikes, Engineering Professionals should consider risks that arise from project uncertainty. This includes, but is not limited, to the following sources of uncertainty:

- input data;
- analysis methods; and
- prediction of future conditions including those from climate change, channel changes, land use changes, etc.

Additionally, Engineering Professionals should consider potential impacts to:

- society, such as impacts to public safety, the environment, social and cultural valued assets, infrastructure, and the economy; and
- clients, such as project costs, schedule, and quality.

See Section **3.5 Climate Change Considerations** for further discussion on this issue in relation to seismic assessment and seismic design of Dikes.

3.2 OVERVIEW OF SEISMIC DESIGN GUIDELINES FOR DIKES

This section provides an overview of the Ministry Guidelines released in 2014, developments since 2014 that impact seismic design of Dikes, and implementation considerations of the Ministry Guidelines established via discussions and workshops with practitioners and municipalities. Guidance is provided on supplementary practice requirements for the designs to be consistent with the new developments.

3.2.1 OVERVIEW OF 2014 MINISTRY GUIDELINES

The 1st Edition of the Seismic Design Guidelines for Dikes was issued by MFLNRORD in 2011. Based on feedback received from practitioners and owners and following an external peer review, MFLNRORD issued the 2nd Revised Edition of the document in 2014, which is referred to in these practice guidelines as the Ministry Guidelines. In the Ministry Guidelines, MFLNRORD adopted the performance-based design framework for seismic design of Dikes. The intent was to specify measurable or predictable performance indicators, such as Dike crest displacements under different levels of ground shaking, to achieve a satisfactory design of the Dike for flood protection during and following an earthquake.

The Ministry Guidelines provide Dike design and remediation guidance on the following specific aspects:

- Seismic ground motions to be considered for the analysis and design of Dikes along with corresponding performance expectations established in terms of dike crest displacements;
- Suitable geotechnical investigation methods to characterize and obtain engineering properties of the site soils for input into the seismic analyses;
- Commonly used methods for seismic analyses considered appropriate for Dikes;
- Seismic rehabilitation and strengthening measures;
- Threshold seismic events that should trigger a post-event evaluation of the integrity of the Dike System; and
- Post-earthquake temporary emergency repair and permanent remediation measures.

At the time the Ministry Guidelines were developed in 2014, a province-wide consequence classification system for the flood protection Dikes did not exist. As a result, and in the interim, MFLNRORD focused efforts only on High Consequence Dikes. High Consequence Dikes were qualitatively classified as:

"flood protection Dikes where the economic and/or life safety consequences of failure during a major flood are very high. These Dikes typically protect urban or urbanizing areas, and failure could result in large economic losses and/or significant loss of life. Majority of the Dikes reconstructed under the 1968 to 1994 Fraser River Flood Control Program would be considered High Consequence Dikes."

Pertinent aspects of the recently published province-wide consequence classification are presented in Section 3.2.2.1.

3.2.1.1 General Principles

The Ministry Guidelines for Dikes were developed with a focus on preserving the Dike integrity under seismic loading conditions to minimize the potential for flooding. This was achieved by prescribing the Dike performance anticipated for three different industry-accepted levels of ground shaking (100-yr, 475-yr, and 2,475-yr return periods) in terms of vertical and horizontal permanent Dike crest displacements. The Dike design is required not to exceed the displacements prescribed for all three levels of ground shaking. It is required that the Dike crest displacements be quantified for Dike cross sections developed at horizontal distances of less than or equal to 300 m along the Dike alignment. At this maximum

specified spacing along the Dike, it is implied that differential Dike core displacements resulting from varying subsurface conditions would be sufficiently small resulting in a low potential for a Dike breach.

The Ministry Guidelines were also developed with the intent of achieving a consistent assessment among Engineering Professionals of the Dike integrity and performance under seismic conditions. Prescriptive seismic loading criteria and analysis methods, including reporting requirements, were identified to achieve this objective.

Although the Ministry Guidelines are generally only applicable to Dikes classified as High Consequence Dikes by the province, adherence to the Ministry Guidelines may be required by the Inspector to be applied to Dikes of lower consequence when it is suspected or known that future development or other alterations to the protected floodplain would increase the classification level. The Inspector has the authority to apply the Ministry Guidelines to any Dike.

3.2.1.2 Seismic Design Process

The seismic design process outlined in the Ministry Guidelines starts by collecting data on soil stratigraphy and the characteristic design properties of different soil types required for both static and seismic analyses, establishing location-specific seismic ground motion parameters, and quantifying mean annual and 10-year water levels for the site. The process also involves compiling and reviewing historical data such as air photos, buried/abandoned streams/channels in the general area, surficial geology data, and available liquefaction susceptibility, landslide, and flood hazard maps.

Both inertial loads and liquefaction-induced permanent Dike displacements impact the stability of Dike slopes and damage to the Dike core and should be considered in Dike design. The Liquefaction Potential of soils within and underlying the Dike, and the resulting permanent displacements, have a first order impact on Dike performance and its flood protection capability. The Liquefaction Potential of soils can be established via simplified or wave propagation analysis methods. The Ministry Guidelines outline:

- the selection of appropriate shaking levels and corresponding representative earthquake magnitudes for liquefaction analysis for each of the three return periods for simplified analysis; and
- selection and use of time-history input motions for wave propagation analyses.

Once zones of soil liquefaction have been identified, the next task is to assess the anticipated permanent Dike displacements. If the estimated Dike crest displacements are larger than the acceptable (or prescribed) displacements, reconfiguring the Dike geometry and/or implementing ground improvement measures, or constructing a new Dike Segment along a less vulnerable alignment will need to be considered. This process may require one or more iterations and the undertaking of rigorous analyses using continuum-based numerical models to provide better insight on both the magnitude and pattern of Dike displacements. It also requires the examination of zones of shear strain concentrations and/or potential failure modes of the Dike core.

Flow Charts outlining the seismic design process for Dikes underlain by liquefiable soils (classified via a Liquefaction Index varying from L0 to L3, with L0 representing no liquefaction and L3 representing complete liquefaction) are available in the Ministry Guidelines to assist practitioners. One such chart is copied and shown in Figure 1, outlining the design process (applicable for a site where liquefaction of soils is expected to occur in zones of limited thickness, or with a Liquefaction Index of L2).



Figure 1: Typical Analysis Flowchart for Dike Sites With Zones of Soil Liquefaction of Limited Thickness

[Note: In Figure 1, a flow slide failure is defined as a significant translational type displacement of a land mass when static shear stresses exceed the undrained residual shear strength of liquefied soil (i.e., a factor of safety against slope failure equal to or less than 1.0 when using liquefied soil strengths and no inertial loads)].

When the anticipated seismic Dike displacements are larger than the acceptable range, an appropriate first step is to look at remedial measures to bring the Dike in alignment with the Ministry Guidelines. Recognizing that some Dikes may not be able to be designed to meet the seismic design criteria outlined in the Ministry Guidelines, a number of design alternatives were outlined in the Ministry Guidelines for consideration by all involved stakeholders with supporting analyses and documentation of results for each case:

• Re-aligning the Dike to avoid the high cost of ground improvement;

- Overbuilding the Dike to satisfy post-earthquake vertical displacement requirements while maintaining Dike integrity relative to flood protection;
- Incorporating the Dike into massive fills required for adjacent land development referred to often as the "superdike" concept; and
- Revising the applicable consequence classification for the Dike.

Based on Dike designs that have been implemented to date and taking into consideration feedback received from stakeholders, the above-referenced design alternatives have been expanded during preparation of these professional practice guidelines to include a two-tiered design approach. Refer to details provided in Sections 3.6 Performance-Based Design and 3.7 Probabilistic-Based Design for further discussion of these approaches. Seismic flood hazard assessment is discussed in Section 3.7.2 Seismic Flood Hazard Assessment.

3.2.1.3 Seismic Hazard Assessment

The objective of a seismic hazard assessment is to establish ground motion parameters applicable for seismic design. The design ground motions should be representative of the plate tectonic setting of the region and take into consideration the regional faults identified in geologic and seismic hazard maps, and evidence of potential fault movements within a radius of about 500 km from the site. Seismic hazard assessment in Canada continues to be developed and updated approximately every 5 years in support of the National Building Code of Canada (NBCC). Improvements to the seismic hazard assessment process incorporate ongoing refinements of the professions' understanding of the seismic source zones, ground motion prediction equations and modeling uncertainties.

Seismic hazard maps and a seismic hazard calculator are available online via the Natural Resources Canada website to compute ground motion parameters for a given site based on its latitude and longitude. The NRCan hazard calculator provides ground motion parameters for firm-ground, or a reference ground condition, for four different return periods: 100-yrs, 475-yrs, 1,000-yrs and 2,475-yrs corresponding to probabilities of exceedance of 40%, 10%, 5% and 2%, respectively, in an exposure period of 50 years. The ground motion parameters are provided in the form of uniform hazard response spectra (UHRS) for horizontal shaking. The de-aggregation of seismic hazard such as contribution of the magnitude-distance pairs to the seismic hazard at a site for varying structural periods can also be obtained from NRCan upon request.

BC's unique plate tectonic environment results in three different earthquake types for this region, each with its own characteristics: i.e. intensity of ground shaking, magnitude, distance to fault rupture length and duration of shaking:

- Shallow crustal earthquakes that occur in the North American Plate
- Deep inslab earthquakes that occur in the subducting Juan de Fuca Plate, and
- Interface subduction earthquakes that occur at the interface of the North American and Juan de Fuca Plates

Seismicity in Northwestern British Columbia results from the strike-slip reverse faulting boundary between the Pacific and North American Plates. The Queen Charlottes Fault (QCF) marks the major transpressive boundary (strike-slip and reverse faulting) between the Pacific and North American Plates from northern Vancouver Island to northern British Columbia. The QCF extends more than 500 km from a southerly triple junction with the Explorer, North American and Pacific Plates, to the southern extent of the Denali and Fairweather faults of Alaska. In Eastern British Columbia, away from the offshore plate tectonic

boundaries, the historical seismicity is low. In Eastern and Northwestern British Columbia, shallow crustal earthquakes control site seismicity.

For a given site, the intensity and duration of shaking are dependent on the earthquake magnitude (which is a measure of how large the fault rupture is), distance from the rupture zone to the site and the fault rupture mechanism. The duration of strong shaking, which indirectly represents the number of cycles of loading, is correlated to the magnitude of the earthquake. The Moment Magnitude scale (denoted by M_w), which measures the total energy released by an earthquake, is commonly used for engineering applications. Incorporating the effects of both the intensity and duration of shaking is important when carrying out geotechnical analysis of foundations soils for performance-based design. Earthquakes of magnitude less than or equal to 5, regardless of the distance to the rupture zone, are not expected to cause damage in manmade structures such as well-constructed and well-maintained Dikes.

The Ministry Guidelines were developed at a time when the location-specific seismic hazard and the corresponding ground motion parameters were being established using the 4th Generation Seismic Hazard Models developed as input to the seismic design provisions in 2010 NBCC. The 4th generation models did not include the contribution of seismic hazard from subduction interface earthquake sources in the probabilistic calculations. Instead, the practice that existed at that time was to consider the effects of a subduction interface earthquake on a deterministic basis. Both the peak ground shaking and earthquake magnitude assigned to a subduction interface earthquake often resulted in seismic loading-induced cyclic shear stresses that were comparable to ground motions with a 475-yr return period. For this reason, subduction interface earthquake ground motions were not explicitly referenced in the 2014 Ministry Guidelines.

The return period of seismic ground motions and the seismic performance expected from Dikes for that return period are inseparable in performance-based design and must not be looked at independently of each other. The combination of seismic demand (or return period of ground motions) and seismic performance vary depending on the type and importance of the structure and costs to achieve the stipulated performance. As an example, for ground motions with a return period of 2,475-years, the seismic performance expected from a dam, a marine terminal, a bridge, or a building, is considerably different. For a building of normal importance, the expected performance is life safety (or non-collapse to permit egress of occupants), whereas for a lifeline bridge, the expected performance is functionality of the bridge with repairable damage.

Following review of published guidelines on performance-based design, the following three combinations of probabilistic seismic ground motion return periods and performance expectations were established for seismic design of Dikes:

- 100-yr return period and expected performance: At this short return period, low levels of ground shaking are expected, and soil liquefaction effects are less likely for most locations in the Lower Mainland. Consequently, only small Dike crest displacements are expected to occur. This level of ground shaking is not expected to compromise the post-earthquake flood protection capability of the Dike Segment.
- 475-yr return period and expected performance: At this intermediate return period, moderate levels of ground shaking are expected, and soil liquefaction effects are likely for most locations in the Lower Mainland. Consequently, low to moderate Dike crest displacements are expected to occur resulting in some damage to the Dike body that will require repairs. This level of ground shaking is not expected to compromise the post-earthquake flood protection capability of the Dike Segment.
- 2,475-yr return period and expected performance: At this long return period, moderate to high levels of ground shaking are expected, and soil liquefaction effects would be prevalent for most locations in

the Lower Mainland. Consequently, moderate to large Dike crest displacements are expected to occur resulting in significant damage to the Dike body potentially requiring complex subsurface repairs. This level of ground shaking may compromise the short-term flood protection capability of the Dike Segment. In other regions of BC such as in the interior, the anticipated ground shaking levels can be significantly lower and the anticipated impact on Dike displacements can also be lower. Refer to Table 4 for a comparison of seismic hazard parameters for different cities.

3.2.1.4 Water Levels

Water levels are important in the geotechnical analysis of seismic stability of Dikes. In the Ministry Guidelines it was considered that combining the peak water levels that occur annually over a short period with rare earthquake ground shaking for use in a Dike stability/displacement analysis, would generally result in overly conservative designs.

In order to avoid unrealistically low joint probabilities, the use of mean annual river water level and mean annual sea water level are recommended in the Ministry Guidelines when carrying out stability and displacement analyses as part of the seismic design of Dikes. There is no definition provided in the Ministry Guidelines for these water levels. Provision is made for assessing the sensitivity of the stability and displacements to varying water levels for special instances (e.g. for sea Dikes exposed daily to both high and low tides). The Ministry Guidelines also require the Engineering Professional to demonstrate the displaced configuration of the diking system would provide at least 0.3 m of post-earthquake freeboard above 10-yr return period water level in addition to meeting the required seismic performance criteria .

Engineering Professionals are referred to the Ministry of Environment, Water Management Branch report entitled, Climate Change Adaptation Guidelines of Sea Dikes and Coastal Flood Hazard Land Use (3 Volumes), dated January 2011.

3.2.1.5 Dike Performance Categories

Following review of the limited documented and available data on Dike performance during past devastating earthquakes, such as after the Christchurch 2011 earthquake, the following three broad and subjective performance categories were established for seismic performance of Dikes with insignificant, moderate and significant consequences:

Performance Category A: No significant damage to the Dike body, post-seismic flood protection ability is not compromised.

Performance Category B: Some repairable (moderate) damage to the Dike body, post-seismic flood protection ability is not compromised.

Performance Category C: Significant damage to the Dike body, post-seismic flood protection ability is possibly compromised.

Recognizing that the end result of seismic ground shaking would be to induce permanent displacements in the Dike and they are expected to be largest at or in the vicinity of the Dike crest, the following approximate and subjective (judgement-based) Dike crest displacements were established for the seismic design of a given Dike Segment:

Performance Category	Maximum Allowable Vertical Crest Displacement	Maximum Allowable Horizontal Crest Displacement			
A	Small (<0.03 m)	Small (<0.03 m)			
В	0.15 m	0.3 m			
С	0.5 m	0.9 m			

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Table 1: Seismic	Performance	Category a	and Dike	Crest Disj	placements	tor Dike	Integrity

Typical Dike displacement criteria published by the US Army Corps of Engineers (USACE) for post-event flood protection capability of Dikes in urban and urbanizing areas, simplified to suit the objectives of the studies carried out for British Columbia, were used as a guide when establishing subjective Dike crest displacements in the 2014 Ministry Guidelines. The USACE seed criteria are summarized below:

 Table 2: USACE Criteria on Post-Seismic Performance, Dike Deformations, Remaining Freeboard, and Damage to Internal Structures

Post-Seismic Protection Ability	Amount of Deformation	Remaining Freeboard for Post-Seismic Evaluation	Significant Damage to Internal Structures
Probably Uncompromised	< 0.3 m	> 0.3 m	No
Possibly Uncompromised	0.3 to 0.9 m	> 0.3 m	Possibly
Likely Compromised	0.9 to 3 m	None	Likely if existing
Compromised	Unlimited	None	Yes

The seismic ground motion return periods that would cause the Dike crest displacements identified for each Performance Category (i.e. A, B and C) were thereafter correlated with the return period of ground motions (and associated peak ground shaking levels) based on local experience of the authors who developed the Ministry Guidelines on behalf of MFLNRORD. The correlations used are summarized in Table 3 below.

Table 3: Correlation Betv	veen Seismic Performance	Category and Return	Period of Ground Motions

Performance Category	Return Period of Ground Motions/Earthquake Shaking Level
A	100-year/EQL-1
В	475-year/EQL-2
С	2,475-year/EQL-3

3.2.1.6 Geotechnical Investigation

The objective of the geotechnical investigation outlined in the Ministry Guidelines is to collect subsurface data to develop geotechnical models applicable for the analysis of the cross sections of the Dike Segment being assessed. Identifying zones of potentially liquefiable soils and the likely lateral and vertical displacements that could occur both during and after earthquake shaking for each specified return period are critical to assessing the damage to the Dike core when following the performance-based design framework adopted in the Ministry Guidelines.

The Ministry Guidelines state that the geotechnical investigation should be of sufficient lateral extent and depth to collect data comprising both the Dike and its foundation. In order to minimize extrapolation of geotechnical data/site conditions and develop some level of confidence on the seismic displacements estimated for the Dike, as a minimum, the investigation should collect information on:

- soil stratigraphy on either side and within the dike;
- depth to mean groundwater levels on either side of and within the Dike;
- characteristics of soil strata susceptible to Liquefaction in the form of penetration resistance, strength, and shear wave velocity; and
- index properties of soils comprising the Dike and underlying foundation soils such as particle size distributions, Atterberg Limits, etc.

The investigation needs to be carried out using techniques currently accepted by the profession as appropriate for seismic assessment of soil-structure systems including reliable characterization of the cyclic resistance of soils comprising the Dike body and foundation.

The Ministry Guidelines stipulate a minimum of three borings per Dike section analyzed, with one boring through the center of the Dike, one on the land side and one on the water side, to develop a soil stratigraphy section appropriate for quantifying seismic displacements using both simplified and detailed analysis methods. Sections are to be analyzed at distances not exceeding 300 m along the Dike alignment.

3.2.1.7 Analysis and Design

One of the key objectives of the Ministry Guidelines was to describe in detail the analysis methods that are acceptable to MFLNRORD, so that the practitioners follow consistent methodology in the design and analysis of Dikes. The expectation was that this would produce Dike designs that are consistent throughout the different regions, so that MFLNRORD and municipalities could assess relative impact of Dike upgrades and associated costs. It also relieved MFLNRORD of having to review the different methodologies followed by the different practitioners in Dike design, and instead focus on key aspects such low performing Dike Segments and associated flood protection requirements as uniformly as practicable.

Pseudo-static slope stability analysis methods with prescribed seismic coefficients and soil shear strengths were recommended in the Ministry Guidelines when carrying out stability analysis of Dike sections. The results of slope stability analyses can be used to estimate seismic displacements induced in Dikes using simplified methods. The well-known Newmark displacement analysis method was recommended as the acceptable method, however, under certain circumstances when the Newmark method yields results that are borderline (relative to the acceptable crest displacements) or when the displacements exceed the limits and it is required to optimize ground improvement requirements and/or dike configurations at a given site to bring the crest displacements to be within the specified values,

provision was made to permit the use of detailed finite element or finite difference models as acceptable methods of analyses.

3.2.2 DEVELOPMENTS SINCE 2014

Several new developments have occurred in key areas that affect the practice of seismic design of Dikes. These areas of development are briefly described below.

3.2.2.1 Dike Classification System

In 2019, the Ministry examined the exposure consequence level from a major Dike failure, for each Dike in BC regulated under the *Dike Maintenance Act*. The study culminated with a province-wide Dike Consequence Classification Study, and the results were released to the public in September 2020. The study examined a total of 212 dikes distributed throughout BC and classified them into the following five consequence categories:

- High Consequence (35 dikes)
- Major Consequence (36 dikes)
- Moderate Consequence (90 dikes)
- Minor Consequence (43 dikes)
- Insignificant Consequence (8 dikes)

It is reported that the 35 *High Consequence* dikes cover 75% of the total area protected by all dikes analyzed, 95% of the total protected population and 94% of the total protected building value. The study fills an important data gap that existed for a long time and illustrates the impact the *High Consequence* dikes have on flood protection.

For details refer to the report BC Dike Consequence Classification Study (Northwest Hydraulic Consultants 2019).

3.2.2.2 Seismic Hazard Parameters

Since issuing the 2014 Ministry Guidelines, two other generations of seismic hazard models have been developed; i.e. 5th generation hazard model for consideration in 2015 NBCC and 6th generation hazard model for consideration in 2020 NBCC. The 2020 NBCC considers 6th generation hazard models and maps developed by NRCan that mark significant improvements in this area of earthquake engineering relative to ground motion models, percentile hazard parameters, frequency content of ground motions, site amplification factors, and de-aggregation results. A comparison of hazard parameters derived for reference ground conditions (Site Class C) from the different hazard models for selected cities is provided in Table 4 to illustrate the differences in the ground motion parameters. For purposes of illustration, the hazard parameters for Vancouver, Victoria and Kelowna have been selected.

Table 4: Comparison of Site Class C Seismic Hazard Parameters from 4th, 5th and 6th GenerationModels for Select Cities. POE 2% in 50 years.

Structure	4 th Generation Hazard Model			5 th Generation Hazard			6 th Generation Hazard		
Period	(2010 NBCC)			Model (2015 NBCC)			Model (2020 NBCC)		
	VAN	VIC	KEL	VAN	VIC	KEL	VAN	VIC	KEL

PGA (0.01 s)	0.46	0.61	0.14	0.36	0.58	0.07	0.45	0.79	0.08
0.10 s				0.68	1.08	0.11	0.95	1.64	0.16
0.20 s	0.92	1.22	0.28	0.84	1.30	0.14	1.06	1.90	0.18
0.30 s				0.84	1.31	0.14	1.01	1.91	0.16
0.50 s	0.64	0.82	0.17	0.75	1.16	0.12	0.76	1.49	0.13
1.00 s	0.33	0.38	0.09	0.42	0.68	0.09	0.43	0.85	0.09
2.00 s	0.17	0.19	0.06	0.26	0.40	0.06	0.27	0.50	0.07
5.00 s				0.08	0.12	0.03	0.07	0.12	0.03
10.00 s				0.03	0.04	0.01	0.03	0.05	0.02

3.2.2.3 Seismic Source-Based Uniform Hazard Spectrum

For the southern half of British Columbia, the hazard contributions come from three main sources of shaking: crustal, in-slab and interface earthquakes. For British Columbia, the uniform hazard spectrum (UHS) available for design is developed by first computing the hazard at various spectral periods using response spectral attenuation relations considering the different contributions from the three main sources.

Through a probabilistic seismic hazard assessment, it is possible to calculate individual UHS for each of these three main contributing sources. This type of analyses has been presented by the Halchuck et al. (2016) using Canada's 5th Generation Seismic Hazard Model. An example of individual UHS for each of the three main sources of shaking is presented from Halchuck et al. (2016) for a site in Vancouver is presented in Figure 2. The same figure also presents the total UHS.

It is possible to carry out seismic engineering designs by analyzing the seismic response of a dike section to multiple spectra. The reason for using a UHS rather than using three spectra for the individual scenarios is to reduce the number of engineering analyses required. However, depending on the contribution from each source to the total UHS, using three spectra in the design may lead to less conservative results. Additional details on how to use source-based UHS in site response analysis can be found (reference SRG).



Figure 2: Comparison of Site Class C UHS from the 5th Generation Models for a Select Site in Vancouver. Total UHS and individual UHS for three Seismic Sources. POE 2% in 50 years

The use of seismic source-based UHS constitutes a design method not included in the Ministry Guidelines but may be considered by the Professional of Record if deemed appropriate.

3.2.2.4 Filling Geotechnical Data Gaps

Fraser Basin Council, recognizing the challenges faced by all stakeholders, initiated a data collection exercise in 2018 primarily for the *High Consequence* Dike Segments in the Fraser Lower Mainland. The work included collecting available data from all municipalities, identifying geotechnical data gaps, completing borings to fill the data gaps to the extent practicable, and developing detailed analytical models to quantify seismic displacements at select Dike sections. The main intention of this exercise was to better understand the seismic vulnerability of selected Dike Segments along the *High Consequence* Dike System. The database developed will be available to the practitioners and developers, which may provide some additional information on subsurface conditions for select Dike Segments in the Lower Mainland BC.

Work is also underway to develop regional liquefaction susceptibility and seismic-induced liquefaction potential maps by the Metro Vancouver seismic microzonation mapping project, which is funded by the Institute of Catastrophic Loss Reduction and Emergency Management BC.

3.2.2.5 Climate Change

The Ministry Guidelines make no specific reference to incorporate future rise in sea or river levels in Dike design. However, in practice, many diking authorities have established the interim and future Dike crest elevations taking into consideration future rise in water levels due to climate change. Similarly, mean annual river water levels and mean annual sea water levels are routinely established by hydrotechnical consultants with and without considerations of future rise in sea levels due to climate change.

This specific aspect of Dike design has been re-visited during preparation of these practice guidelines and additional commentary and guidance on sea level rise are provided in **Section 3.5 Climate Change Considerations**.

3.2.2.6 Optimizing Performance-Based Design Displacement Criteria

Although not explicitly noted in the Ministry Guidelines, a longer-term strategy adopted by the authors of that document was to formulate an analytical framework that was easy to implement and modify where the prescribed Dike crest displacements could be varied, depending on the importance classification of the Dike. The intent was to first establish a Dike classification system and then address the applicable prescriptive displacement criteria for lower consequence categories of Dikes; e.g. permit larger displacements (and hence a higher potential for damage and a breach) for intermediate to low consequence Dikes than for High Consequence Dikes for a given return period of ground shaking. The designers should consult the local diking authority for acceptable displacement criteria for different Dike consequence categories.

3.2.2.7 Probabilistic-Based Seismic Vulnerability Assessments

Probabilistic-based seismic vulnerability assessments are currently being developed by the firm Golder Associates Ltd. on behalf of Fraser Basin Council and MFLNRORD for screening and prioritizing Dikes that are seismically vulnerable for damage. These criteria consider a range of ground shaking intensities, flood levels, and Dike geometries, ultimately focused on the development of vulnerability under different levels of seismic shaking. These methodologies also address rapid re-construction and response times for Dikes and additional commentary and guidance on probabilistic-based Dike design are provided in **Sections 3.7 Probabilistic-Based Design.**

3.2.2.8 Practice Guidelines for Site-Specific Seismic Response Analysis

A site-specific seismic response analysis (SSRA) involves an assessment of the response of a multilayered soil profile to earthquake shaking applied at depth, and how the ground motion intensity and frequency content of the applied ground motions change due to the passage of seismically-induced shear waves propagating upwards from a basal layer. Guidance on the recommended best practice for SSRAs have been developed and are part of the package for the latest Seismic Retrofit Guidelines 2020 Edition (Volume 9). This same information is provided in the Guidelines for Seismic Analysis of Existing Buildings in BC. The guidance provided in these documents contains important information on data input, analysis, and reporting requirements when undertaking an SSRA, including independent review requirements.

3.2.3 IMPLEMENTATION CONSIDERATIONS OF MINISTRY GUIDELINES

Practitioners, municipalities and other stakeholders have expressed concern on the cost of meeting the geotechnical field investigation requirements and seismic displacement limits specified in the Ministry Guidelines for High Consequence Dikes. These concerns, presented herein, have been collected via workshops and feedback surveys completed over time since 2014. The implementation considerations have been reviewed during preparation of these practice guidelines to the extent practicable and guidance is provided on possible solutions.

3.2.3.1 Seismic Hazard Parameters

The practitioners shall use the ground motion parameters that correspond to the latest building code in effect at the time of application for *Dike Maintenance Act* approval.

3.2.3.2 Maximum Dike Crest Displacements for Dikes

There is consensus that the cost of Dike seismic design completed to date using the performance-based design guidance outlined in the Ministry Guidelines for High Consequence Dikes far exceeds the cost of Dike raising without seismic strengthening. Dikes designed using the probabilistic-based design methodology outlined in **Section 3.7 Probabilistic-Based Design** is an acceptable alternative in some circumstances, and additional commentary and limits of use is provided on this methodology in this section.

As noted previously in **Section 3.2.1.1 General Principles**, the Ministry Guidelines were developed at a time when a province-wide exposure consequence levels for Dikes did not exist.

3.2.3.3 Number of Borings and Analysis Section Spacing

Carrying out three test holes per Dike section (water side, land side and crest) at distances not exceeding 300 m along the dike alignment as outlined in the Ministry Guidelines (see Section 3.2.1.6 Geotechnical Investigation) has received pushback from various stakeholders including developers, municipalities, and practitioners because of access, environmental impact, and cost considerations, particularly for the boreholes located on the water side.

The Professional of Record in the geotechnical discipline must develop an investigation plan that considers the balance between having closely-spaced sections developed from individual test holes (resulting in less detail in the subsurface model at each section, but providing more frequent sections), and widely-spaced sections developed from groupings of test holes (resulting in more detail in the subsurface model at each sections). The investigation plan needs to be sufficiently detailed to assess the overall seismic performance of the Dike and to meet the input data requirements outlined in **Section 3.4 Required Input Data**. In many instances, having closely spaced sections may provide a better overall assessment of Dike performance than widely-spaced sections. At critical locations, such as where there are with steep waterside slopes or pump stations, more detailed subsurface models are appropriate.

Selection of the appropriate level of investigation should consider factors including the adequacy of available information and the consequence classification of the Dike.

At a minimum, the number of test holes should be 1 per 100 m of lineal length of the Dike, and should include collecting cross sectional data to develop suitable subsurface models at critical sections such as pump station locations and steep slopes. More test holes may be required to provide a sufficient level of detail, at the Professional of Record's discretion. A Professional of Record must provide a technical rationale regarding their selection of test hole locations and spacings and document this in the Seismic Dike Report. In no case should the test holes and analysis sections be spaced more than 300 m along the Dike.

3.2.3.4 Seismic Flood Hazard Assessment and Documentation to Support Exposure Consequence Re-Classification

Section 5 of the Ministry Guidelines discusses alternatives to meeting those guidelines including steps for removal of a High Consequence Dike classification by "Documenting expected damage, putting together a remediation plan, restricting land use and regulating floodplain development in the protected area (*e.g.*, flood proofing bylaws and other regulatory tools)...".

Practitioners seeking this alternative route are now directed to **Section 3.7 Probabilistic-Based Design** of these practice guidelines for the required steps. Note that completing a probabilistic-based design does not alter the MFLNRORD produced consequence classification of the Dike.

3.2.3.5 Geometry of a Superdike

The concept of a very wide superdike was introduced in the Ministry Guidelines for situations where displacement criteria cannot be met and ground improvement is not feasible. Criteria defining the geometry of a superdike was not specified, resulting in different interpretations adopted by different practitioners.

Commentary on the concept and geometry to be considered for superdikes is given in **Section 3.6.4 Superdikes and Setback Dikes.**

3.2.3.6 Commonly used Platforms for Dynamic Site Response Analyses

The Ministry Guidelines prescribe a methodology to assess seismic-induced displacements of Dikes. Such displacements, however, may also be assessed using more comprehensive finite difference or finite element platforms, which are capable of incorporating the combined effects of non-linear soil behaviour and groundwater flow.

The finite difference program FLAC and the finite element program PLAXIS are commonly used by the geotechnical earthquake engineering practitioners in the Lower Mainland when conducting dynamic site response analysis. The computer programs such as FLAC and PLAXIS form powerful platforms for seismic loading-induced deformation analysis of dikes, and the results are suitable for the purposes of assessment of Dike performance as long as appropriate constitutive models and boundary conditions are implemented. It is expected that, when performed properly, both programs should provide a similar assessment of seismic deformations (both horizontal displacements and settlement) of a Dike under seismic loading conditions.

The Engineering Professional should demonstrate that an appropriate level of constitutive model calibration has been carried out and appropriate boundary conditions have been selected when using finite element or finite difference programs in site response analyses. Current practice for dynamic analyses covers a wide range of approaches, which can make it difficult for regulatory agencies and local authorities to assess the appropriateness of any particular analysis, boundary conditions and/or constitutive model used. In this sense, improved documentation practices are necessary to ensure similar quality assurance requirements are used among practitioners. Documentation requirements for Dynamic Site Response Analyses are described in **Section 3.8.1 Reporting Documentation Requirements**.

3.3 DESIGN CRITERIA FOR DIKES OTHER THAN HIGH CONSEQUENCE

The Ministry Guidelines are only applicable to High Consequence Dikes in high seismic areas, however if the Inspector specifies that the Ministry Guidelines are to be followed for any other consequence category of Dike, the local diking authority must determine the acceptable seismic design criteria and communicate this to the Design Team. The local diking authority must seek approval from the Inspector for the seismic design criteria it is utilizing.

3.4 REQUIRED INPUT DATA

When undertaking a seismic design of a Dike, the following input data is required in addition to collecting site specific information as described in Sections 3.2.1.6 Geotechnical Investigation, 3.2.2.4 Filling Geotechnical Data Gaps, and 3.2.3.3 Number of Borings and Analysis Section Spacing:

- 1. As-built (Record) drawings for the Dike these include details on the Dike cross section, materials used for construction, construction details such as level of compaction for the Dike Segments of concern and adjoining segments, drawings and design details for appurtenant structures such as flood boxes and pump stations.
- 2. Historical performance of the Dike this includes inspection reports summarizing past performance of the Dike Segment such as settlement, scouring, seepage concerns, vegetation, evidence of animal burrows, land use changes, etc.
- 3. Available geotechnical borings refer to Fraser Basin Council Database for Dikes in the Lower Mainland and reports and as-built (record) drawings prepared and completed by engineers and contractors during initial Dike construction and subsequent modifications/alterations (if applicable) in other jurisdictions. Existing borings are often useful for defining stratigraphy, but may have unreliable SPT penetration resistance values due to unknown energy levels associated with the hammer type and lift/drop mechanism.
- 4. Data on water levels for analysis it is required to establish mean river water and mean ocean water levels and groundwater conditions including the phreatic surface within the Dike when necessary via seepage analysis (refer to Appendix E of Ministry Guidelines on *Analysis Methodology*). Water levels should consider climate change effects.
- 5. Ground shaking levels for return periods of 100-yr, 475-yr, and 2,475-yr by establishing the UTM coordinates for the site and then inputting these coordinates into the interactive Natural Resources Canada website to obtain the results.
- 6. The surface topography/bathymetry on both sides of the dike, including the river/sea bed level and its lateral variation away from the dike, at least for a distance within which a potential failure mechanism, could develop, and
- 7. Other available information these include surficial geology maps, aerial photographs, maps showing liquefaction susceptibility of soils and flood hazards developed for the area (when available).

When conducting liquefaction assessments, new testhole investigations should consider, as a minimum, one testhole to a depth of 30 m or practical refusal. The use of Standard Penetration Tests should consider energy measurements and various correction factors suggested in Idriss and Boulanger (2008). Satisfactory use of the SPT for liquefaction analyses requires that the apparatus and procedures conform with the ASTM D-6066 standard. Gravelly sites should be investigated with the instrumented Becker penetration test (iBPT), which allow a direct measurement of the energy delivered to the tip (DeJong et al., 2014, 2016). Direct soil sampling should always be the primary means for determining fines contents for the purpose of determining equivalent "clean sand" values (Idriss and Boulanger, 2008)

When conducting site response analyses, or using code-based ground motion amplification factors, shear wave velocity (Vs) should be measured using appropriate techniques (see Hunter and Crow, 2015), which may include Seismic CPT, surface wave methods or downhole testing. Refraction Microtremor (ReMi)-based techniques should be avoided due to potential for bias, particularly at depth (Stewart et al., 2014). Although numerous empirical correlations exist for estimating Vs from penetration resistance,

these should not be used for ground response analyses applications when the results are sensitive to small variations in Vs.

Any required input data that is necessary for the project and not available must be provided by the owner.

3.4.1 UTILITIES AND OTHER STRUCTURES

Flood boxes and pump houses are often constructed within or in proximity to Dikes. The differential seismic performance of these structural units will result in an interface with the Dike that is vulnerable to piping failure following earthquake shaking and may form the weakest link in the Dike Segment analyzed. The Dike Segments that are directly connected to these structures may be required to be designed to more stringent displacements. Consideration may be given to the provision of wing walls designed to reduce the hydraulic gradients to acceptable levels to reduce the risk of piping failure. The use of approved Dike fills abutting the wing walls compacted to the standards defined in Dike construction guidelines must be followed. Geotechnical Engineering Professionals shall coordinate all required analyses with the Structural Engineering Professional and implement suitable designs.

It should be noted that the approval process under the *Dike Maintenance Act* only relates to the performance of the Dike and not the design of any utilities or other structures. In addition to meeting the requirements under the *Dike Maintenance Act*, there may be other design standards that apply.

3.5 CLIMATE CHANGE AND FUTURE CONSIDERATIONS

As global warming continues, the effects of the changes on local riverine floods and coastal water levels will become further understood. Current Ministry Guidelines state that permanent flood protection structures, such as Dikes, are likely to require upgrading periodically to account for the increasing knowledge (MFLNRO, 2014, MWLAP, 2003, MOE, 2011a, MOE, 2011b). When providing upgrades to a Dike, such as to address seismic conditions, the hydrotechnical design event should be reviewed and if necessary, updated. For example, a previously applied 1:200-year (0.5% annual exceedance probability) flood may have a higher magnitude based on updated understanding of current and future conditions.

Ministry Guidelines suggest Dikes should be designed with consideration of projected conditions for at least 70 to 100 years into the future (MOE, 2011a), however consideration of intermediate time periods may be required where design water levels during the intermediate periods may be higher than for future periods¹. Alternative time horizons may be applied based on design life or adoption of adaptive plans for future upgrades; but should only be applied following consultation with the Dike owner and Inspector.

When assessing the design event, Ministry Guidelines should be adhered to. The projection of future conditions should account for the following:

- For coastal Dikes, the following should be considered:
 - Sea level rise
 - Subsidence
 - Local settlement
 - Projected changes in waves, wind, storms (intensity, frequency, duration, direction, timing)

¹ For example, many rain-on-snow dominated watersheds in BC are expected to experience increasing probability or magnitude of floods as rainfall intensity increases with global warming and subsequently decreasing flood magnitudes as snowpack decreased with further global warming.

- Changes in shoreline that may affect wave effects and runup.
- Uncertainty
- For river Dikes the following should be considered:
 - Changes in design flow (magnitude, timing, duration, defining process)
 - Changes in hydrotechnical design conditions and channel conditions (i.e. ice, debris, sediment, bed, banks, channel form, and channel process)
 - Local settlement
 - Uncertainty
- For Dikes along lakes and reservoir, the following should be considered:
 - Changes in magnitude, timing, and duration of design inflow
 - Changes in outflow or hydrologic loss from the lake
 - Changes in wind, setup, and waves
 - Changes in ice cover
 - Changes in sediment supply and bed changes (particularly at outlet along Dikes)
 - Local settlement
 - Uncertainty
- For Dikes along estuary and tidally influenced rivers, the following should be considered:
 - Applicable coastal Dike and river Dike conditions listed above.
 - Changes in timing and probability of simultaneous occurrence of high flows and high coastal water levels.

Freeboard is typically applied as a mechanism to account for local variations in water level and uncertainty in the data and analysis used to calculate the design conditions. Freeboard of 0.6 m is commonly used in BC, however as low as 0.3 m and as much as 1.0 m or more have been used depending on the source of the hazard, quality of data used, and calculation method to determine the design event.

Other resources include *Professional Practice Guidelines – Legislated Flood Assessments in a Changing Climate in BC* (Engineers and Geoscientists BC 2018) and Sea Dike Guidelines (BC Ministry of Environment 2011).

3.6 PERFORMANCE-BASED DESIGN

The magnitude of seismic deformations within a Dike largely depends on whether liquefaction of the foundation soils occurs. If liquefaction is predicted to occur, often, the performance requirements of the Ministry Guidelines will not be met. If liquefaction is not predicted to occur, deformations tend to be small (i.e. less than 1 m) but if liquefaction does occur, deformations can be much larger (i.e. greater than 1 m), depending on site-specific factors. There generally does not tend to be a gradual increase in displacement with increasing seismic hazard (i.e. with stronger ground shaking), but rather a large increase when the earthquake ground motions exceed a threshold level that initiates liquefaction. Accordingly, liquefaction is the most significant contributor to the seismic vulnerability for most Dikes.

Liquefaction results in the loss of strength and stiffness of granular soil. Seismic deformation of Dikes depends on factors including the earthquake ground motion intensity, earthquake magnitude, extent of liquefaction, Dike configuration and site topography and bathymetry. In general, larger deformations can be expected where:

- Dikes are close to a slope (such as a riverbank),
- there are steeper slopes (including the Dikes slopes and riverbank slopes),
- slopes/Dikes are higher,
- thicker liquefiable soil is present,
- thinner non-liquefiable crust is present,
- the design seismic hazard has a higher return period than the seismic hazard that initiates liquefaction.

The first three points above all relate to the static shear stress bias (i.e. a de-stabilizing force, such as a slope or surcharge). Higher stress biases are caused by higher and steeper slopes. Areas without a static shear stress bias (i.e. flat ground) would not be expected to experience large deformation caused by liquefaction. Setback Dikes, short Dikes and Dikes on non-liquefiable subgrades, such as clay-like soils, unsaturated soil, and sufficiently dense granular soils, can be expected to have smaller seismic deformations under a given seismic hazard.

Dikes constructed over soils where liquefaction (and accordingly potentially large seismic deformations) is anticipated may require ground improvement (see **Section 3.6.1 Ground Improvements**). If displacement criteria cannot be met and if ground improvement is not feasible, the Ministry Guidelines contemplate possible design alternatives as already mentioned in **Section 3.2.1.2 Seismic Design Process**. As noted there, alternatives that could be considered include:

- 1) realigning Dikes to less seismically vulnerable areas,
- 2) overbuilding Dikes to accommodate seismic displacements,
- 3) building very wide "superdikes", and
- 4) removing the High Consequence Dike classification

As outlined in Section 3.2.3.4 Seismic Flood Hazard Assessment and Documentation to Support **Exposure Consequence Re-Classification**, re-classification of Dikes in BC is no longer permitted and instead a probabilistic-based approach can be followed by developing comprehensive flood risk and flood protection strategies, including post-earthquake Dike repair plans.

The following subsections discuss design alternatives that allow for the Design Team to bring the design of a Dike in alignment within the Ministry Guidelines using performance-based design options. The performance-based alternatives include ground improvements as well as items 1 to 3 in the list above. Analytical and documentation efforts required to justify use of the probabilistic-based approach where the Dike design will not meet the performance-based criteria of the Ministry Guidelines, are described in detail in **Section 3.7 Probabilistic-Based Design**.

3.6.1 GROUND IMPROVEMENT

Mitigation of seismic deformations can often be accomplished using ground improvement. Ground improvement using stone columns is currently one of the most suitable and cost-effective ground improvement method for non-plastic and cohesionless soils. Compaction piles, soil mixing and jet grouting and other innovative technologies are other alternatives to increase the strength of sand to limit

liquefaction. These alternatives may cost more and could be more difficult to adapt to changing or unexpected subsurface conditions than stone columns.

Compaction piles can consist of timber, precast concrete or steel pipe piles. These compaction piles are expected to cost about 2 to 20 times the cost of stone columns per treated soil volume. Compaction piles may be the most practical alternative where ground improvement is required underwater.

Soil mixing methods include deep soil mixing (DSM) and cutter soil mixing (CSM). These methods are typically about five times the cost of stone columns per treated soil volume. Jet grouting also costs more, at about five to ten times the cost of stone columns.

Partial ground improvement may also be considered, often in conjunction with one of the option options such as superdiking in areas of lower seismic deformations.

As an alternative to ground improvement, some specific circumstances may use ground reinforcement.

3.6.1.1 Innovative Ground Improvement Methods

Innovating ground improvement techniques continue being developed in various parts of the world. These techniques have the potential to provide non-conventional solutions for achieving desired ground improvement levels for seismic Dike projects.

Innovative ground improvement methods may be considered by Engineering Professionals where appropriate, but the use of such methods should be discussed with the owner and the Inspector as these techniques may not always be appropriate. If used, the Engineering Professional should consider the following:

- the use of specialists to assist in design and implementation
- the need for testing, reviewing, and monitoring (including long-term) the efficacy of the technique
- the potential impact on the environment
- other potential impacts
- the need for a contingency plan if the expected results are not achieved

Caution should be used when implementing innovative ground improvement methods and the work should only be undertaken by Engineering Professionals appropriately qualified and experienced to do so.

Two biomediated techniques for liquefaction mitigation are microbial denitrification and microbiallyinduced calcite precipitation or MICP. Microbial denitrification (i.e. nitrate reduction) is a biological process in which nitrate is reduced stepwise to nitrogen gas. By generating gas, the potential for pore pressures to increase as soil particles are compressed during seismic shaking is significantly reduced. Nitrogen produced by the denitrification process is the most suitable biogas for sand desaturation because it is chemically inert and its solubility in water is very low (He et al. 2013). One of the disadvantages of this technique is that gas bubbles can induce settlements, so this aspect should be considered when evaluating this technique as a liquefaction mitigation solution.

MICP consists of cementing the inter-particle contacts by precipitating calcium carbonate (CaCO3) through bio-geo-chemical processes using bacteria that can be native to the ground. CaCO3 precipitation reduces permeability and improves the strength, stiffness, and dilatancy of the soil by pore-filling, particle roughening, and inter-particle binding. While MICP has not been commercialized, promising results have been obtained in the laboratory and limited field trials in the Netherlands and Canada. Field trials will

likely be required to test the applicability of bio-grouting at large scales and in particular to improve dike reaches.

3.6.2 DIKE REALIGNMENT

Consideration of a new alignment for the Dike may be a more cost-effective option to the other design alternatives and may improve access and constructability. Things to consider when undertaking a Dike realignment include, but may not be limited to, geotechnical conditions along the proposed realignment, land acquisition requirements, environmental and archaeological impacts, construction access, noise impacts, site utilities, and adjacent infrastructure. One type of Dike realignment is a setback Dike as explained in **Section 3.6.4 Superdikes and Setback Dikes**.

3.6.3 OVERBUILDING

Overbuilding Dikes may be feasible where deformations are relatively small but do not meet the performance-based criteria of the Ministry Guidelines relative to the available free-board. Because of the uncertainty in accurately predicting seismic deformations and the potential for damage to the Dike core, this approach may not be suitable where large seismic deformations are anticipated and should be assessed by the Professional of Record based on the specific project details.

3.6.4 SUPERDIKES AND SETBACK DIKES

Dikes could either be designed using a setback Dike or superdike. Conceptually a superdike would have to extend beyond the zone of lateral spread and a setback Dike would need to be behind the zone. These two types of Dikes are discussed together because both provide flood protection by maintaining a Dike Segment with a setback beyond the zone of large seismic deformations and lateral spread. Typically for seismic considerations, the superdike width could be at least 20 times the combined height of the Dike and riverbank slope (ie. to the bottom of the river channel). Similarly, the setback dike could be located a distance at least 20 times the height of the riverbank.

As has been well documented, seismic-induced lateral spreading near an open channel or face can extend large distances from the open face attenuating toward land. The general concept for seismic design of a superdike is to build a Dike that is wide enough such that an acceptable Dike section is retained behind the area that has large seismic deformations and that the overall water retention capacity is not compromised. Similarly, setback Dikes would be constructed far enough from the zone of large deformations near such that the performance criteria of the Ministry Guidelines would be met. The assessment of the setback (or crest width of superdikes) should be assessed using numerical analytical methods as limit equilibrium methods do not accurately predict the magnitude and pattern of large deformations.

3.7 PROBABILISTIC-BASED DESIGN

If the performance-based options of adding ground improvements, realigning the Dike, designing an overbuilt Dike, or constructing a superdike or setback Dike are not feasible, the only option that remains is to develop a design that does not meet the performance-based criteria of the Ministry Guidelines, otherwise known as a probabilistic-based design.

Undertaking a probabilistic-based design requires a certain level of training and experience so an Engineering Professional undertaking this type of work should refer to **Section 5.0 Professional Registration & Education, Training, and Experience** for more information on the specific educational and experience indicators. The considerations for this option include developing a comprehensive flood risk and flood protection strategy, including post-earthquake Dike repair plans, the goal of which is to justify use of the probabilistic-based design.

Before undertaking a probabilistic-based design, there must be a documented process to assess the feasibility of the performance-based design alternatives and an explanation as to why no other options are viable (see Section 3.7.1 Feasibility Assessment of Performance-Based Design Alternatives). Then, an assessment needs to be completed of the level of flood protection after the occurrence of each of the earthquake levels required by the Ministry Guidelines (100-yr, 475-yr, and 2,475-yr return periods) (see Section 3.7.2 Seismic Flood Hazard Assessment). As this would result in a reduced level of flood protection after an earthquake, the probabilistic-based option would have to demonstrate that the flood risk would be acceptable before the Dike could be rebuilt .

It should be noted that providing this documentation to the Inspector does not guarantee that a probabilistic-based design will be accepted, rather this documentation is required if a probabilistic-based design is to even be considered. Final approval will be subject to Inspector review. Initiating discussions with the Inspector about the intent to develop a probabilistic-based design at a preliminary stage may help in steering the process.

3.7.1 FEASIBILITY ASSESSMENT OF PERFORMANCE-BASED DESIGN ALTERNATIVES

Types of performance-based design alternatives discussed in **Section 3.6 Performance-Based Design** need to be identified and considered.

- From a technical perspective, what types of ground improvements could be implemented to meet the Ministry Guidelines?
- For each technically feasible type of ground improvement, what are the extents?
 - Horizontal extents
 - Depth
- What other design alternatives such as Dike realignment, overbuilding and "superdiking" could be considered?

For each technically feasible performance-based design alternative, the following need to be considered:

Cost

- What is the estimated cost of the viable ground improvements/design alternatives?
 - It's not sufficient just to say it's 'really expensive'.
 - A Class C or Class D cost-estimate needs to be developed.

Property Encroachment/Acquisitions

- The horizontal extent of the ground improvements/design alternatives may extend beyond the footprint of the Dike. If so, can the ground improvements fit within the property boundary constraints?
- If not, how much property acquisition would be required.

Access for Construction

- Can the ground improvements/design alternatives be implemented using only the same access required for the Dike construction? Or, would additional access be required to implement the ground improvements/design alternatives?
 - For example, if ground improvements are required beyond the footprint of a Dike, out into the edge of a river channel, would a barge be required to implement these ground improvements?

Environmental Impacts

- The horizontal extent of the ground improvements/design alternatives may extend beyond the footprint of the Dike. If so, do they impact any adjacent environmentally sensitive areas?
- In particular, the majority of Dikes are located in areas adjacent to water bodies. As such, ground improvements may require disturbance within these water bodies.
 - Are the potential environmental impacts considered permanent or temporary?
 - What kind of environmental compensation might be required to offset these impacts?

Archaeological Impacts

- Do the ground improvements/design alternatives pose a risk to any known archaeological sites?
- Has an archaeological assessment been conducted? What is the potential for archaeological impact of the proposed development?

Noise Impacts

- Are there noise concerns related to the proposed ground improvement/design alternatives?
- Are there nearby homes / businesses.

Adjacent Utilities / Buildings / Critical Infrastructure Impacts

• Is there a risk of impacting nearby utilities or critical infrastructure?

Traffic Impacts

- Impacts to traffic / pedestrians / park users etc.
- How long will the ground improvements take?

Based on a review of the findings of the assessments noted above, the feasibility of the ground improvements/design alternatives needs to be assessed and discussed in the Seismic Dike Report. It is not sufficient to just state ground improvements/design alternatives are not feasible; the various aspects need to be considered and estimated. In particular, high-level cost estimates need to be provided such as a Class C or Class D cost estimate. When the cost estimate is shown to be prohibitive to moving forward with a performance-based design alternative, a probabilistic-based design alternative may be considered.

3.7.2 SEISMIC FLOOD HAZARD ASSESSMENT

3.7.2.1 Defining an Independent Seismic Flood Hazard

Historically, the provincial flood protection standard was set based on historical floods, without consideration of seismic hazards. However, it is now recognized that Dikes can be damaged by earthquakes, which introduces an additional flood hazard. It should be noted that regional and tectonic subsidence of the earth crust has not been considered in these practice guidelines.

Dike crest elevations could be lowered following an earthquake due to deformations and cracking. For a seismically damaged Dike, the elevation at which the Dike is considered competent is the effective Dike crest elevation. As a result, an earthquake-damaged Dike would be vulnerable to flooding at lower water

surface elevations than what it was originally designed for. This increased vulnerability would persist until the Dike has been rebuilt, and the Dike crest restored to the required design elevation. It's important that freeboard is handled in a consistent way when addressing seismic and non-seismic flood hazards.

The purpose of completing a seismic flood hazard assessment is to evaluate the probability of flooding due to an earthquake having previously damaged the Dike. The time required to rebuild the earthquakedamaged Dike is an important consideration in completing this assessment. Flooding due to an earthquake having previously damaged the Dike is an independent hazard from flooding due to water levels exceeding the pre-earthquake Dike crest elevation. One of the key outcomes of the seismic flood hazard assessment is to quantify the probability of this independent hazard, and express this hazard in the same way that the historical flood hazards (i.e. without consideration for seismic conditions) have been expressed; namely, as a return period.

Under this approach, the independent seismic flood hazard is defined as follows:

Flooding that occurs as a result of water levels exceeding the crest elevation of a Dike that has been deformed by an earthquake, but not exceeding the original crest elevation of the Dike before it was deformed; this flooding can also be caused by erosion and piping of an earthquake-damaged Dike.

In other words, the seismic flood hazard is flooding that would not have otherwise occurred if the Dike was not in a damaged state due to an earthquake. Since the acceptable probability of a non-seismic flood hazard has been well established historically, this approach allows practitioners to assess the independent seismic flood hazard and compare it to the historically-acceptable non-seismic flood hazard. The importance of this approach is that it directly compares the non-seismic and seismic flood hazards, which may allow for development of more practical and economical flood protection strategies.

3.7.2.2 Considerations for the Seismic Flood Hazard Assessment

The Engineering Professional must undertake a formal seismic flood hazard assessment as described in this section, or as otherwise accepted by Inspector, when the displacement-based performance criteria from the Ministry Guidelines cannot practicably be met. Determining the seismic flood hazard requires comprehensive geotechnical, probabilistic and recovery-time analyses, and a commitment from the owner to implementing a recovery and flood mitigation program for repairing the Dike after it has been damaged by strong seismic shaking. The seismic flood hazard assessment described in these practice guidelines does not consider consequence and therefore does not comment on seismic flood risk.

The development of a seismic flood hazard assessment involves establishing the vulnerability of a Dike to a seismic hazard (i.e. damage/lower crest elevation) and the associated recovery time. The likelihood of damage and the corresponding recovery time are expected to be a function of the earthquake return period, with longer return-period earthquakes causing more damage and possibly requiring longer recovery times. It is recognized that evaluating the feasibility of repair and re-construction within a set recovery time is complex and may require significant effort to demonstrate, as discussed in the Ministry Guidelines:

"While rapid re-construction may be feasible for discrete, short sections of dikes, re-construction to address widespread damage throughout the diking system may be difficult when dike work would be competing for resources for re-construction of other critical infrastructures such as water, sewer, roads and bridges. If the dikes cannot be repaired promptly, large sections of communities in low lying areas would be vulnerable to flooding, even from low return period events".

The seismic flood hazard can be reduced by improving the seismic resilience of the Dike or reducing the recovery time, or a combination of both.

A seismic flood hazard assessment must be conducted and documented by an appropriately qualified Engineering Professional. The seismic flood hazard assessment must:

- Include a scope and a level of detail that is commensurate with the complexity of the Dike Segment being analyzed. The scope of work should include, as a minimum, the engineering analyses and methodology summarized in Figure 3;
- describe the process and approach that were used in undertaking the seismic flood hazard assessment;
- apply the emergency recovery plan process established by the authority having jurisdiction over the area protected by the Dike;
- quantify the seismic flood hazard; and
- recommend appropriate flood management or mitigation measures such that the seismic flood hazard is within the acceptable level as determined by the local diking authority and as approved by the Inspector.



Figure 3: Minimum Recommended Engineering Analysis and Methodology to be Included in a Seismic Flood Hazard Assessment

If, in the opinion of the Inspector, the seismic flood hazard assessment submitted by the Dike owner has been developed in accordance with these practice guidelines, a Dike owner must implement measures outlined in the seismic flood hazard assessment as authorized in writing by the Inspector.

3.7.2.3 Probabilistic Analysis

The probability of flooding due to an earthquake-damaged Dike (the seismic flood hazard) is equal to the probability that a flood higher than the deformed Dike crest elevation will occur, multiplied by the probability that the Dike has been damaged, since earthquakes and floods are independent events.

$$P[F, EQ] = P[F_{EQ}] \cdot P[EQ_D]$$

Where P[F,EQ] is the probability of flooding due to an earthquake damaging the Dike $P[F_{EQ}]$ is the probability of a flood higher than the earthquake-damaged Dike $P[EQ_D]$ is the probability that the Dike has been damaged by an earthquake

The probabilities of earthquake and flood events are usually expressed as return periods, which are the average time intervals between events. These are often evaluated using the Poisson's distribution or the binomial distribution. The limitation of the binomial distribution is that it is not valid if there is the possibility of more than one event occurring in a time interval, although most of the time (i.e. for infrequent events) it provides a reasonable approximation. The approach presented below is an approach that uses the Poisson's distribution as it can handle multiple events within a time interval, and is easily transformed between return period and probability. For coastal Dikes the binomial distribution does not work because of the need to consider multiple events per time interval (eg. year). The general equation for the Poisson's distribution probability mass function is as follows:

$$P_t(n) = \frac{(t/T)^n}{n!} e^{-t/T}$$

Where: Pt(n) is the probability of n events in a time interval t n is the number of events t is the time interval

T is the event return period

Following this equation, the probability that one or more events has occurred in a time interval is 1 minus the probability that no events have occurred, resulting in:

$$P[event] = 1 - e^{-t/T}$$

Looking at the probability of the Dike being damaged by an earthquake at any time, this becomes: $P[EQ_D] = 1 - e^{-tr/T_{EQd}}$

Where: tr is a time interval equal to the rebuild time T_{EQd} is the earthquake return period that damages the Dike.

If, for example, the Dike has a five year rebuild time, the probability of the Dike being damaged at any point in time is equal to the probability that a damaging earthquake has occurred within the five years prior to that point in time. If a damaging earthquake occurred prior to that (e.g. six years previously), the Dike will have been repaired already.

Recognizing that the relevant hazard is floods that occur because the Dike has been damaged by an earthquake, only floods between the earthquake-damaged Dike crest elevation and the pre-damaged

Dike crest elevation should be included (since water levels above the pre-damaged Dike crest elevation would have resulted in flooding anyways). The probability of a flood is then:

$$P[F_{EQ}] = P[F_1] - P[F_2]$$

Where $P[F_1]$ is the probability of a flood higher than the damaged Dike $P[F_2]$ is the probability that the flood is higher than the Dike design crest elevation

Using the equation for Poisson's distribution, this becomes:

$$P[F_{EQ}] = e^{-t/T_1} - e^{-t/T_2}$$

Where T₁ is the flood return period of the damaged Dike T₂ is the design flood return period t is a time interval

To assess the immediate probability of flooding (expressed on an annual basis), taking the limit of t as it approaches zero (i.e. immediate), this becomes:

$$P[F_{EO}] = e^{-1/T_{1-2}}$$

Where:

$$T_{1-2} = \frac{T_1 \cdot T_2}{T_2 - T_1}$$

 T_{1-2} represents the return period of flooding between the T_1 and T_2 return periods. The probability of flooding can be easily changed back to a return period using the formula for the Poisson's distribution.

3.7.3 INPUT REQUIRED FROM THE LOCAL DIKING AUTHORITY

3.7.3.1 Acceptable Level for Seismic Flood Hazard

Under the probabilist-based approach, an acceptable level for the seismic flood hazard has not yet been defined by the Ministry Guidelines. In the absence of a provincial standard, local diking authorities will need to establish the acceptable level for the seismic flood hazard within their jurisdiction. Local diking authorities should set these standards as part of an overall management strategy, as opposed to establishing the standard on a case-by-case or project-by-project basis. Further, any strategy developed by the local diking authority will be subject to review and acceptance by the Inspector.

3.7.3.2 Recovery Time

In addition to establishing the acceptable level for the seismic flood hazard, the local diking authority also needs to establish recovery time that can be used as input into the probabilistic-based design. Recovery time is a component of an emergency recovery plan that must be presented to the Design Team in order for them to undertake a probabilistic-based design.

3.7.4 WORKED EXAMPLES

As part of the seismic flood hazard assessment, the statistical analysis can take into account a detailed fragility curve for estimated ground displacements as a function of earthquake intensity measures. However, as an initial screening assessment, a step function (i.e. simplified fragility curve) can be used in place of a detailed fragility curve, provided the displacement threshold selected for the step function is conservative. Worked examples of this approach are provided in **Appendix A Case Studies** for two geographic locations, one demonstrating where the simplified step function provides an acceptable outcome, the other demonstrating where the simplified step function does not provide an acceptable outcome, and as a result, a more detailed analysis involving a detailed fragility curve is required.

3.8 REPORTING REQUIREMENTS

3.8.1 GENERAL DOCUMENTATION REQUIREMENTS

Engineering Professionals are required to establish and maintain documented quality management processes that include retaining complete project documentation for a minimum of ten (10) years after the completion of a project or ten (10) years after engineering documentation is no longer in use. For more information, refer to Guide to the Standard for Retention of Project Documentation (Engineers and Geoscientists BC 2018b) and **Section 4.1.4 Retention of Project Documentation**.

As part of project documentation, the Engineering Professional should document design assumptions, selection of design soil properties, calibration procedures and results of analyses, so that both documented checks and independent reviews can be appropriately carried out.

3.8.2 SEISMIC DIKE REPORT DOCUMENTATION REQUIREMENTS

Documenting the design process in the Seismic Dike Report is recommended and has several advantages:

- could add value over the long-term by providing information that is easily accessible should questions by reviewers or regulatory agencies arise;
- could be independently reproduced if necessary;
- can facilitate the necessary independent review process, and
- can improve insights and benefits for the Engineering Professionals involved in the original design process.

The Engineering Professional should include the following information in the Seismic Dike Report:

- Project location and background information
- Design or assessment approach in relation to the Ministry Guidelines and these practice guidelines
- Methodology used for calculating the design surface peak ground acceleration. If one dimensionalsite response analyses are being conducted, the information provided should follow requirements in the Seismic Retrofit Guidelines, 2020 Edition, Manual Volume No. 9, Recommended Seismic Site Response Analyses (SSRA), Best Current Practice. Currently under development and expected to be released in the first quarter of 2021.

- Background information including historical data such as air photos, buried/abandoned streams/channels in the general area, surficial geology data, and available Liquefaction Susceptibility, landslide, flood hazard maps, previous geotechnical reports and geotechnical investigations, and asbuilt drawings;
- Underground and surface utilities and infrastructure that could impact the mechanical and hydraulic behaviour of the Dike;
- Documentation of any cracks or other signs of disturbance including animal burrows;
- Dike design surface geometry and presence of surface armouring material if different from the body of Dike material. The presence of a water collection system or ditch on the landside should also be documented;
- Documentation of the design water levels for the site and the methodology employed to obtain these values;
- Drillhole type and location
- Description of material zones, strength, and stiffness characteristics of the Dike and foundation materials including:
 - Fines contents adjusted SPT N60 or Qt design values,
 - angle of internal friction, cohesion, total and submerged unit weights,
 - small-strain shear moduli and damping ratio profiles,
 - peak undrained shear strength and post-liquefaction residual shear strength of soils,
 - hydraulic conductivity values,
 - estimated over-consolidation stress;
- Documentation of the methodology employed to conduct the Liquefaction Potential assessment;
- Summary of the selection of appropriate shaking levels and representative earthquake magnitudes for Liquefaction analysis for each of the three return periods for simplified analysis;
- Documentation of the selection of the static and post-seismic design soil shear strengths;
- Results of Limit Equilibrium Analyses or Continuum-based numerical models;
- A summary of displacement levels for different seismic return periods including post-liquefaction settlements.

The Seismic Dike Report should include a section that documents the independent reviewer's comments and how those comments where addressed and incorporated (see Section 4.1.8 Documented Independent Review of High Risk Professional Activities or Work). It should also include the name of the reviewing Engineering Professional and may include a copy of the reviewer's letter or report, or this may be retained on file with the project documentation and the findings summarized in the Seismic Dike Report.

4.0 QUALITY MANAGEMENT IN PROFESSIONAL PRACTICE

4.1 ENGINEERS AND GEOSCIENTISTS BC QUALITY MANAGEMENT REQUIREMENTS

Engineering Professionals must adhere to applicable quality management requirements during all phases of the work, in accordance with the Engineers and Geoscientists BC Bylaws and quality management standards.

To meet the intent of the quality management requirements, Engineering Professionals must establish and maintain documented quality management processes for the following activities:

- Use of relevant professional practice guidelines
- Authentication of professional documents by application of the professional seal
- Direct supervision of delegated professional engineering or professional geoscience activities
- Retention of complete project documentation
- Regular, documented checks using a written quality control process
- Documented field reviews of engineering or geoscience designs and/or recommendations during implementation or construction
- Where applicable, documented independent review of structural designs prior to construction
- Where applicable, documented independent review of high-risk professional activities or work prior to implementation or construction

4.1.1 USE OF PROFESSIONAL PRACTICE GUIDELINES

Engineering Professionals are required to comply with the intent of any applicable professional practice guidelines related to the engineering or geoscience work they undertake. As such, Engineering Professionals must implement and follow documented procedures to ensure they stay informed of, knowledgeable about, and meet the intent of professional practice guidelines that are relevant to their professional activities or services. These procedures should include periodic checks of the Engineers and Geoscientists BC website to ensure that the latest versions of available guidance is being used.

For more information, refer to *Quality Management Guides – Guide to the Standard for the Use of Professional Practice Guidelines* (Engineers and Geoscientists BC 2021a), which also contains guidance for how an Engineering Professional can appropriately depart from the guidance provided in professional practice guidelines.

4.1.2 AUTHENTICATING DOCUMENTS

Engineering Professionals are required to seal all Documents, including electronic files that they prepare or deliver in their professional capacity to others who will rely on the information contained in them. This

applies to Documents that Engineering Professionals have personally prepared and those that others have prepared under their direct supervision.

Failure to seal these engineering documents is a breach of the Bylaws.

For more information, refer to *Quality Management Guides – Guide to the Standard for the Authentication of Documents* (Engineers and Geoscientists BC 2021b).

4.1.3 DIRECT SUPERVISION

Engineering Professionals are required to directly supervise any engineering work they delegate. When working under the direct supervision of an Engineering Professional, an individual may assist in performing engineering work, but they may not assume responsibility for it. Engineering Professionals who are professional licensees engineering may only directly supervise work within the scope of their licence.

When determining which aspects of the work may be delegated using the principle of direct supervision, the Engineering Professional having ultimate responsibility for that work should consider:

- the complexity of the project and the nature of the risks associated with the work;
- the training and experience of individuals to whom the work is delegated; and
- the amount of instruction, supervision, and review required.

Careful consideration must be given to delegating field reviews. Due to the complex nature of field reviews, Engineering Professionals with overall responsibility should exercise judgment when relying on delegated field observations and should conduct a sufficient level of review to have confidence in the quality and accuracy of the field observations. When delegating field review activities, Engineering Professionals must document the field review instructions given to a subordinate. (See Section 4.1.6 Documented Field Reviews During Implementation or Construction.)

For more information, refer to *Quality Management Guides* – *Guide to the Standard for Direct Supervision* (Engineers and Geoscientists BC 2021c).

4.1.4 RETENTION OF PROJECT DOCUMENTATION

Engineering Professionals are required to establish and maintain documented quality management processes to retain complete project documentation for a minimum of ten (10) years after the completion of a project or ten (10) years after an engineering document is no longer in use.

These obligations apply to Engineering Professionals in all sectors. Project documentation in this context includes documentation related to any ongoing engineering work, which may not have a discrete start and end, and may occur in any sector.

Many Engineering Professionals are employed by organizations, which ultimately own the project documentation. Engineering Professionals are considered compliant with this quality management requirement when reasonable steps are taken to confirm that (1) a complete set of project documentation is retained by the organizations that employ them, using means and methods consistent with the Engineers and Geoscientists BC Bylaws and quality management standards; and (2) they consistently adhere to the documented policies and procedures of their organizations while employed there.

For more information, refer to *Quality Management Guides – Guide to the Standard for Retention of Project Documentation* (Engineers and Geoscientists BC 2021d).

4.1.5 DOCUMENTED CHECKS OF ENGINEERING AND GEOSCIENCE WORK

Engineering Professionals are required to perform a documented quality checking process of engineering work, appropriate to the risk associated with that work. All Engineering Professionals must meet this quality management requirement.

The checking process should be comprehensive and address all stages of the execution of the engineering work. This process would normally involve an internal check by another Engineering Professional within the same organization. Where an appropriate internal checker is not available, an external checker (i.e., one outside the organization) must be engaged. In some instances, self-checking may be appropriate. Where internal, external, or self-checking has been carried out, the details of the check must be documented. The documented quality checking process must include checks of all professional deliverables before being finalized and delivered.

Engineering Professionals are responsible for ensuring that the checks being performed are appropriate to the level of risk associated with the item being checked. Considerations for the level of checking should include:

- the type of item being checked;
- the complexity of the subject matter and underlying conditions related to the item;
- the quality and reliability of associated background information, field data, and elements at risk; and
- the Engineering Professional's training and experience.

As determined by the Engineering Professional, the individual doing the checking must have current expertise in the discipline of the type of work being checked, be sufficiently experienced and have the required knowledge to identify the elements to be checked, be objective and diligent in recording observations, and understand the checking process and input requirements.

For more information, refer to *Quality Management Guides* – *Guide to the Standard for Documented Checks of Engineering and Geoscience Work* (Engineers and Geoscientists BC 2021e).

4.1.6 DOCUMENTED FIELD REVIEWS DURING IMPLEMENTATION OR CONSTRUCTION

Field reviews are reviews conducted at the site of the construction or implementation of the engineering or geoscience work. They are carried out by an Engineering Professional or a subordinate acting under the Engineering Professional's direct supervision (see **Section 4.1.3 Direct Supervision**).

Field reviews enable the Engineering Professional to ascertain whether the construction or implementation of the work substantially complies in all material respects with the engineering concepts or intent reflected in the engineering or geoscience documents prepared for the work.

For more information, refer to *Quality Management Guides* – *Guide to the Standard for Documented Field Reviews During Implementation or Construction* (Engineers and Geoscientists BC 2021f).

4.1.7 DOCUMENTED INDEPENDENT REVIEW OF STRUCTURAL DESIGNS

Engineering Professionals developing structural designs are required to engage an independent review of their structural designs. An independent review is a documented evaluation of the structural design concept, details, and documentation based on a qualitative examination of the substantially complete structural design documents, which occurs before those documents are issued for construction or implementation. It is carried out by an experienced Engineering Professional qualified to practice structural engineering, who has not been involved in preparing the design.

The Professional of Record must conduct a risk-assessment after conceptual design and before detailed design to (1) determine the appropriate frequency of the independent review(s); and (2) determine if it is appropriate for the independent reviewer to be employed by the same firm as the Professional of Record, or if the independent reviewer should be employed by a different firm.

The risk-assessment may determine that staged reviews are appropriate; however, the final independent review must be completed after checking has been completed and before the documents are issued for construction or implementation. Construction must not proceed on any portion of the structure until an independent review of that portion has been completed.

For more information, refer to *Quality Management Guides – Guide to the Standard for Documented Independent Review of Structural Designs* (Engineers and Geoscientists BC 2021g).

4.1.8 DOCUMENTED INDEPENDENT REVIEW OF HIGH RISK PROFESSIONAL ACTIVITIES OR WORK

Engineering Professionals must perform a documented risk-assessment prior to initiation of a professional activity or work to determine if that activity or work is high-risk and therefore requires a documented independent review.

If the activities or work are deemed high risk, and an independent review is required, the results of the risk assessment must be used to (1) determine the appropriate frequency of the independent review(s); and (2) determine if it is appropriate for the independent reviewer to be employed by the same firm as the Professional of Record, or if the independent reviewer should be employed by a different firm.

The documented independent review of high-risk professional activities or work must be carried out by an Engineering Professional with appropriate experience in the type and scale of the activity or work being reviewed, who has not been involved in preparing the design.

The documented independent review must occur prior to implementation or construction; that is, before the professional activity or work is submitted to those who will be relying on it.

For seismic assessment and seismic design of Dikes in BC as described within these practice guidelines, both the performance-based analysis and the probabilistic-based analysis require independent review as per the standard, and both must be a Type 2 independent review where the independent reviewer must be from outside of the firm undertaking the design.

For more information, refer to *Quality Management Guides – Guide to the Standard for Documented Independent Review of High-Risk Activities or Work* (Engineers and Geoscientists BC 2021h).

4.2 OTHER QUALITY MANAGEMENT REQUIREMENTS

Engineering Professionals must also be aware of any additional quality management requirements from other sources that are relevant to their work, which may include but are not limited to:

- legislation and regulations at the local, regional, provincial, and federal levels;
- policies of authorities having jurisdiction at the local, regional, provincial, and federal levels;
- agreements and service contracts between clients and Engineering Professionals or their firms; and/or

• standards for engineering or geoscience firms, particularly those that apply to quality management system certification, such as the ISO 9000 family.

Engineering Professionals should assess any areas of overlap between the Engineers and Geoscientists BC quality management requirements and the requirements of other applicable sources. If the requirements of different sources overlap, Engineering Professionals should attempt to meet the complete intent of all requirements.

Where there are conflicts between requirements, Engineering Professionals should negotiate changes or waivers to any contractual or organizational requirements which may conflict with requirements of legislation, regulation or the Engineers and Geoscientists BC Code of Ethics. Generally, no contractual obligation or organizational policy that may apply to an Engineering Professional will provide justification or excuse for breach of any of the Engineering Professional's obligations under any legislation, regulation, or the Engineers and Geoscientists BC Code of Ethics. Where such conflicts arise and cannot be resolved, Engineering Professionals should consider seeking legal advice from their own legal advisers on their legal rights and obligations in the circumstances of the conflict, and they may also seek practice advice from Engineering and Geoscientists BC on any related ethical dilemma that they may face in the circumstances.

4.3 PRACTICE ADVICE

Engineers and Geoscientists BC provides their Registrants and others with assistance addressing inquiries related to professional practice and ethics.

Practice advisors at Engineers and Geoscientists BC can answer questions regarding the intent or application of the professional practice or quality management aspects of these practice guidelines.

To contact a practice advisor, email Engineers and Geoscientists BC at practiceadvisor@egbc.ca.

5.0 PROFESSIONAL REGISTRATION & EDUCATION, TRAINING, AND EXPERIENCE

5.1 PROFESSIONAL REGISTRATION

Engineering Professionals have met minimum education, experience, and character requirements for admission to their professions. However, the educational and experience requirements for professional registration do not necessarily constitute an appropriate combination of education and experience for performing seismic assessment and seismic design of Dikes in BC. Professional registration alone does not automatically qualify an Engineering Professional to take professional responsibility for all types and levels of professional services in this area of practice.

It is the responsibility of Engineering Professionals to determine whether they are qualified by training and/or experience to undertake and accept responsibility for carrying out seismic assessment and seismic design of Dikes (Code of Ethics Principle 2).

5.2 EDUCATION, TRAINING, AND EXPERIENCE

Seismic assessment and seismic design of Dikes requires minimum levels of education, training, and experience in many overlapping areas of engineering.

Engineering Professionals who take responsibility for seismic assessment and seismic design of Dikes must adhere to the second principle of the Engineers and Geoscientists BC Code of Ethics, which is to "practice only in those fields where training and ability make the registrant professionally competent" and, therefore, must evaluate their own qualifications and must possess the appropriate education, training, and experience to provide the services.

The level of education, training, and experience required of Engineering Professionals should be adequate for the complexity of the project. This section describes indicators that Engineering Professionals can use to determine whether they have an appropriate combination of education and experience.

Note that these indicators are not an exhaustive list of education and experience types that are relevant to seismic assessment and seismic design of Dikes in BC. Satisfying one or more of these indicators does not automatically imply competence in seismic assessment and seismic design of Dikes in BC.
5.2.1 EDUCATIONAL INDICATORS

Certain indicators show that Engineering Professionals have received education that might qualify them to participate professionally in seismic assessment and seismic design of Dikes in BC. Educational indicators are subdivided into formal education (such as university or engineering school) and informal education (such as continuing professional development).

Formal educational indicators include having obtained or completed one or more of the following:

- An undergraduate-level degree in civil engineering or a related engineering field from an accredited engineering or geoscience program
- A graduate-level degree specializing in geotechnical engineering, seismic engineering, coastal engineering, or hydrotechnical engineering from an accredited engineering or geoscience program

Informal educational indicators include having participated in or undertaken one or more of the following:

- Training courses and/or mentorship facilitated by the Engineering Professional's employer that focus on seismic assessment and seismic design of Dikes
- Continuing education courses or sessions offered by professional organizations (such as Engineers and Geoscientists BC) that focus on geotechnical engineering, seismic engineering, coastal engineering, and hydrotechnical engineering
- · Conferences or industry events that focus on topics related to seismic aspects of Dike design
- A rigorous and documented self-study program involving a structured approach that contains materials from textbooks and technical papers on seismic assessment and seismic design of Dikes

5.2.2 EXPERIENCE INDICATORS

Certain indicators show that Engineering Professionals have an appropriate combination of experience that might qualify them to participate professionally in seismic assessment and seismic design of Dikes in BC.

Experience indicators include having completed one or more of the following:

- For an extended duration (greater than one year) and/or as an Engineering-in-Training (EIT)/ Geoscientist-in-Training (GIT), participated in seismic assessment and seismic design of Dikes under the direct supervision of an Engineering Professional with an appropriate combination of education and experience
- Participated in past projects working alongside Engineering Professionals with an appropriate combination of education and experience, and developed a sufficient knowledge of the various aspects of seismic assessment and seismic design of Dikes
- Demonstrated experience working on seismic Dike projects
- Participated in academic or industry working groups that focus on topics related to seismic assessment and seismic design of Dikes

Specific areas of knowledge applicable to seismic Dike design include the following:

- Principles of seismic design
- 1-D and 2-D hydrodynamic modelling
- Knowledge of fluvial geomorphology, watershed hydrology and groundwater geology
- Basics of soil mechanics
- Probability concepts in engineering

- Understanding of the effects of climate change on the watershed in question
- Environmental requirements for design
- Risk analysis
- Cost-benefit analyses

If an Engineering Professional chooses to participate in a Design Team that is undertaking probabilisticbased design of Dikes as outlined in **Section 3.7 Probabilistic-Based Design** of these practice guidelines, experience indicators for this type of work include the following:

- 10 years of related experience in design, construction, and/or performance evaluation of Dikes
- Previous involvement with at least three probabilistic-based seismic design of Dikes
- Previous experience undertaking hazard and risk assessments for floods, geohazards and seismic hazards

6.0 REFERENCES AND RELATED DOCUMENTS

[Update this section as required for your guidelines.] Documents cited in the main guidelines appear in **Section 6.1**: **References**; documents cited in appendices appear in the reference list at the end of each corresponding appendix.

Related documents that may be of interest to users of these guidelines but are not formally cited elsewhere in this document appear in **Section 6.2**: **Related Documents**.

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[Insert your references in this section, ordered in alphabetical order by author. See below for tips about the required format for writing up references. Note that all references must have a corresponding citation in the main document.]

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6.2 RELATED DOCUMENTS

[Insert your references to related documents here, using the same format.] Insert text.



Appendix A: Case Studies

PROFESSIONAL PRACTICE GUIDELINES SEISMIC ASSESSMENT AND SEISMIC DESIGN OF DIKES IN BC

APPENDIX A: CASE STUDIES

Hold for Case Studies

- A1 CASE STUDY 1
- H2 APPENDIX
- H3 Appendix

A2 CASE STUDY 2

PROFESSIONAL PRACTICE GUIDELINES SEISMIC ASSESSMENT AND SEISMIC DESIGN OF DIKES IN BC

5.9 - APPENDIX A

BUILDINGS PROFESSIONAL PRACTICE GUIDELINES

STRUCTURAL ENGINEERING SERVICES FOR TALL CONCRETE BUILDING PROJECTS

VERSION 1.0 PUBLISHED [<mark>MONTH], [DAY], 20X</mark>



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Provide high-resolution versions of any logos in jpg or tiff format.

Do not delete the version information below the table.]

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PREFACE

These *Professional Practice Guidelines – Structural Engineering Services for Tall Concrete Building Projects* were developed by Engineers and Geoscientists British Columbia to guide professional practice related to structural engineering services for tall concrete buildings.

These guidelines were first published in 2021 to address the unique challenges associated with the design of tall concrete buildings. Topics covered include design for gravity loads, design for lateral wind forces, and design for earthquake ground motions. Much of the document deals with the latter topic, which has seen significant changes in recent years. This document deals with the seismic design of concrete buildings using Linear Dynamic Analysis, as well as the evaluation of seismic performance using Non-linear Dynamic Analysis, which is increasingly being used for the design of tall concrete buildings.

Most, if not all, tall concrete buildings in BC are shear wall buildings and often the shear walls are arranged in a central core. Thus, this document deals primarily with this type of building. There is no minimum height or minimum number of stories that defines the buildings within the scope of this document; many of the concepts and principles presented in this document for tall concrete buildings will apply to low-rise concrete buildings as well. Similarly, much of the guidance provided for tall concrete buildings (steel or encapsulated mass timber) with concrete core walls. The Structural Engineer of Record must use their professional judgment to determine whether and how these guidelines apply to their particular building.

It is the Engineering Professional's responsibility to meet the requirements of current edition of the Code (VBBL or BCBC) and corresponding referenced standards (e.g., CSA A23.3. Information about "best practice" is evolving more rapidly than the adoption of new editions of the Code, particularly with regard to design for earthquake ground motions. Thus, the NBC 2020 model code and CSA A23.3-19 are referenced throughout these guidelines where considerations for "best practice" exceed the requirements of the current edition of the Code and referenced standards. These documents are expected to be adopted in the next edition of the Code. Since there is limited information in Canadian Codes and referenced standards regarding the evaluation of seismic performance using Non-linear Dynamic Analysis, additional considerations for "best practice" are provided based on two US guidelines (LATBSDC and PEER TBI).

These *Professional Practice Guidelines – Structural Engineering Services for Tall Concrete Building Projects* establish the expectations and obligations of professional practice in relation to the specific professional activity of structural engineering services, for tall concrete building projects, to be followed at the time they were prepared. However, this is a "living document" that is to be revised and updated as required in the future, to reflect the developing state of practice. This page is intentionally blank.

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ABBREVIATIONS

ABBREVIATION	TERM
АНЈ	Authority Having Jurisdiction
вс	British Columbia
BCBC	British Columbia Building Code
CRP	Coordinating Registered Professional
CSA	Canadian Standards Association
EER	electrical engineer of record
GER	Geotechnical engineer of record
GILD	Gravity Induced Lateral Demand
HSS	hollow structural sections
LATBSDC	LA Tall Buildings Structural Design Council
LFRS	Lateral Force Resisting System
MER	mechanical engineer of record
NBC	National Building Code of Canada
PEER TBI	Pacific Earthquake Engineering Center Tall Buildings Initiative
PGA	peak ground acceleration
PSHA	probabilistic seismic hazard analysis
QM	Quality Management
RPR	Registered Professional of Record
SER	Structural Engineer of Record
SEABC	Structural Engineers Association of BC
SFRS	Seismic Force Resisting System
SLS	Serviceability Limit State
SRP	supporting Registered Professional
SSRA	site-specific response analysis
ULS	Ultimate Limit State

PROFESSIONAL PRACTICE GUIDELINES STRUCTURAL ENGINEERING SERVICES FOR TALL CONCRETE BUILDING PROJECTS

UHS	uniform hazard spectrum
VBBL	Vancouver Building By-law

DEFINED TERMS

The following definitions are specific to these guidelines. These words and terms are capitalized throughout the document.

TERM	DEFINITION
Act	Professional Governance Act [SBC 2018], Chapter 47.
Architect	An individual who is a member of the Architectural Institute of BC.
Authority Having Jurisdiction	The governmental body responsible for the enforcement of any part of the Code or the official or agency designated by that body to exercise such a function.
Basis of Design (Document)	A document prepared by the Structural Engineer of Record for use and approval by a Peer Review panel, for example in the Peer Review of the Non-linear Dynamic Analysis of the building.
Bylaws	The Bylaws of Engineers and Geoscientists BC made under the Act.
Capacity Design (Approach)	A methodology of providing a higher capacity against failure due to brittle actions thereby resulting in an overall ductile response of a structure.
Code	The British Columbia Building Code (BCBC) or the Vancouver Building By-law (VBBL).
Coordinating Registered Professional	A Registered Professional retained under Clause 2.2.7.2.(1)(a) of Division C of the Code to coordinate all design and Field Reviews of the Registered Professionals who are required for a project.
Deformation-Controlled Action/Demand	An action expected to undergo non-linear behavior in response to earthquake shaking, and which is evaluated for its ability to sustain such behavior.
Elastic	Deformation of a structural member that recovers immediately upon removal of the force that produced it.
Engineering Professional(s)	Professional engineers, professional licensees engineering, and any other individuals registered or licensed by Engineers and Geoscientists BC as a "professional registrant" as defined in Part 1 of the Bylaws.
Engineers and Geoscientists BC	The Association of Professional Engineers and Geoscientists of the Province of British Columbia, also operating as Engineers and Geoscientists BC.
Force-Controlled Action/Demand	An action that is expected to undergo limited non-linear behavior in response to earthquake shaking, and is evaluated based on available strength.
Gravity-Induced Lateral Demand	A constant lateral force applied to the Seismic Force Resisting System by gravity loads.

Gravity-Load Resisting Frame	A system of structural members (e.g., slabs, beams, columns, or walls) connected together to transfer gravity loads to the foundation.
Inelastic	Deformation of a structural member that does not recover upon removal of the force that produced it.
Lateral Force Resisting System	A structural system that transfers lateral forces to the foundation.
Letters of Assurance	Documents set out in a schedule of Subsection 2.2.7. in Part 2 of Division C of the Code used to confirm and assure Code compliant design and required field reviews by Architects and Engineering Professionals. Otherwise known as Schedules A, B, C-A, and C-B. Refer to Guide to the Letters of Assurance in the BC Building Code (Province of BC 2010).
Linear Analysis	An analysis where the stiffness matrix remains constant.
Linear Dynamic Analysis	A linear analysis of a structure accounting for the movement (acceleration and velocity) of the structure using the modal response spectrum method.
Non-linear Dynamic Analysis	See Non-linear Time History Analysis.
Non-linear Time History Analysis	Non-linear evaluation of dynamic response of a structure subjected to a ground motion record.
Peer Review	The independent evaluation of the work of an Engineering Professional for conceptual and technical soundness by another appropriately qualified Engineering Professional.
Primary Structural System	A combination of structural members that support a building's self- weight and applicable live loads based on occupancy, use of the space, and environmental loads such as wind, snow, and seismic forces. The Primary Structural System is comprised of the Lateral Force Resisting System and the Gravity-Load Resisting System.
Registered Professional Registered Professional of Record	 Defined in the Code as: "a) a person who is registered or licensed to practice as an Architect under the Architects Act, or b) a person who is registered or licensed to practice as a professional engineer under the Engineers and Geoscientists Act." For the purposes of these guidelines, as the <i>Engineers and Geoscientists Act</i> has been superseded by the <i>Professional Governance Act</i>, this can include professional engineers and professional licensees engineering, and any other individuals registered or licensed by Engineers and Geoscientists BC as a "professional registrant" as defined in Part 1 of the Bylaws and having the appropriate scope of practice, all of whom must be qualified by training or experience to provide designs for building projects. Defined in the Code as a Registered Professional retained to undertake design work and Field Reviews in accordance with Subsection 2.2.7. of Division C.
Registrant	Means the same as defined in Schedule 1, section 5 of the <i>Professional Governance Act</i> .

Seismic Force Resisting System	The Lateral Force Resisting System designed specifically to resist seismic actions (forces and displacements).
Struct.Eng.	A designation which reflects a grade of membership granted by Engineers and Geoscientists BC to an Engineering Professional who has demonstrated to Engineers and Geoscientists BC that they have the requisite qualifications for that grade of membership. Some Authorities Having Jurisdiction stipulate that only a Struct.Eng. can take professional responsibility for structural engineering services on certain types of buildings.
Structural Engineer of Record	An Engineering Professional with general responsibility for the structural integrity of the Primary Structural System. The Structural Engineer of Record takes overall responsibility as the Registered Professional of Record for all items under the structural discipline on Schedule B of the Letters of Assurance in the Code. A Structural Engineer of Record may be required by the Authority Having Jurisdiction to be registered as a Struct.Eng.

1.0 INTRODUCTION

Engineers and Geoscientists British Columbia is the regulatory and licensing body for the engineering and geoscience professions in British Columbia (BC). To protect the public, Engineers and Geoscientists BC establishes, monitors, and enforces standards for the qualification and practice of its Registrants.

Engineers and Geoscientists BC provides various practice resources to its Registrants to assist them in meeting their professional and ethical obligations under the *Professional Governance Act* (the *Act*) and Engineers and Geoscientists BC Bylaws (Bylaws). Those practice resources include professional practice guidelines as outlined in Bylaw 7.3.1.

Each professional practice guideline establishes the expectations and obligations of professional practice that all Engineering Professionals are expected to have regard for in relation to a specific professional practice activity. Engineers and Geoscientists BC publishes professional practice guidelines on specific professional services or activities where additional guidance is deemed necessary. Professional practice guidelines are written by subject matter experts and reviewed by stakeholders before publication.

Having regard for professional practice guidelines means that Engineering Professionals must follow established and documented procedures to stay informed of, be knowledgeable about, and meet the intent of any professional practice guidelines related to their area of practice. By carefully considering the objectives and intent of a professional practice guideline, an Engineering Professional can then use their professional judgment when applying the guidance to a specific situation. Any deviation from the guidelines must be documented and a rationale provided. Where the guidelines refer to professional obligations specified under the *Act*, the Bylaws, and other regulations/legislation, Engineering Professionals must understand that such obligations may be mandatory.

These *Professional Practice Guidelines – Structural Engineering Services for Tall Concrete Building Projects* provide guidance on professional practice for Engineering Professionals who provide structural engineering services for tall concrete building projects. PURPOSE OF THESE GUIDELINES

This document provides guidance on professional practice to Engineering Professionals who provide structural engineering services for tall concrete building projects. The purpose of these guidelines is to provide a common approach for carrying out a range of professional activities related to this work.

Following are the specific objectives of these guidelines:

- i. Describe the standards of practice that Engineering Professionals should follow when practicing within the scope and applicability of these guidelines by:
- specifying the required tasks and/or services that Engineering Professionals should complete; and
- specifying professional obligations under the *Act*, the Bylaws, other regulations/legislation, and the established norms of practice in this area, including the primary obligation to protect the safety, health, and welfare of the public and the environment.
- *ii.* Describe the roles and responsibilities of the various participants/stakeholders involved in these professional activities. The document should assist in delineating the roles and responsibilities of the various participants/stakeholders, which may include the Registered Professionals of Record, owners/clients, Authorities Having Jurisdiction, and contractors.

- iii. Define the skill sets that are consistent with the training and experience required to carry out these professional activities.
- iv. Provide guidance on the use of assurance documents, so the appropriate considerations have been addressed (both regulatory and technical) for the specific professional activities that were carried out.
- v. Provide guidance on how to meet the quality management requirements under the *Act* and the Bylaws when carrying out the professional activities identified in these professional practice guidelines.

1.1 ROLE OF ENGINEERS AND GEOSCIENTISTS BC

These guidelines form part of Engineers and Geoscientists BC's ongoing commitment to maintaining the quality of professional services that Engineering Professionals provide to their clients and the public.

Engineers and Geoscientists BC has the statutory duty to serve and protect the public interest as it relates to the practice of professional engineering, including regulating the conduct of Engineering Professionals. Engineers and Geoscientists BC is responsible for establishing, monitoring and enforcing the standards of practice, conduct and competence for Engineering Professionals. One way that Engineers and Geoscientists BC exercises these responsibilities is by publishing and enforcing the use of professional practice guidelines as per Bylaw 7.3.1.

Guidelines are meant to assist Engineering Professionals in meeting their professional obligations. As such, Engineering Professionals are required to be knowledgeable of, competent in, and meet the intent of professional practice guidelines that are relevant to their area of practice.

The writing, review, and publishing process for professional practice guidelines at Engineers and Geoscientists BC is comprehensive. These guidelines were prepared by subject matter experts and reviewed at various stages by a formal review group, and the final draft underwent a thorough consultation process with various advisory groups and divisions of Engineers and Geoscientists BC. These guidelines were then approved by Council and, prior to publication, underwent final editorial and legal reviews.

Engineers and Geoscientists BC supports the principle that appropriate financial, professional, and technical resources, as well as sufficient time to design the building properly, should be provided (i.e., by the client and/or the employer) to support Engineering Professionals who are responsible for carrying out professional activities, so they can comply with the standards of practice provided in these guidelines. These guidelines may be used to assist in the level of service and terms of reference of an agreement between an Engineering Professional and a client.

1.2 INTRODUCTION OF TERMS

See the **Defined Terms** section at the front of the document for a full list of definitions specific to these guidelines.

1.3 SCOPE OF THE GUIDELINES

These guidelines pertain to the professional practice and obligations associated with the professional structural engineering services for tall concrete building projects.

This document was written for tall concrete shear wall buildings, and more specifically, concrete core wall buildings; however, many of the concepts presented in this document apply to low-rise concrete buildings, as well as tall hybrid buildings (e.g., steel or encapsulated mass timber with concrete core walls).

Topics covered include design for gravity loads, design for lateral wind forces, and design for earthquake ground motions. Guidelines on the design for earthquake ground motions occupies much of this document. Guidance is provided on the seismic design of concrete buildings using Linear Dynamic Analysis, as well as the more advanced topic of evaluation of seismic performance using Non-linear Dynamic Analysis.

1.4 APPLICABILITY OF THE GUIDELINES

These guidelines provide guidance on professional practice for Engineering Professionals who carry out structural engineering services for tall concrete building projects. These guidelines are not intended to provide technical or systematic instructions for how to carry out these activities; rather, these guidelines outline considerations to be aware of when carrying out these activities. Engineering Professionals must exercise professional judgment when providing professional services; as such, application of these guidelines will vary depending on the circumstances.

An Engineering Professional's decision not to follow one or more aspects of these guidelines does not necessarily represent a failure to meet professional obligations. For information on how to appropriate depart from the practice guidance within these guidelines, please refer to *Guide to the Standard for the Use of Professional Practice Guidelines* (Engineers and Geoscientists BC 2021b), Section 3.4.2.

While these guidelines are written for Engineering Professionals, they are also useful for other consultants, developers, constructors, building officials, and the general public, as they establish a foundation of basic knowledge and a common level of expectation for all stakeholders with respect to appropriate practice for Engineering Professionals when providing professional services for these types of buildings.

1.5 ACKNOWLEDGEMENTS

This document was written by a group of technical experts, and was reviewed by a separate group of technical experts, as well as by various advisory groups and divisions of Engineers and Geoscientists BC. Authorship and review of these guidelines does not necessarily indicate the individuals and/or their employers endorse everything in these guidelines.

The [name of other organization] reviewed these guidelines and provided their official endorsement.

See Appendix A: Authors and Reviewers for a list of contributors.

2.0 ROLES AND RESPONSIBILITIES

2.1 COMMON FORMS OF PROJECT ORGANIZATION

The organization of building projects varies according to the needs of the project and the parties involved. The Structural Engineer of Record (SER) is most commonly in a contractual relationship with either the owner, the Coordinating Registered Professional (CRP) (typically the Architect), or a design-build contractor. Refer to Appendix A of the Structural Engineering Services for Part 3 Building Projects Guidelines [Engineers and Geoscientists BC, 2019] for organizational charts showing both contractual and functional relationships.

Regardless of how the project is organized, the various participants each have particular responsibilities, as described below.

2.1.1 COMMUNICATION AND COORDINATION

Tall concrete buildings have complex structural systems which are sensitive to the geometry of the building and configuration of the structural members therein. While it is possible to make many buildings with geometrically complex configurations "work" structurally, by establishing a few "rules" or strategies with the Architect and design team at early stages in the project, the complexity of the structural system – including analysis, detailing, constructability, and, ultimately, performance – can be significantly simplified and/or improved. Such strategies may involve:

- Coordinating the size, location, and geometry of the core(s) (including openings in the walls);
- Identifying and/or minimizing irregularities in the structure;
- Coordinating the location of gravity-load resisting columns in relation to the core(s);
- Coordinating plumbing requirements with the mechanical and electrical Engineering Professionals;
- Establishing permissions and limitations for services penetrations through structural members.

2.2 **RESPONSIBILITIES**

The following sections on the roles and responsibilities are not meant to be an exhaustive list of either project participants or their responsibilities. Instead, they outline key considerations that these participants should take when embarking on a tall concrete building project.

2.2.1 OWNER/CLIENT

As discussed in **Section 2.1 Common Forms of Project Organization**, an owner can also be the SER's client. Regardless of the contractual relationship between the owner and the SER, to ensure the design and construction of the building project meets appropriate standards of public safety and the requirements of the Code, the Owner should assume the following responsibilities.

The Owner should:

- proceed with a building project only after securing adequate financing, recognizing that a reasonable contingency should be included;
- ensure a CRP or design/build contractor and appropriate Registered Professionals of Record (RPR) are retained;
- ensure required approvals, licenses, and permits from the Authorities Having Jurisdiction are obtained;
- develop, along with the Architect or the design/build contractor, an appropriate written description of the building project;
- ensure appropriate scopes of work and reasonable schedules of work are developed for RPRs;
- ensure that the need for and cost of independent review and, where applicable, Peer Review, are contemplated and addressed in the contract;
- ensure contracts are finalized with RPRs before their services are required;
- ensure the contracts with RPRs are amended where necessary to include services required beyond the original scopes of work;
- recognize that designs, design drawings, specifications, contract documents, and other documents prepared by RPRs are for that building project only and should not be used or copied for other building projects without consent of the RPRs;
- recognize that some design changes may be required, including those resulting from different interpretations of the Code between the Authority Having Jurisdiction (AHJ) and RPRs; and
- confirm if the SER is to apply the Association's Sustainability guidelines to the building project (Engineers and Geoscientists BC 2016) and the specific nature of the services to be provided.

If the Owner does not assume the above responsibilities, RPRs should:

- consider recommending to the owner in writing that he or she fulfills his or her responsibilities; or
- consider withdrawing from the building project.

2.2.2 COORDINATING REGISTERED PROFESSIONAL

The role of the CRP, as described in the Letter of Assurance, Schedule A, Confirmation of Commitment By Owner and Coordinating Registered Professional, is to coordinate the design work and Field Reviews of the RPRs required for the project in order to ascertain that the design will substantially comply with BCBC or VBBL (defined collectively in these guidelines as Code), and other applicable enactments respecting safety.

The role of the CRP is clearly defined in the BCBC, Note A-2.2.7.2.(1)(a) of Division C.

It is not intended that the CRP has to assume responsibility for the adequacy or accuracy of the technical design, or for subsequent Field Reviews of the RPRs who provide design and Field Review services. However, the CRP does need to provide a level of administrative overview beyond simply obtaining authenticated drawings and Letters of Assurance, whether or not the CRP has a contractual relationship with the RPRs involved in the project.

The CRP has certain responsibilities, which may include the following, to enable RPRs to perform their duties appropriately.

The CRP should:

• Ensure there is sufficient time permitted for the RPRs to execute their work to the required standards, with sufficient coordination;

- Provide timely and appropriately detailed information to allow RPRs to adequately carry out their scope of work;
- Coordinate and review designs, specifications, and contract documents prepared by RPRs;
- Coordinate communication of information between the owner, the general contractor, and the RPRs, so the building project substantially complies in all material respects with the Code and meets the owner's needs; and
- Ensure compliance with the Engineers and Geoscientists BC Bylaw 7.5.3 regarding the completion of documented independent reviews of structural designs.

2.2.3 ARCHITECT

Architectural considerations and responsibilities related to tall concrete buildings include, but are not limited to, the following.

The Architect should:

- Interpret the needs of the owner so the designs will meet the intended function of the building project;
- Identify and advise RPRs of special design criteria, such as, in the case of the SER, equipment, loads, and span requirements;
- Develop the scope of work with RPRs for designs, specifications, contract documents, Field Reviews, and/or contract administration;
- Determine, in consultation with the SER, the most appropriate gravity and lateral system layouts for the building that respond best to the building program (Basis of Design);
- Determine and advise the SER of the fire rating requirements of structural members;
- determine, in consultation with the RPRs and SRPs, strategies for utilizing alternative solutions, as appropriate;
- facilitate early-stage coordination of any irregular tall building-related issues, such as proposed alternative solutions, with the Authority Having Jurisdiction (AHJ); and
- prepare and manage an integrated model for the coordination of the RPRs work, where applicable.

2.2.4 GEOTECHNICAL ENGINEER OF RECORD

The GER is responsible for the geotechnical aspects of the design for the subgrade support of the building and the associated Field Reviews. As with any other type of construction, the GER should refer to the *Guidelines for Geotechnical Engineering Services for Building Projects* (Engineers and Geoscientists BC 2020) and the requirements of the AHJ.

When providing services related to the Non-linear Dynamic Analysis of a tall concrete building, specific considerations and responsibilities include but are not limited to the following.

The GER should:

- Determine lateral earth pressure and bearing capacities for gravity and lateral load cases;
- Determine the expected foundation settlements based on the loads provide by the SER;
- Provide the expected foundation settlements, including differential settlements, to the Architect and SER.
- Where applicable, conduct a site-specific probabilistic seismic hazard analysis (PSHA) and provide the site-specific response spectrum (i.e., the results) to the SER;

2.2.5 MECHANICAL ENGINEER OF RECORD

The MER has overall responsibility for the design and field review of the mechanical systems. As with any other type of construction, the MER should refer to the *Guidelines for Mechanical Engineering Services for Building Projects* (Engineers and Geoscientists BC 1993) and the requirements of the AHJ. Specific considerations and responsibilities related to tall concrete buildings include but are not limited to the following.

The MER should:

- Coordinate services routing and all penetrations, particularly conduits, with the Architect and SER; and
- Route the piping and ductwork so that generally, and wherever possible, they do not penetrate members of the Lateral Force Resisting System unless absolutely necessary; in that case, seek approval of the SER and Architect.

2.2.6 ELECTRICAL ENGINEER OF RECORD

The EER has overall responsibility for the design and field review of the electrical systems. As with any other type of construction, the EER should refer to the *Professional Practice Guidelines – Electrical Engineering Services for Building Projects* (Engineers and Geoscientists BC 2019b) and the requirements of the AHJ. Specific considerations and responsibilities related to tall concrete buildings include but are not limited to the following.

The EER should:

- Coordinate location of electrical room and conduit routing requirements with SER; and
- In collaboration with the SER, route the cables, conduits, and raceways so, to the greatest extent possible, they do not penetrate or negatively affect critical members of the Primary Structural System.

2.2.7 STRUCTURAL ENGINEER OF RECORD

The SER has overall responsibility for the design and Field Review of the Primary Structural System (i.e., the Lateral Force Resisting System (LFRS) and the Gravity-Load Resisting Frame). As with any other type of construction, the SER should refer to the *Professional Practice Guidelines – Structural Engineering Services for Part 3 Building Projects* (Engineers and Geoscientists BC 2019a) and the requirements of the AHJ. Specific considerations for tall concrete buildings include but are not limited to the following.

The SER should:

- work with the owner, the Architect, or the design/build contractor to develop a scope of work that allows the SER to provide the required designs, specifications, contract Documents, Field Reviews, and/or contract administration, as described in these guidelines and the Code;
- authenticate the appropriate Code Letters of Assurance for design and Field Reviews regarding the designs and supporting documents the SER prepares. This includes taking responsibility for all structural items in the Letter of Assurance, Schedule B, Assurance of Professional Design and Commitment for Field Review, and crossing out and initialing only items that do not apply to the project.

- review the secondary structural elements, specialty elements, or non-structural elements for their impact on the structural design. While the SER may not be responsible for the design of secondary structural elements, specialty structural elements, or non-structural elements, the SER is responsible for designing the Primary Structural System to accommodate these other elements, and for allowing for their effects on the Primary Structural System. Such secondary components may include canopies, guardrails, cladding systems and/or glazing support, anchorage of equipment, steel stud partition walls, etc.
- where the structural design is dependent on the work of supporting Registered Professionals (SRPs) for specialty or secondary structural elements, obtain from the SRP Schedule S-B and Schedule S-C (see *Joint Professional Practice Guidelines Professional Design and Field Review By Supporting Registered Professionals* [AIBC and Engineers and Geoscientists BC 2020]);
- obtain and coordinate specific loading conditions from other RPRs such as those from landscaping (planters, trees, artwork, etc.), fire trucks or emergency access routes, pools, libraries or fitness rooms, and storage, mechanical, or other specialty rooms.
- clearly identify all loading requirements on the structural drawings.
- understand scope of other disciplines in order to better incorporate SER's design into an integrated and coordinated product;
- allow for and coordinate mechanical, electrical, and plumbing penetrations, particularly around electrical rooms and near columns and critical structural elements;
- inform the client of the requirement to engage a wind consultant to perform a wind study, where applicable;
- ensure sufficient schedule is available to deliver a design to the required standard of practice.
- clearly identify on the contract documents the expected building (and therefore elevator shaft) drift and coordinate with the elevating device consulting engineer, where available;
- ensure a documented independent review of structural designs (see Engineers and Geoscientists BC Bylaw 7.5.3) is completed before the documentation is issued for construction or implementation;
- where applicable, for example for building projects utilizing Non-linear Dynamic Analysis, prepare a Basis of Design Document and ensure a Peer Review of the structural design is completed before the documentation is issued for construction or implementation;
- ensure that the need for and cost of independent review and, where applicable, peer review, are contemplated and addressed in the contract.
- be familiar with and, where appropriate, apply Engineers and Geoscientists BC's Sustainability guidelines to the work (Engineers and Geoscientists BC 2016).

2.2.8 Specialty Structural Engineer or Supporting Registered Professional

Where a specialty structural engineer is engaged directly by the SER, the specialty structural engineer should work with the SER to clearly develop the specialty structural engineer's scope of work. The specialty structural engineer should also work with the CRP to coordinate with all relevant parties.

The specialty structural engineer is responsible for the integrity of their designs and must authenticate the documents prepared in his or her professional capacity or under his or her Direct Supervision.

Because the specialty structural engineer acts as an SRP, providing supporting engineering services to the SER, the specialty structural engineer must submit to the SER an authenticated Schedule S-B, Assurance of Professional Design and Commitment for Field Review By Supporting Registered Professional, and Schedule S-C, Assurance of Professional Field Review and Compliance By Supporting

Registered Professional, as identified in Joint Professional Practice Guidelines – Professional Design and Field Review By Supporting Registered Professionals (including Model Schedules S-B and S-C) [Prepared jointly by Engineers and Geoscientists BC and the AIBC].

2.2.9 DESIGN-BUILD CONTRACTOR

For design/build projects, the CRP would typically be a representative of the design/build contractor, and the design/build contractor would be contractually obligated to ensure that the CRP adequately discharges their responsibilities.

2.2.10 GENERAL CONTRACTOR

A general contractor has a contractual relationship with an owner. This contract typically states that the general contractor is responsible for the labour, materials, and equipment for the building project, as well as the construction methods, techniques, sequences, procedures, safety precautions, and programs associated with the construction, as set out in the contract documents.

The general contractor is responsible for their own work, the supervision and coordination of the subcontractors' work, and the inspection of the subcontractors' work prior to Field Reviews by the SER and by the SRP, where applicable. The general contractor is responsible for providing reasonable notice to the SER and the SRP when components are ready for Field Review.

Notwithstanding field reviews and compliance inspections, they do not absolve the General Contractor of the responsibility to execute works in accordance with construction documents. The General Contractor must provide independent quality control.

2.2.11 AUTHORITY HAVING JURISDICTION

An AHJ is responsible for enforcing the Code, policies, standards, and bylaws, or for assessing compliance with the Code, standards, and local bylaws. AHJs can be provincial, municipal, townships, districts, First Nations, or other organizations such as Technical Safety BC

The AHJ receives authenticated permit submissions, including Letters of Assurance, from the CRP or the RPRs at appropriate times during the building project. The AHJ should confirm that the submissions have been properly completed; and if deficiencies are identified, clearly communicate to the CRP and/or RPRs the specific items that require further attention.

An AHJ may perform inspections as part of its compliance assessment. Inspections by the AHJ do not eliminate the requirement for Engineering Professionals to conduct Field Reviews of their scopes of work.

3.0 GUIDELINES FOR PROFESSIONAL PRACTICE

3.1 OVERVIEW

The guidelines for the design of tall concrete buildings are presented in three separate sections.

Section 3.2 Design for Gravity Loads presents important considerations for estimating applied loads in tall concrete buildings, design of columns and bearing walls, design of floor slabs, design of transfer girders and transfer slabs, design of foundations, and miscellaneous considerations.

Section 3.3 Design for Lateral Wind Forces presents considerations for determining wind forces, the Serviceability Limit State (SLS) and Ultimate Limit State (ULS) criteria, modelling considerations, strength design of the Lateral Force Resisting System (LFRS) for wind forces, and the use of supplementary damping systems.

Section 3.4 Design for Earthquake Ground Motions is the largest of the three sections. It presents considerations for preliminary design, determining seismic demands using Linear Dynamic Analysis, design of concrete shear wall cores, refined analysis of structure below plastic hinge zone, design of Gravity-Load Resisting Frames for seismic deformation demands, advanced design issues, and the evaluation of life safety performance using Non-linear Dynamic Analysis.

This document outlines the services an SER should provide for a tall concrete building project, and may help an SER explain his or her services to a Client, whether the Client is an Owner, an Architect, or a design/build contractor

These outlines are not intended to be exhaustive, and should not detract from other provisions of these guidelines.

3.1.1 CONSIDERATION OF RISK

The Engineering Professional has a professional responsibility to uphold the principles outlined in the Engineers and Geoscientists BC Code of Ethics, including protection of public safety and the environment. As such, the Engineering Professional must use a documented approach to identify, assess, and mitigate risks that may impact public safety or the environment when providing professional services.

One of the risk factors that must be considered is climate change implications on the building. Engineering Professionals have a responsibility to notify their clients of future climate-related risks, reasonable adaptations to lessen the impact of those risks, and the potential impacts should a client refuse to implement the recommended adaptations. Engineering Professionals are themselves responsible for being aware of and meeting the intent of any climate change requirements imposed by a client or authority having jurisdiction.

Construction and operation of buildings contribute significantly to global CO₂ emissions, and the manufacturing of Portland cement, in particular, results in significant CO₂ emissions. These guidelines are

not intended to advocate for tall concrete buildings nor for concrete as a building material, but instead are intended to set the expectations and obligations for Engineering Professionals providing the structural engineering services for tall concrete buildings.

In considering climate change implications for tall concrete building projects, the SER, in collaboration and communication with the owner and other Engineering Professionals, should consider the environmental impact of tall concrete buildings and opportunities to mitigate the impact. When assessing the appropriateness of any material substitutions, the SER must also consider the structural performance; such considerations should include, but not be limited to, whether the proposed substitution is codified or if an alternative solution would be required, availability of research and technical guidance, and general limitations of use (e.g., certain member types, climates).

Other areas of risk encountered in professional practice are quality, technical, financial, and commercial risks. Engineering Professionals should consider risks in such areas using techniques that are appropriate to their area of practice.

3.1.2 APPLICABLE CODES AND STANDARDS

At the time of publication, the following codes related to structural engineering services for tall concrete building projects were in force:

- British Columbia Building Code (BCBC) 2018
- Vancouver Building By-law (VBBL) 2019

At the time of publication, the following standard related to structural engineering services for tall concrete building projects was in force:

• CSA A23.3-14

Codes are regularly revised as knowledge and experience progress and new technologies are developed. Model codes are developed at the national level, then adopted at the provincial level, and finally enforced at the local government level. As such, there is often a delay between when research is conducted and new technologies are developed and published, informing the industry of future expectations of "best practice," and when that information is adopted into the requirements of the Code. It is the Engineering Professional's responsibility to meet the requirements of the Code currently in force. More recent (i.e., not yet adopted) versions of Codes and standards typically are also Code compliant; however, if it is not and the Engineering Professional chooses to apply the impending requirements, an alternative solution would be required.

CSA A23.3-19 and the model code, NBC 2020, are referenced throughout these guidelines where considerations for "best practice" exceed the requirements of the Code and referenced standards currently in force. These documents are expected to be adopted in the next edition of the Code.

In some cases, specifically where guidance is not provided in current or incoming Codes, additional considerations for "best practice" are provided based on the LATBSDC guidelines and PEER TBI guidelines.

Specific requirements for parking garages are outside the scope of these guidelines. The SER should note that the requirements of CSA S413-14 Parking Garages, and any other Code referenced standards that apply to the project, must be met.

3.2 DESIGN FOR GRAVITY LOADS

3.2.1 COLUMNS AND BEARING WALLS

3.2.1.1 Introduction

Columns and bearing walls are critical components in the Gravity-Load Resisting Frame of tall concrete buildings. The failure mode of columns or bearing walls in tall concrete buildings can be very brittle (with little or no warning) and consequences of failure are usually severe. As a result, the Code requires a very low probability of failure for a column or bearing wall. The SER should be cautious about using experience from previous projects to design (brittle) columns or bearing walls, as there is no feedback on what probability of collapse was actually achieved in their previous designs.

3.2.1.2 Estimating Applied Loads

It is particularly important that the SER make an accurate (i.e., safe) estimate of all loads applied to columns and bearing walls in tall concrete buildings.

With concrete structures, the dead load due to the self-weight of the building is a very large portion of the load, and it is very important that the estimate of the self-weight of the building for the gravity-load design of columns and bearing walls be equal to or larger than the actual self-weight. However, an overestimate of gravity loads may be unsafe for seismic design; this is discussed in **Section 3.4.4.1 Element Design Forces**. The SER should provide allowances and tolerances for the self-weight of the structure which they have control over; tighter control of concrete dimensions on the structural drawings and during Field Reviews permits smaller allowances.

With tall concrete buildings, any error made per floor can accumulate significantly over the height of the building. The SER should allow for the additional weight of the levelling grout applied to the floors, as this can result in a significant increase in the dead load on a column that supports numerous floors.

One way the SER can verify that the estimates of gravity load used in design are consistent with what actually is built is to include the information on the structural drawings. The Code requires that structural drawings have sufficient detail to allow the determination of dead loads, as well as show all other loads, which were used in the design of both the structural members and the exterior cladding. One means by which this requirement can be satisfied is to provide a table of design loads on the structural drawings. However, this approach can leave uncertainty as to the specific location in the building where these design loads were applied in the structural design.

The SER should consider indicating explicitly, on the floor or roof plans, the design loading used for the design of that floor/roof and supporting structure. For floors or roofs with multiple occupancies or significant variations in loading intensities (e.g., landscaped areas or heavy cladding systems), the SER should consider providing a separate plan drawing (loading key-plan) indicating the design loading assumptions for even greater clarity. This information can be very useful to all who reference the structural drawings; current and future Architects and Engineering Professionals can rely on this information for review and coordination of the structure, and building owners can rely on this information for maintenance and operations. This information is also useful to the contractor during construction to be able to verify that concrete or landscaping thicknesses, for example, are not exceeded. The Professional Practice Guidelines Structural Engineering Services for Part 3 Building Projects (EGBC 2019) Section 3.3.3 has a list of what structural drawings need to show for a building permit.

The following are some examples of loads that must be properly accounted for:

- Floor-leveling grout control of floor flatness during construction and slab deflections will significantly influence the amount of floor leveling material that will be added. The SER should allow for 0.25-0.5 kPa or more;
- Floor finishes in luxury units e.g., heavy stone;
- Floor finishes on balconies e.g., heavy tiles, sloped topping;
- Concrete topping used to provide slopes on roofs and terraces there is the potential for a significant amount of concrete to be added;
- Concrete housekeeping pads for mechanical and electrical equipment;
- Elevator machinery;
- Ceilings, and the electrical and mechanical services in the ceilings;
- Movable partition walls steel stud and gypsum board walls typically fall within the Code prescribed allowance of 1.0 kPa;
- Fixed partition walls concrete masonry walls can be particularly heavy. They should be accounted for specifically and should shown on the key plan;
- Exterior cladding, window walls, curtain walls, precast elements, brick, etc.;
- Window washing equipment and fall-arrest systems;
- Mechanical units on the roof; and
- Mechanical screens.

3.2.1.3 Estimating Load Distribution to Columns and Bearing Walls

Reinforced concrete floor systems (slabs and beams) are highly indeterminate with multiple load paths. They normally have considerable ductility that allows for redistribution of any overload. The same cannot be said about the vertical supports for the floor systems (i.e., the columns and bearing walls). Whereas concrete slabs typically deflect significantly or show other signs of overload prior to failure, columns and bearing walls may fail in a brittle manner with very little prior deformation.

The distribution of gravity loads from floor systems to columns and walls is a complex phenomenon that is influenced by such things as the construction sequence, creep and shrinkage of concrete, and the changing stiffness of members as the load is increased. More complex models do not necessarily result in a more accurate estimate of the force distribution because they are not able to accurately account for all the factors. The SER must pay special attention to making a safe estimate of the design forces on columns and bearing walls.

Pattern loading for live loads are typically not required for residential floors (CSA A23.3 Clause 13.8.4) but may be warranted for floors with higher live loads such as retail, amenity floors, plazas, heavy mechanical, and electrical equipment. The SER should consider pattern loading effects were uneven distribution of loads or finishes, including landscaping, could result in large variations in loading effects. Pattern loading is a particularly important consideration for the design of transfer slabs, multi-spans, or cantilever transfer beams.

Whenever an analysis problem is complex and sensitive to the assumptions, it is important for the SER to consider a number of different solutions in order to determine the range of effects; this is often referred to as "bounding the solution." The following are possible approaches to determining column design loads:

• A floor-by-floor analysis using simple tributary areas. This solution should always be considered.

- A three-dimensional Linear Analysis of the floor system. This solution provides a different force distribution that depends on the assumed stiffnesses, which are constantly changing as a floor system is loaded.
- A full three-dimensional analysis of the entire building.

An added complexity in the full building model is how the axial stiffness of the columns and bearing walls is modelled. The axial stiffnesses of these members depends on the in-situ concrete properties, the level of creep deformations and shrinkage that have occurred previously, as well as the rate at which the members are loaded to the design force level. When the axial deformation of the supporting columns is of similar magnitude as the deflection of the transfer girder or slab, it is very important for the SER to consider a range of stiffness values. It is possible to use a full three-dimensional model and account for construction sequence and long-term effects (creep and shrinkage); however, the uncertainty increases with the complexity of the model.

When some of the columns and bearing walls supporting a floor/roof level are themselves supported on transfer girders or transfer slabs, the analysis of the level in question becomes more complex since the stiffness of the transfer elements on the level below are difficult to estimate. Diagonal cracking of these transfer members can dramatically influence the force distribution. The SER should pay special attention when determining the design forces for columns and bearing walls supported on transfer elements and for columns and bearing walls supporting transfer elements.

Special attention needs to be paid to increased demands on the supporting elements of transfers due to vertical earthquake motions. This is discussed further in **Section 3.4.7.3 Discontinuous Elements Supporting Gravity Loads**.

3.2.1.4 Determining Column and Bearing Wall Resistance

The lateral deformations of a building due to earthquake ground motions (and wind forces) will reduce the axial resistance of columns and bearing walls. The reduction in axial resistance depends on the dimension of the member perpendicular to the axis of bending. A bearing wall, for example, will have a very large reduction in axial resistance when the building deforms in the direction of strong-axis bending of the wall. For this reason, the SER should make sure to design the member to have some reserve axial resistance. The SER is reminded that all walls, including so-called bearing walls, will attract seismic actions. Considerations for determining wind-induced and seismic-induced demands are provided in **Section 3.3 Design for Lateral Wind Forces** and **Section 3.4 Design for Earthquake Ground Motions**, respectively.

CSA A23.3 Clause 14.2.3 requires that the factored resistance of bearing walls must account for strong axis bending due to the resultant of the axial load not being at the centroid of the wall or due to lateral deformation of the building due to wind or seismic demands.

Second-order bending of columns and bearing walls must be properly accounted for when determining the resistance of columns and bearing walls. As a minimum, all compression members should be designed to withstand the total axial load applied at the minimum eccentricity (15 mm + 0.03 times the overall thickness of the member), assumed to be uniform over the full height of the member (i.e., bent in single curvature).

Thin Walls

Thin reinforced concrete walls can be a cost-effective structural element as long as the loads applied to the member are small. Research (Adebar, 2013) has demonstrated that heavily loaded thin concrete

walls are particularly brittle and can lose all axial load carrying capacity with little or no warning. As a result, CSA A23.3-14 Clause 10.10.4 was revised to reducing the maximum factored axial load resistance of compression members that are less than 300 mm in dimension and for walls that are not tied along the full length.

Thin concrete walls should not be used to resist significant gravity loads in tall concrete buildings, particularly in high seismic regions where the walls could be damaged by lateral deformation of the building due to earthquake motions. If the interstorey drift ratio at any point in a building exceeds 0.5%, all walls in the entire building that are assumed to support gravity loads must contain two layers of uniformly distributed reinforcement with a minimum clear spacing of 50 mm between layers (CSA A23.3 Clause 21.11.3.3.1).

Column Offsets

A column offset occurs when the outline of the column above does not fall within the outline of the column below. The code does not include provisions on how to design a column offset.

The increased bearing stresses that occur at the interface of the two offset columns is only a small part of the design problem. The change in location of the resultant axial compression in the column above and below the offset generates a bending moment that is usually resisted by the core. The concrete diaphragms at the level of the offset, as well as the diaphragms above and below the offset, transmit the associated shear forces to the core. When the bending moment from a column offset is resisted by the core, special attention is required in the seismic design of the core to account for the Gravity-Induced Lateral Demand (GILD). This is discussed further in **Section 3.4.7.1 Gravity-Induced Lateral Demand Irregularity.**

Careful detailing is required in all affected members in the load path between the column offset and the foundation. For example, the columns above and below the offset require additional crack control reinforcement. Special attention is needed when large forces need to be transferred from the columns to the core by (passive) reinforcement rather than active prestressing force in the slabs.

Fire

Recent tragedies have increased the awareness of fire safety in tall buildings. Concrete is inherently more resistant to fire than other construction materials, but has limitations. The main issue is providing sufficient thickness of concrete and sufficient concrete cover to the reinforcement to protect the reinforcement from losing strength.

The Code requires a minimum 2-hour fire-resistance rating in many situations; however, in some instances, a more stringent requirement may be required, and local jurisdictions may specify requirements in excess of those specified in the Code. It is the responsibility of the Architect to determine the minimum required fire-resistance rating of the structure.

All columns and walls must be designed for a minimum fire-resistance rating. Typically, the Code requires that the fire-resistance rating of load-bearing walls and columns be greater than or equal to that of the assembly supported. That is, the columns and walls supporting a floor slab must have at least the fire-resistance rating required for the floor slab. Columns must satisfy minimum dimensions for the applicable fire rating; where small columns are used, D-2.8.2 of CSA A23.3 prescribes a factor by which the columns must be overdesigned.

In most cases, all sides of the column should be considered exposed to fire; however, in the case of columns embedded in partition walls that are fire separations between units, it would be reasonable to

assume that a column is exposed to fire on only the exposed sides. This approach is allowed by D-2.8.6 of CSA A23.3 for columns built into a masonry or concrete wall; while CSA A23.3 does not mention drywall partitions for this application, it would seem a reasonable extension of the code intent. All fire protection assumptions should be clearly stated on the structural drawings for future reference by Architects or Engineering Professionals involved in renovations.

The SER should consider relying on concrete cover for the fire protection of columns rather than gypsum board as there is no way to ensure that the gypsum board will be properly installed and will remain in place through the life of the building.

3.2.1.5 Influence of Column Design on Other Components

When columns are closely spaced, e.g., 3 metres apart or less for typical slab thicknesses, the columns and interconnecting slabs may act as a frame that resists lateral loads. Similarly, if columns are located close to the core, e.g., within 6 metres for typical slab thicknesses, the columns, core, and interconnecting slabs will act as lateral load resisting frame. See **Section 3.4.2 Preliminary Design Considerations** (for earthquake design) for a further discussion.

The layout of columns supporting the floor systems may have a significant influence on the unbalanced overturning moment applied to the LFRS (i.e., the core). This is particularly a concern in the coupled wall direction. The unbalanced bending moments applied to the core generate a GILD on the core. This is discussed further in **Section 3.4.7.1 Gravity-Induced Lateral Demand Irregularity.**

The differential vertical movement of columns and walls due to differential creep deformations may have a significant impact on the floor systems and is discussed in **Section 3.2.2.3 Flexural Design of Slabs.**

The SER should also consider thermal effects on exterior columns and differential movement. Differential temperature effects may require columns to be kept primarily within the building envelope for tall concrete buildings.

3.2.2 FLOOR SLABS

3.2.2.1 Estimating Applied Loads

Much of the discussion in **Section 3.2.1.2 Estimating Applied Loads** (for columns and bearing walls) is also applicable to estimating loads on floor slabs. A number of additional issues specifically related to floor slabs are presented here.

The Code specified live loads are a minimum and may not be sufficient for all conditions. The SER must account for the actual live load expected for the building. Examples of common scenarios where the Code specified live loads may not be sufficient include, but are not limited to:

- 3.6 kPa for mechanical rooms,
- 2.4 kPa for offices with high-density filing systems,
- 4.8 kPa for assembly loading on suspended ground floor slabs many tall buildings require firetruck access (maximum loads vary by AHJ) at the ground floor level.

The significant weight of landscaping needs to be accounted for, with the appropriate Ultimate Limit State (ULS) load factor for the given soil depth.

For tall buildings, window washing systems and fall restraint systems designed by specialty Engineering Professionals can apply significant localized forces on floors and have special connection requirements for connections of davit base arms or fall restraint anchor posts where they fasten to slabs.

The SER should be aware that the NBC 2020 has changed how the live load reduction is applied to the design of slabs.

3.2.2.2 Punching Shear

Concrete slabs can tolerate enormous overload without failing in flexure. The critical failure mode for twoway slabs (without drop panels or column capitals) is often punching shear around the column. Punching shear failure is very brittle and sudden, and thus a safe design is important. In addition, some reserve punching shear strength in the slab is needed to resist any unbalanced moment transfer resulting from the lateral deformations of the building.

Large lateral deformations of the buildings due to earthquake ground motions cause flexural cracking around the column, which reduces the factor of safety against punching shear failure. The SER must conduct a specific check for the reduced punching shear capacity due to seismic deformations. See **Section 3.4.6 Design of Gravity-Load Resisting Frames for Seismic Deformation Demands.** When the interstorey drift ratios are large, transverse reinforcement may be needed in the slab to prevent a punching shear failure.

Sleeves, Ducts, and Conduits

The SER should account for the effect of sleeves, in-slab ducts and conduits when calculating punching shear resistance.

The SER should realize that it is very likely that sleeves will be added at the last minute and should be involved in determining how many and where they can be placed. For columns in parking levels, it is prudent to assume at least one hole in the short dimension of the columns for drainpipes. For columns in parking garages, it is recommended to assume at least one 150 mm diameter round hole on the narrow end of the columns on the opposite end from the maneuvering aisle (since drain lines are generally routed down the "back" of the column to prevent car impact).

In-slab ducts located near columns are a concern as they may cause a punching shear failure of the slab, especially in highly stressed slabs such as transfer slabs. Piping and manifolds (header where water supply piping for the unit connects to in-slab piping for all of the fixtures in the unit) should be kept out of the critical punching shear zone around the column.

The SER should consider specifying a thicker slab near electrical rooms to allow for conduit congestion.

Structural Integrity Reinforcement

If a punching shear failure occurred in a slab, and the weight of the slab dropped onto the slab below, a progressive failure could potentially result in the complete collapse of the building. Thus, CSA A23.3 requires that structural integrity reinforcement be provided to support the weight of the slab after a punching shear failure. This reinforcement should consist of at least two bars or two prestressing tendons that extend through the column in each span direction. Integrity reinforcement is not required if there are beams containing shear reinforcement in all spans framing into the column.

3.2.2.3 Flexural Design of Slabs

Slab thickness is determined to control deflections (SLS), while the quantity of flexural reinforcement is determined to provide the required flexural strength (ULS). The quantity and distribution of flexural reinforcement will also influence the cracking of slabs (SLS).
Slab Deflections

Table 9.2 in CSA A23.3 provides guidance for the span-to-depth ratios of slabs. This table was developed for slabs supported by columns and walls in a regular arrangement; the SER should exercise caution and conservatism for slabs with an irregular arrangement of supports. It is recommended that the SER supplement the tabulated span-to-depth ratios with calculations to determine the expected deflections of the slab. Over time, with calculations and field observations of performance, the SER can confirm or modify the span-to-depth ratios used for design.

The continuity (negative) bending moments at the support, which are strongly influenced by the adjacent spans, have a pronounced effect on the deflections of slabs. As a result, in order to effectively control deflection, exterior (end) spans should generally be shorter than interior spans for the same thickness of slab.

It is important to limit the long-term deflections along the exterior façade of the building because the envelope system (window wall or curtain wall) has a limited displacement tolerance (typically 19 mm deflection is allowed by window wall manufacturers). The cladding system may be damaged if the differential deflection of the slab after the finishes are installed exceeds the tolerance for the cladding system. This can be a very costly repair on tall concrete buildings.

A variety of different methods can be used to estimate the deflection of a concrete floor system. One method is a simple two-dimensional frame analysis (strip) program. Another approach is to use a commercially available linear finite element analysis program. A combined approach is to conduct a finite element analysis to determine the immediate deflections and to estimate the long-term deflection using the simplified procedures in CSA A23.3. In any case, it is important that the SER understands the input and output of the deflection calculations (i.e., does not rely on a "black box" for the design), and checks and calibrates assumptions and design decisions based on multiple field observations.

Factors that influence slab deflections include:

- Age and compressive strength of the concrete at the time the forms are removed;
- Sequence used for removing forms and installing reshores;
- Location of reshores in the span (note this typically cannot be considered in design as the shoring system is unknown);
- Number of levels of reshores;
- Amount and arrangement of reinforcement;
- Amount of shrinkage; and
- Actual loading on the slab.

Refer to the Professional Practice Guidelines Professional Engineering Services for Temporary Structures: Formwork, Falsework, and Reshore (EGBC 2021).

Floor Flatness and Levelness

Non-level or non-flat floors, including those built within allowable construction tolerances, can accentuate slab deflection issues.

Differential vertical displacements of columns and walls supporting slabs can contribute to a floor not being level after the creep deflections occur. The long-term vertical displacements of columns and walls is dependent on the magnitude of the axial compression stress. Columns with high axial compression stress will have larger creep deflections than columns with low axial compression stress, or walls which typically have a lower compression stress inherently. This differential vertical movement of columns and walls can have significant impact on the levelness of floor slabs. It is possible for the slab formwork to be adjusted to correct for this differential movement; however, this is not a common practice so should be discussed and coordinated with the contractor prior to specifying.

3.2.3 TRANSFER GIRDERS AND TRANSFER SLABS

Transfer girders or transfer slabs are used to transfer the gravity loads from one or more columns or bearing walls at the level that the columns or bearing walls are discontinued. SFRSs that resist lateral loads due to earthquake must be continuous down to the foundation and cannot be supported on transfers as per Sentence 4.1.8.10.(3) of the Code. When a column location shifts by a sufficiently small amount, a column offset may be used in place of a transfer element. See **Section 3.2.1.4 Determining Column and Bearing Wall Resistance**.

Transfer girders and transfer slabs complicate the estimate of the load distribution to the columns and bearing walls as discussed in Section 3.2.1.3 Estimating Load Distribution to Columns and Bearing Walls.

Transfer girders and transfer slabs are often deep members. Sometimes the lower portion of the member is cast first and is used to support the weight of the upper portion. When a pour joint exists within a member, careful consideration should be given to the preparation of the interface surface and the resulting resistance to horizontal shear flow along the surface. Additional longitudinal and transverse shear reinforcement may be required in the lower portion of the member if it is to be used to support the weight of the fresh concrete when casting the top portion of the member.

Transfer girders and transfer slabs are often shear-critical members. When a deep transfer element is supported on a narrow support such as a wall, special attention needs to be paid to the anchorage of the longitudinal reinforcement. At the face of the support, the longitudinal reinforcement must be capable of resisting the shear demand on the longitudinal reinforcement; see CSA A23.3 Clause 11.3.9.5.

Special attention also needs to be paid to the anchorage of the transverse shear reinforcement in deep transfer elements. Although transverse shear reinforcement with a 90-degree hook at the bottom end have been commonly used as stirrups in transfer slabs and mat foundations, these do not meet the CSA A23.3 anchorage requirements because the cover cannot be considered restrained against spalling. Terminators forming mechanical anchorage at the bottom end of bar can be considered as a Code compliant solution.

Significant challenges occur when transfer girders or transfer slabs frame into the core. The interstorey drift of the building due to earthquake ground motions may induce a large bending moment in the transfer element, and a large axial compression in the member(s) supporting the other end of the transfer girder or transfer slab. See Section 3.4.6 Design of Gravity-Load Resisting Frames for Seismic Deformation Demands.

3.2.4 FOUNDATIONS

Foundation settlements, particularly differential settlement, must be accounted for in the structural design of tall concrete buildings.

Differential settlements are of particular concern as they may result in a magnified horizontal displacement at the top of the building, due to the ratio of building height to foundation width.

The SER should provide the geotechnical Engineering Professional with the gravity loads, including distribution that the building will apply to the soil so that the geotechnical Engineering Professional can determine, and report to both the Architect and SER, the expected total and differential foundation settlement.

3.2.5 MISCELLANEOUS CONSIDERATIONS

3.2.5.1 Roof-Mounted Systems

Tall buildings require systems to facilitate the exterior envelope maintenance for the building (i.e., window washing). Such systems may include fall-restraint anchors or crane and gantry systems to support bosun chairs or platforms. The SER must consider the loads that will be imposed by these systems in the design of the building. Some systems include fall-restraint anchors that are intended to be cast into concrete knee walls or parapet walls; these walls must be designed to resist the loading from these anchors. Additional reinforcement is likely required locally at both the anchor-to-parapet connection and the parapet-to-slab connection. In addition, very tall buildings (greater than 20 storeys) will require building maintenance units, which are large cranes that sit on the roof of the building. These cranes have a significant mass and can impose very large gravity (and lateral) loads on the roof of the building; the depth of the roof slab and the size of the supporting columns may need to be increased. The SER should encourage the project team to finalize the design of these systems during the design phase of the project because it can be difficult and expensive to accommodate these elements in the structural design at the shop drawing stage of the project.

3.2.5.2 Elevators

In tall concrete buildings, the elevators are supported by machines that are located at the top of the elevator shaft, supported by the concrete slab that forms the lid of the elevator shaft. The loads exerted by the elevator machines can be significant and the elevator manufacturer will have specific requirements for openings and flatness of this slab. The detailed design of this slab requires coordination with the elevator manufacturer, who should provide specific information in the form of shop drawings. The SER should anticipate that this slab might need to be at least 300 - 400 mm thick.

Horizontal displacement of a tall concrete building may cause distortion of the elevator shaft, which will reduce the vertical space available over the full height of the building for the installation of the elevator. The horizontal displacements may be permanent when due to GILD on the building, or may be transient when due to wind loading. It may be necessary to allow for a wider elevator shaft in order to accommodate the distortion.

For more information on the roles and responsibilities of professionals providing services related to elevating devices, refer to the Professional Practice Guidelines Professional Responsibilities for the Design and Installation of Elevating Devices in New Buildings (EGBC 2020) and Professional Responsibilities for the Alteration of Elevating Devices in Existing Buildings (EGBC 2021).

3.2.5.3 Temperature Effects

All materials, including construction materials, expand and contract with changes in temperature. The design of structural members that are not enclosed within the building envelope must allow for the expected thermal movement, or stresses in the case of restrained members. Secondary structural components, such as steel framing around mechanical units, are common and typically outside of the conditioned space, which renders them prone to more drastic temperature changes. It is recommended to

use slip connections from the steel to concrete to allow thermal movements to occur without inducing large stresses at the connection points.

3.2.5.4 Mass Concrete

Large footings or thick transfer slabs may require that special measures be taken to deal with the generation of heat from hydration of cement and the resulting volume changes. The maximum temperature of the concrete and differential temperature strains must be limited to avoid cracking of the cooler surface concrete.

3.2.5.5 Cladding Support

The SER should specify their assumptions with regard to gravity and lateral support of cladding systems on the structural drawings to ensure that finishes have adequate allowances for structural movements, and loading assumptions are clear for the supporting Registered Professional (SRP), if retained. Vertical members which span between floors may be required to support cladding systems where traditional mullions are not sufficient, for example in buildings with large floor to floor heights. These vertical members are typically hollow structural sections (HSS); the SER should identify the size and location of these secondary structural elements during the design stage.

The SER should review and coordinate the vertical deflection allowance for the cladding system to ensure that the cladding system will not be damaged by differential movement between two consecutive floor slabs.

Excessive seismic drifts need to be communicated to the Architect for consideration during the design of the cladding system. Some cladding systems, especially those with large panels, cannot tolerate large seismic drift demand (> 0.02).

3.3 DESIGN FOR LATERAL WIND FORCES

Wind is an important aspect of tall concrete building design and often governs the required stiffness and strength of the Lateral Force Resisting System (LFRS).

3.3.1 METHODS FOR CALCULATING WIND FORCES

There are three methods for calculating wind loads, and the Code prescribes when these methods can be used. The three methods for calculating wind loads are:

- the static procedure,
- the dynamic procedure, and
- the wind tunnel procedure.

The static method is not appropriate for the design of tall concrete buildings because it does not consider the characteristics of the building. The wind loading design values predicted by the static method can be very unconservative when the dynamic characteristics of the structure is similar to those of the wind excitation. The Tacoma Narrows Bridge collapsed when the aeroelastic flutter caused by the wind matched the natural frequency of the structure. For this reason, wind loads on slender structures should be determined through model testing.

The dynamic procedure method is recommended to be used to calculate wind lateral forces for tall concrete buildings and is mandated to be used (see Article 4.1.7.2. of the Code) where any of the following apply:

- the lowest natural frequency is between 1.0 0.25 Hz,
- the height is greater than 60 m, or
- the height of the building is greater than 4 times the effective width.

The "effective width" definition in the Code is based on empirical observations of when dynamic effects governed the wind response of buildings. However, these observations were mainly from rigid frame buildings where the LFRS was the entire width of the building. As such, the correlation of height to width ratio is not as applicable for shear wall buildings that have a lower frequency. For core wall buildings, the aspect ratio of the core walls (height of building to length of core walls in each direction) is generally used as an indicator of the building slenderness.

If the building's lowest natural frequency is less than 0.25 Hz, or if the height is more than 6 times the minimum effective width, the wind tunnel procedure (i.e., experimental method) is mandatory. The SER should inform the client of the requirement to engage a wind consultant to perform a wind study. This report should be prepared and authenticated by an Engineering Professional. The wind study should consider the adverse effect of proposed future developments in addition to the current geographic and built environment specific to the building site.

For multiple towers linked by a podium, the concurrent effect of wind needs to be considered in order to capture the effect of building motions in the opposite direction. See subsection **Podium Structures** in **Section 3.4.3.2 Seismic Demands According to NBC** for more information.

3.3.2 SLS AND ULS CRITERIA

The wind design of tall concrete buildings involves consideration of both the ULS criteria for adequate factored capacity to resist factored wind forces as well as the SLS criteria for acceptable wind deflections and building movements.

For tall slender buildings, satisfying the maximum translation and rotational accelerations under wind excitation will generally govern the minimum stiffness requirements for the LFRS. Typically, in these buildings, the entire Primary Structural System can be considered in the calculation of wind deflections and vibration criteria. One of the SLS criteria is a limit of H/500 lateral deflection, as per Article 4.1.3.5. of the Code. Calculations of deflections must account for P-Delta effects.

The SLS criteria for occupant comfort under wind-induced accelerations can be one of the most challenging to satisfy. The perception of motion and the magnitude that is deemed acceptable is specific to individual occupants – design criteria will not satisfy all occupants all the time. ISO 10137 "Basis for design of structures – Serviceability of buildings and walkways against vibrations" provides criteria for occupant comfort under wind vibration that specifies the maximum accelerations during windstorm events with a 1-year return period. For the 1 in 10-year event, the NBC Commentary provides the acceptance range of wind accelerations between 1.5% to 2.5% of gravity, with the lower end of this range generally applied to residential occupancies and the higher end to business occupancies. It is recommended that the acceleration criteria fall within recommended limits for all of the 1-, 5-, and 10-year return period events. Since these criteria are related to the occupancy of the building, these limits are typically examined at the highest occupied floor in the building, and do not apply to maintenance spaces or unoccupied rooftops.

The wind consultant described in **Section 3.3.1 Methods for Calculating Wind Forces** should prepare a report which provides detailed wind loads for the building (and cladding), and summarizes the expected wind vibration response (acceleration) and criteria for anticipated wind events with a 1-, 5-, and 10-year reoccurrence interval.

When a building does not meet the required SLS maximum acceleration criteria for occupant comfort, the dynamic response of the building can be altered by re-configuring the LFRS, by generally adding stiffness, by changing the building façade roughness (e.g., corner cut outs, balconies, etc.), or by adding supplementary damping. For very tall buildings (greater than 20 storeys), adding an open floor also can reduce vortex-shedding effects. Supplementary damping is discussed in **Section 3.3.5 Supplementary Damping Systems** below.

3.3.3 MODELLING CONSIDERATIONS

Since the wind loading for tall concrete buildings is highly dependent on the dynamic response of the building, it is important to use appropriate stiffness properties for the analysis. As the building frequency decreases, the susceptibility to dynamic wind effects, such as vortex shedding, increases. Consequently, it is more conservative to design the building for a lower frequency for the wind design and it is important not to overestimate the stiffness of the building. The effect of foundation movement on building frequency should be considered and accounted for in computer modelling. Note that this effect is less pronounced in buildings with multiple below grade levels.

The effectives stiffnesses provided in the Commentary to Chapter 9 of CSA 23.3-14 should be used as the initial values. However, the SER needs to confirm the actual effective stiffness based on the demands on the system, and whether the concrete will crack under the wind loading.

Typically, a tall concrete building is analyzed with two different computer models. The first model, for SLS response, includes both the LFRS and the Gravity-Load Resisting Frame members. Appropriate effective stiffnesses for SLS loads should be assigned to all members. The second model, for ULS wind design, includes only the LFRS elements, with the effective stiffnesses reduced to account for the increased cracking due to the higher ULS wind loads.

If the Gravity-Load Resisting Frame is used to help resist the ULS wind loads, it is important to use effective stiffness values for each of the members that reflect what portion of the wind forces are resisted by the two different systems. Thus, trial and error may be needed to determine the appropriate effective stiffness values.

For concrete shear wall buildings, the critical damping ratio for determination of dynamic wind effects (accelerations) is commonly taken as 2% for ULS loading and 1.5% for SLS loading. However, researchers have indicated that actual damping is lower in very tall slender buildings (over 200 meters in height); for such buildings, the SER should consider using a lower damping ratio. There are a number of scholarly articles which provide guidance on this subject; see **Section 6.2 Related Documents**.

3.3.4 STRENGTH DESIGN OF LATERAL FORCE RESISTING SYSTEM

In high seismic zones, it is typical for the LFRS to be designed to resist all the ULS wind loads, and for the Gravity-Load Resisting Frame to be designed to be sufficiently flexible to tolerate the lateral displacements due to earthquake ground motion. If the Gravity-Load Resisting Frame is used to help resist the ULS wind loads, all members of the Gravity-Load Resisting Frame must be designed to resist the additional wind forces, and special consideration needs to be given to ensure the Gravity-Load

Resisting Frame can tolerate the seismic displacements; see **Section 3.4.6 Design of Gravity-Load Resisting Frames for Seismic Deformation Demands**.

As buildings become taller, the wind forces increasingly govern the strength requirements of the LFRS. This results in a seismic over-strength of the concrete wall elements (such as coupling beams and wall piers) which introduces additional challenges to meeting the seismic Capacity Design requirements for the wall shear strength, foundation strength, and diaphragm strength; see **Section 3.4 Design for Earthquake Ground Motions**.

As the same concrete wall elements are used to resist the forces due to both wind and seismic, the stricter requirements for seismic design control the detailing of the reinforcement. For example, the vertical reinforcement used to resist tension forces from wind and seismic cannot be offset bent according to the seismic design requirements. In some instances, such as the envelope of coupling beam design forces, the wind design requirements are stricter than the seismic design requirements. It is permitted to redistribute the coupling beam force demands from seismic as inelastic response; but the SER should avoid or limit the amount of redistribution of coupling beam forces from wind.

Wind forces generate significant diaphragm forces at the levels where the LFRS has a significant discontinuity (*e.g.*, due to additional shear walls below a particular level). CSA A23.3-14, which is referenced by the Code, does not have any provisions for the design of diaphragms for non-seismic loads. However, useful information on the design of diaphragms can be found in Clause 21 of CSA A23.3-14 (for seismic loads), or the new Clause 19 of CSA A23.3-19.

3.3.5 SUPPLEMENTARY DAMPING SYSTEMS

Some of the common supplementary damping systems (dampers) for tall concrete buildings are:

- tuned mass dampers,
- tuned liquid sloshing and tuned liquid column dampers,
- viscoelastic coupling headers, and
- viscoelastic links in outrigger configurations.

Typically, these systems are designed by a wind consultant or design-build contractor, and they are tuned to suit the in-situ properties of the constructed building. Dampers can typically add approximately 1-2% additional damping, on top of the inherent damping that is assumed for the vibration response of the building. Dampers that rely on a large mass (approximately 0.5-1% of the total building mass) at the top of the building require a large amount of floor space. The mass of dampers must be accounted for in both the gravity and lateral (seismic) designs.

Tuned mass dampers may be expensive due to the capital cost of the dampers, the cost of their design and installation, and space they occupy at the top of the building (i.e., un-occupiable space).

Tuned mass-dampers and water-dampers are designed to work within a certain frequency range to address serviceability concerns and affect the resonant response of the building. However, they cannot be relied upon to reduce the ULS wind response resonance case of the building since the tuned water systems rely on the water being in the tank, and it may not be possible to guarantee this with sufficient reliability for the ULS case as well as the SLS case.

Integrated damping systems such as visco-elastic dampers and viscous dampers generally require less floor space than tuned-mass dampers. Viscous dampers require maintenance and inspection, which is key to the reliability of these systems. Conversely, visco-elastic dampers do not require maintenance. Since these dampers are integrated into the building structure, they also affect the earthquake response

of the building (generally in a favorable way). If the seismic analysis of LFRS takes advantage of dampers for earthquake response, the Non-linear Dynamic Analysis procedures discussed in **Section 3.4.8 Evaluation of Life Safety Performance Using Non-linear Dynamic Analysis** should be followed.

3.4 DESIGN FOR EARTHQUAKE GROUND MOTIONS

3.4.1 INTRODUCTION AND OVERVIEW

This section provides considerations for the design of tall concrete buildings for earthquake (seismic) demands including forces and displacements and is broken down into the following sections:

- Section 3.4.2 Preliminary Design Considerations,
- Section 3.4.3 Determining Seismic Demands Using Linear Dynamic Analysis,
- Section 3.4.4 Design of Concrete Shear Wall Cores,
- Section 3.4.5 Refined Analysis of the Structure Below Plastic Hinge Zone,
- Section 3.4.6 Design of Gravity-Load Resisting Frames for Seismic Deformation Demands,
- Section 3.4.7 Advanced Design Issues, and
- Section 3.4.8 Evaluating Life Safety Performance Using Non-linear Dynamic Analysis.

3.4.2 PRELIMINARY DESIGN CONSIDERATIONS

3.4.2.1 Irregularities

A structure with simple, regular geometry is easier to design, and will likely perform better during an earthquake. This does not mean that the building architecture also needs to be simple and regular. It means that the structure, particularly the SFRS, should be as regular as possible. A very irregular structure may have a higher probability of collapse during a large earthquake and is more likely to be damaged during a smaller earthquake.

The Code identifies a number of common irregularities, and has specific requirements for buildings with these irregularities; however, it is important to note that these additional requirements are not sufficient to ensure that a highly irregular building will perform as well as a regular building. The additional requirements are intended to address life safety performance, not the level of damage that will occur.

The list of irregularities (Article 4.1.6.8. of the Code) are constantly being updated. For example, GILD is a new type of irregularity introduced in the current edition of Code, and sloped gravity-load columns is a new type of irregularity that will be included in the next edition of the Code, consistent with the NBC 2020. While the focus is often on irregularities in the Seismic Force Resisting System (SFRS), it is important to note that irregularities exist in the Gravity-Load Resisting Frame, such as sloped gravity-load columns; these must also be accounted for in the design.

Another benefit of a regular building is well-defined load paths for all forces, as well as a clear separation between the structural elements and structural actions that dissipate energy through inelastic deformation, and the structural elements and structural actions that must be capacity protected.

3.4.2.2 Geometry of Core

In a core wall building, the geometry of the core is very important. The preferred location of the core from a structural perspective is at the centre of the building (strictly speaking, at the centre of mass). This is

normally also the preferred location from a functional perspective and thus most buildings have a central core.

In some cases, such as when the floor plate is very long or has multiple wings, the building may have several cores, and in other cases, a single core may be located closer to one end of a building. In the latter case, additional lateral force resisting elements such as shear walls may be required to reduce the eccentricity of the SFRS. The location and geometry of the core and any additional shear walls should be coordinated with the Architect early in the project.

The core controls lateral drifts of the building due to wind forces and earthquake ground motions and resists the lateral forces due to the wind, as well as the seismic forces generated by the earthquake ground motions. Thus, it is important that the core has adequate lateral stiffness and lateral strength.

The core usually encompasses the elevators, the elevator lobby, and the stairways. One of the main factors that determines the size of the core, and hence the stiffness and strength of the core, is the number of elevators. Taller buildings typically have more elevators and, as a result, larger cores. Core walls have been used in BC for more than 40 years, and generally, the functional requirements have resulted in appropriately sized cores. However, recent advances in elevator technology (i.e., increased speed and computer controls for more efficient demand management) is resulting in tall concrete buildings being constructed with fewer elevators. This results in more slender cores, which increases the challenge of designing buildings that will perform well. As a core becomes more slender, it becomes increasingly difficult to satisfy serviceability requirements for wind vibration, and to have sufficiently low seismic drift demands on the Gravity-Load Resisting Frame and on the nonstructural components in the building.

The preferred configuration of the core is a rectangular shape. This results in an orthogonal arrangement that avoids directional effects and simplifies the analysis of the seismic demands. See **Fig. 1** for examples of core configurations.

A closed shape around the perimeter of the elevator and stair shafts results in good torsional rigidity. It is recommended that geometry of the core be such that the first two modes of the building are the lateral modes in the two perpendicular directions, and the third mode is the torsional mode. Additionally, it is recommended that there be good separation between the lateral modes and the torsional mode (i.e., a minimum of 0.5 s separation).

It is important to consider the GILD from dead load bending moments applied to the core when determining the arrangement of the core and the Gravity-Load Resisting Frame. When the core is located on one side of the floor plate so that dead load bending moments from the slab are applied on one side of the core only, the GILD can become very significant. Reducing the span of the slab will reduce the GILD. Similarly, columns that are placed at a similar distance on either side of a more centrally located core will reduce the GILD. When that is not possible, cantilever beams attached to the more lightly loaded side of the core can help reduce the unbalanced dead load moment. Finally, the GILD caused by column offsets may be reduced by providing counter-balancing offsets on the opposite side of the building.

An important characteristic of a regular core is uniform size and location of openings over the height of the building, particularly in the upper floor levels. Having a solid wall where openings are stacked above in the upper floors can be tolerated below the plastic hinge; but are very undesirable in the upper floors as that will inhibit the coupling beam deformations needed for the good energy dissipation characteristics of a coupled wall system. The area of a missing opening (often referred to as a "panel zone") will have high shear demands that need to be carefully considered. To avoid this, the SER should consider filling

openings in the concrete structure of upper floors using masonry block wall infill (with a sufficient gap at the boundaries) or covering the openings with drywall partition walls.

Finally, an important characteristic of an ideal core is that the walls have sufficient length to develop the diagonal reinforcement beyond the door openings. In a coupled wall system, the main energy dissipating mechanism is the yielding of the diagonal reinforcement in the coupling beams. Thus, adequate anchorage of this reinforcement into the wall is very important. It is important to note that CSA A23.3-19 has increased requirements whenever the full straight embedment length for the diagonal reinforcement is not provided; the SER should consider applying these additional detailing requirements proactively. Some of the example cores shown in Fig. 1 include smaller than ideal wall piers at the ends of the coupling beams that would require special consideration in the design.







Fig. 1 –Example cores from tall concrete buildings in BC.

3.4.2.3 Gravity-Load Resisting Frame

While the SFRS is designed to resist all seismic forces and to control the building drifts, both the SFRS and the Gravity-Load Resisting Frame will experience the same lateral displacements of the building, as

PROFESSIONAL PRACTICE GUIDELINES STRUCTURAL ENGINEERING SERVICES FOR TALL CONCRETE BUILDING PROJECTS they are connected together by the floor slabs. Thus, the arrangement of the Gravity-Load Resisting Frame is an important part of the seismic design of a building.

A stiff SFRS (core) that limits the building drifts permits more architectural freedom in the arrangement of the Gravity-Load Resisting Frame, and conversely, an SFRS that provides less drift control permits less architectural freedom in the Gravity-Load Resisting Frame. The deformation of the building induces demands on the Gravity-Load Resisting Frame in a number of different ways.

The column drift ratio (lateral displacement of column over a storey height) that results from the building drift ratio depends on the relative bending stiffness of the floor system and the columns. When the floor system is flexible (e.g., long span flat-plate slabs), very little bending is induced into the column. In that case, the slab is expected to crack around the column, thereby decreasing the punching shear resistance of the slab. Cracking of the slab starts reducing the punching shear resistance of a slab at a building interstorey drift ratio of 0.005 (0.5%); however, because of the different load factors for gravity design and seismic design, punching shear requirements tend to become significant when the building interstorey drift ratios exceed about 1.0%, as discussed in **Section 3.4.6.5 Slab-Column Connections.**

When the floor system has a high bending stiffness (e.g., when there is a thick transfer slab), the building drifts will generate large column bending, and since the columns are subjected to large axial compression, these members are usually not able to tolerate the induced bending demands. Any beams or curbs that frame into the gravity-load columns will further reduce the flexibility of these members because of their reduced length (i.e., the short-column effect). Stiff horizontal floor members may also generate significant axial force into the supporting columns, and this could cause failure of the column if not adequately accounted for.

As the building drifts are larger above the plastic hinge region, the influence of transfer slabs and transfer girders framing into the core is more significant. A large transfer element framing into the core may also influence where the plastic hinge will form in the building.

Locating the gravity-load columns as far as possible from the core increases the flexibility of the floor system. This reduces the bending induced into the columns and reduces the stiffness of the Gravity-Load Resisting Frame, and hence reduces the unintentional outrigger effect. Regardless of the column layout, when the slab has prestressing, there will be less flexural cracking of the slab and hence larger demands on the column.

See Section 3.4.6 Design of Gravity-Load Resisting Frames for Seismic Deformation Demands for a further discussion of these topics. Example 4 in Appendix B presents the results of Non-linear Dynamic Analysis of a building with a gravity-load column in close proximity to the core.

Gravity-load bearing walls that are not intended to resist any seismic forces can still generate an irregularity if they have significant lateral stiffness. Similarly, non-structural walls, such as concrete exterior façade walls, may cause concentrations of deformations in the SFRS, and the façade walls may fail in a brittle manner if they do not have joints that can tolerate the required movements.

3.4.2.4 Concrete Strength

A number of design requirements motivate the use of higher concrete compression strength. The thickness of the core walls are normally controlled by the maximum shear resistance of the wall, $V_{r,max}$, which is a function of the concrete compression strength. Higher concrete compression strength increases the (calculated) ductility of walls by reducing the compression strain depth, reduces the interstorey drift demands by increasing the effective flexural rigidity ($E_c I_e$) of the walls, and reduces the required embedment length on the diagonal reinforcement in coupling beams.

CSA A23.3 limits the maximum compression strength of concrete used in an SFRS to 80 MPa; however, for a number of reasons, concrete strengths higher than 60 MPa tend not to be used very often for core walls in BC. Concrete with a strength higher than 60 MPa has a significant price premium. Another consideration is that the maximum concrete compression strength that can be used to determine the concrete contribution to shear resistance of a wall (V_c) is limited to 64 MPa, even though the concrete contribution to shear resistance is typically not large in the plastic hinge region.

The Code equation for modulus of elasticity of concrete (E_c), which is an important part of the flexural rigidity of shear walls, has been found to be generally conservative in BC due to the good quality aggregate found here.

3.4.2.5 Reinforcement Strength

CSA A23.3 provisions for concrete structures, with the exception of the confinement reinforcement requirements, were developed for Grade 400 reinforcement (yield strength of 400 MPa). The additional elastic strains that result from using higher-grade reinforcement will generally reduce the ductility of concrete structures and may reduce the shear strength. As such, CSA A23.3 requires that the design, detailing, and ductility requirements for structures designed using a reinforcement grade higher than 400 MPa account for the increased strain demands. The complexity of accounting for the increased strain demands effectively prohibits the use of higher yield strength reinforcement at this time.

Grade 500 MPa reinforcement can be used for confinement ties of vertical column reinforcement, and can be used in capacity-protected elements such as core footings and raft foundations that are not shear-critical. One advantage of higher-grade reinforcement is reduced congestion.

Future editions of CSA A23.3 are expected to contain provisions for the use of higher-grade reinforcement.

3.4.3 DETERMINING SEISMIC DEMANDS USING LINEAR DYNAMIC ANALYSIS

3.4.3.1 Modelling Requirements

Mass and Stiffness

The model of the building must represent the actual mass and stiffness of the real structure as closely as possible. The mass must be correct in magnitude and distribution in all three dimensions. For example, the mass of a water tank on the roof of the building and the mass of landscaping on a podium slab must be modeled at the correct elevation and location on the floor plan.

Determining the effective stiffness of a concrete building during an earthquake is complex because the stiffness of the building changes as cracks form due to the imposed deformations. Thus, the Code requires the use of both an upper bound and lower bound estimate of the stiffness. The minimum design force level is determined using an upper-bound estimate (i.e., the stiffness of the building before significant damage). This is the empirical fundamental lateral period prescribed by the Code. Conversely, the displacement demands must be determined using an estimate of stiffness that accounts for the expected level of damage. CSA A23.3 defines the effective stiffness of concrete shear walls and coupled walls as a function of the elastic bending moment demand to the strength of the wall. The lower the strength, the lower the effective stiffness because a lower strength wall will have more damage (i.e., more cracking) during the earthquake.

As the flexural strength of the concrete walls are not known when the analysis is started, a lower-bound estimate of strength must be used to make a lower-bound estimate of stiffness. A refined (increased) stiffness can be used after the design is completed, and the strength is known, to make refined (reduced) estimates of building displacements if needed.

Subterranean Levels

When the seismic base is at grade and the site is not sloping, the mass of the subterranean structure (including grade level) may be ignored when doing the Linear Dynamic Analysis of the building in order to get a correct estimate of the base shear at grade level.

A complete model of the subterranean structure needs to be included in the building model in order to account for the flexibility of the base of the building. Upper-bound estimates of stiffness (e.g., uncracked stiffness) of the subterranean structure can be used, and the flexibility of the soil or rock below the foundation can be ignored, as CSA A23.3 requires that a refined model of the subterranean levels with a range of stiffness assumptions be used to determine the forces in the elements below grade (see **Section 3.4.5 Refined Analysis of Structure Below Plastic Hinge Zone**). This refined analysis will also be used to determine the additional drifts in the tower walls due to cracking of the below-grade structure and movement of the foundation due to flexibility of soil or rock. The additional deformations determined in the refined analysis of the structure below the plastic hinge zone need to be added to the results of the building dynamic analysis.

The subterranean floor diaphragms that connect the lateral force resisting elements (core walls and perimeter walls) must be modelled as semi-rigid in both analyses.

On large projects, a significant grade difference can occur from one side of the site to the other; this can impact the modelling assumptions and the soil loading that must be considered.

Diaphragms

The concrete diaphragms can be modelled as rigid for many levels of a tall concrete building, which simplifies the analysis of the building.

The diaphragm must be modelled as semi-rigid in the following situations:

- At any level where there is a discontinuity in the wall stiffness. The floor above and below the discontinuity may also need to be modelled as semi-rigid.
- At any level where a concrete wall terminates.
- At the subterranean levels where the diaphragms connect the core walls and the perimeter foundation walls.

Example 3 in Appendix B presents the results from Non-linear Dynamic Analysis of a building with a discontinuous shear wall.

Gravity-Load Resisting Frame

The Code requires that the SFRS be designed to resist 100% of the lateral earthquake loads. Thus, the analysis of the SFRS must be done with a model that eliminates any earthquake loads being resisted by the Gravity-Load Resisting Frame. A simple way to achieve this in the model is to provide hinges at the top and bottom of all gravity-load columns and walls, and reduce the out-of-plane bending stiffness of the slabs.

It is important to note that unless the Gravity-Load Resisting Frame is very flexible, additional analyses with different models for the Gravity-Load Resisting Frame must be done to investigate any potential detrimental influence that the Gravity-Load Resisting Frame might have on the seismic response of the building. The Code requires that if the stiffness of the Gravity-Load Resisting Frame, using a best-estimate model of the frame, decreases the fundamental lateral period of the building by more than 15%, the period of the building used to determine the minimum design forces must account for the Gravity-Load Resisting Frame. That is, the building must be designed for higher force levels.

In addition, if the Gravity-Load Resisting Frame introduces or increases the irregularity of the building, or has any other adverse effect on the SFRS, the detrimental influence of the Gravity-Load Resisting Frame must be accounted for in the design of the SFRS.

Finally, the Gravity-Load Resisting Frame must be investigated and shown to behave elastically or to have sufficient non-linear capacity to support the gravity loads while undergoing earthquake-induced deformations. The separate analysis that needs to be done to satisfy this last requirement is discussed in **Section 3.4.6 Design of Gravity-Load Resisting Frames for Seismic Deformation Demands**

P-Delta

For tall concrete buildings, it is important that second-order (P-delta) bending moments be correctly accounted for in the analysis of the building. These additional bending moments cause additional lateral displacements (drift) of the building. Computer programs for the Linear Dynamic Analysis of buildings have different options for how the P-delta is determined. Generally, the iterative procedure in which the load is computed from a specified combination, known as the P-delta combination, must be used because the Code specifies that the companion loads (0.5 live and 0.25 snow) must be considered. The iterative method considers P-delta on an element-by-element basis and local buckling is captured more effectively; however, there may be more difficulty with convergence. The alternative mass-based, non-iterative procedure in which the load is calculated from the mass at each level is an approximate procedure that may underestimate the P-delta effect due to the difference between the mass and the total gravity loads.

3.4.3.2 Seismic Demands

Site Class

An important factor that influences the seismic demands on a building is the site class. The average shear wave velocity in the top 30 m of soil or rock (V_{s30}) is a parameter that is used to determine the site class.

The Code does not clearly define the "top" from where the 30 m is to be measured, and different interpretations have been used in the past. Based on recent consensus of best practice, the 30 m should be measured from the ground surface.

Note that the LATBSDC guidelines indicate that when the total weight of the building including the subterranean floors exceeds the weight of soil removed for construction of the subterranean levels, the "top" of the 30 m may be taken half-way between the foundation level and the ground level. This approach contradicts the recommended practice mentioned above and should be used with caution.

When a site has strong soil/rock impedance contrast (i.e., shallow bedrock), the measured V_{s30} may give inaccurate measures of the site amplification or de-amplification of ground motions. In that case, a site-

specific response spectrum should be considered; see subsection **Site-Specific Response Analysis** in **Section 3.4.8.4 Seismic Hazard**.

Scaling Linear Dynamic Analysis Results

The minimum seismic design forces prescribed by the Code depend on an empirical period that is a function of the height above the base, where the base of the structure is the level at which the horizontal earthquake motions are considered to be imparted to the structure. Depending on the size and stiffness of the subterranean structure, the earthquake motions will be imparted to the structure somewhere between the foundation level and grade level. Measuring the height of the building from grade level results in a safe estimate of the minimum seismic design forces.

If the structural model of the building accounting for cracking of concrete indicates a longer fundamental lateral period of the building, as it normally does, the fundamental lateral period used to determine the minimum lateral earthquake forces can be increased by up to a factor of 2.0 times the empirical value.

The maximum fundamental lateral period that can be used to determine the minimum seismic design forces is 4.0 s (for concrete shear wall buildings). Assuming the factor of 2.0 described above is applicable, this limit is reached when the height of a building exceeds 137 m. Taller buildings will have reduced ductility demands resulting from the increased minimum lateral earthquake forces.

The Article 4.1.8.7. of the Code defines a scaling factor for displacements whenever the fundamental lateral period of the building, as determined from the structural model that includes the influence of damage due to earthquake motions, is greater than 4.0 s. The scaling factor for displacements, determined from the minimum lateral earthquake force for a fundamental lateral period of 4.0 s, will be different from the scaling factor for forces if the height of the building is less than 137 m (and the factor of 2.0 described above is applicable).

The Code states that intermediate values of design spectral acceleration (between explicitly defined points) can be determined by linear interpolation. As the ratio of spectral displacement to spectral acceleration is proportional to T^2 (where T is the fundamental lateral period of the building), the linear variation of acceleration between defined points results in parabolic variations of displacement. The large period range between defined points at 2s, 5s, and 10s results in a very distorted displacement spectrum. Thus, either the design spectral displacement values should be determined using linear interpolation between the defined points at T = 0.2, 0.5, 1, 2, 5 and 10 s (a piece-wise linear displacement spectrum used to back-calculate the acceleration spectrum), or log-log interpolation should be used for the acceleration spectrum, as suggested in NBC 2020.

The results of the Linear Dynamic Analysis must be scaled to 100% of the minimum lateral earthquake force if the building has any of the nine Code-defined irregularities. Vertical stiffness irregularity commonly occurs when concrete walls are terminated part way up the height of a building. Mass irregularity may occur, for example, due to the mass of landscaping on a podium floor level. If the building does not have any of the Code-defined irregularities, the results of the Linear Dynamic Analysis may be scaled to 80% of the minimum lateral earthquake force.

The minimum lateral earthquake force is based on a simple static model of the structure that is constrained to move only in the direction of the earthquake motion. Therefore, the dynamic analysis model that is used to determine the scaling factor must be similarly constrained, preventing translation of the building in the other direction, as well as any rotation of the building. The scale factor is determined by dividing the lateral earthquake forces obtained from the simple static model (either 100% or 80% as described above) to the constrained dynamic model of the building. Once the scale factor has been

obtained, it is applied to the forces and/or displacements obtained from a dynamic analysis of the unconstrained model. Note that the scaling factor obtained in this way will be smaller for more torsionally eccentric buildings.

When the value of the base shear determined from dynamic analysis is larger than the minimum base shear calculated using the static procedure, the base shear from the dynamic analysis must be used. This will occur when the dynamic model is stiffer than the static model (resulting in a smaller value of the fundamental lateral period) or where higher modes dominate the dynamic response. An example of the latter condition is a flexible, long-period tower on top of a large, heavy, short-period podium.

Torsion

When determining whether a building has a torsional sensitivity irregularity, any Gravity-Load Resisting Frame members, such as a wall, that influences the torsional deformations of the building must be considered in the analysis. Torsional sensitivity is common in buildings with long floor plates.

Torsional sensitivity increases the design forces in two ways:

- i. as an identified irregularity, the base shear must be scaled to 100% of the minimum lateral earthquake force; and
- ii. larger accidental torsion demands must be included in design.

Two different procedures are used to account for the effects of accidental torsional moments acting concurrently with the lateral earthquake forces. In the static procedure, larger demands result from the static effect of torsional moments due to the lateral force at each level being shifted +/- 10% of the plan dimension of the building perpendicular to the direction of seismic loading being considered. When a building is not torsionally sensitive, the dynamic procedure with a three-dimensional dynamic analysis of the building perpendicular to the direction of seismic loading being considered. When a building can be used with the centres of mass shifted by a distance equal to 5% of the plan dimension of the building perpendicular to the direction of seismic loading being considered. It is good practice to use the static procedure for determining the demands from accidental torsion whenever the first mode of the building is a torsional mode, irrespective of whether the building has a torsional sensitivity irregularity.

Podium Structures

Special consideration is needed when designing tall concrete buildings on top of podium structures that have significantly greater lateral stiffness and mass, particularly when multiple towers share a common podium structure. The challenges include:

- estimation of fundamental lateral period used to determine the minimum base shear;
- scaling the results of the dynamic analysis of the building to the minimum base shear;
- selection of the proper force reduction factors $R_d R_o$ when lower ductility shear walls (e.g., squat walls) are part of the podium structure; and,
- determining the demands on the diaphragms that interconnect the tower walls and the podium walls.

When two towers are connected by a podium structure, the following approach can be used to scale the results from Linear Dynamic Analysis:

- 1. Use a constrained dynamic model of Tower 1 and the podium structure to determine the scale factor applied to forces in Tower 1 above the podium levels.
- 2. Use a constrained dynamic model of Tower 2 and the podium structure to determine the scale factor applied to the forces in Tower 2 above the podium levels.

3. Use a dynamic model that includes Towers 1, Tower 2 and the podium structure, and the larger of the two scaling factors above, to determine the design forces in the podium levels.

Example 1 in Appendix B presents the results from the Non-linear Dynamic Analysis of two towers on a common podium.

3.4.4 DESIGN OF CONCRETE SHEAR WALL CORES

This section presents important aspects of the design of concrete shear wall cores including:

- determination of the element design forces;
- design of the coupling beams, which must be done before the design of wall piers to resist axial load and bending moment;
- the nominal flexural overstrength and probable flexural overstrength of walls;
- design of walls for shear;
- the wall ductility check; and
- a summary of detailing requirements.

3.4.4.1 Element Design Forces

The model of the building where only the SFRS resists the earthquake loads and effects (with hinges at the top and bottom of all gravity-load columns and walls, and reduced out-of-plane bending stiffness of the slabs) is used to determine the force demands on the elements of the SFRS. The results include bending moments and shear forces applied to all elements (wall piers and coupling beams) and axial loads applied to wall piers in the coupled wall direction.

The axial loads applied to the wall piers due to gravity loads must also be determined. The axial compression forces due to gravity loads reduce the net uplift in the walls piers and therefore reduce the amount of vertical reinforcement required in the wall piers to resist the earthquake loads. This suggests a lower-bound estimate of axial compression would be safe. However, axial compression due to gravity loads reduces the inelastic rotational capacity of the wall piers and therefore decreases the ductility of the wall system. Thus, a best-guess estimate (rather than lower bound or upper bound estimate) is needed for the gravity loads on the wall piers. See **Section 3.2.1.3 Estimating Load Distribution to Columns and Bearing Walls** for a discussion of the calculation of gravity loads on columns and walls using three-dimensional Linear Analysis of the floor system versus a simple floor-by-floor tributary area approach.

According to the Code, the factored loads to be considered with the earthquake loads (1.0E) is 100% of dead loads (1.0D) and, when detrimental, 50% of live loads (0.5L) and 25% of snow load (0.25S). The load combination 1.0E + 1.0D is usually critical for the design of the vertical reinforcement, while 1.0E + 1.0D + 0.5L + 0.25S is usually critical for the ductility check.

Unlike for wind design, the Code does not require consideration of two different dead load factors to be used with seismic design. When a significant allowance for dead load is required for components that may or may not be installed or constant throughout the life of the building, for example landscaping, partition walls, or floor levelling, it may be appropriate to use two estimates of the dead load for seismic design to determine the most conservative load combination.

The elements of the SFRS must also be designed to resist the lateral loads due to wind; for tall concrete buildings, this often controls the required strength of the core, particularly the coupling beams. The factored loads to be considered in load case 4 with factored wind loads (1.4W) is either 125% or 90% of dead load (1.25D or 0.9D), whichever is more critical. In addition, when additional gravity loads are

detrimental, 50% of live loads (0.5L) and 50% of snow load (0.5S) must be included (Article 4.1.3.2. of the Code). It is important to note that when a building has a GILD, the increased gravity loads due to 1.25D + 0.5L + 0.5S will often cause larger lateral force demands on the walls than those required to be considered for wind design.

3.4.4.2 Design of Coupling Beams

The design of the coupling beams needs to be completed before the wall piers can be designed because the wall piers must meet the CSA A23.3 capacity design requirement of not yielding before significant yielding has occurred in the coupling beams.

It is important to balance the opposing requirements of providing minimum overstrength while providing a simple variation of reinforcement over the height in order to simplify construction.

Good practice is to ensure that the coupling beam capacity is at least equal to the demands from wind loading (1.4W) for that storey. That is, yielding of the coupling beams and redistribution of the coupling beam forces to adjacent levels is not permitted. On the other hand, for the earthquake loading case (1.0E), a limited amount of redistribution of elastic coupling beam forces is considered acceptable. Consistent with the commentary to CSA A23.3, it is good practice to limit the maximum redistribution of coupling beam forces from earthquake to 20%.

Diagonal reinforcement is most commonly used in the design of coupling beams to resist the entire factored shear force and factored bending moments. However, when the coupling beam satisfies certain dimensional limitations and its shear stress level is sufficiently low, it is possible to design ductile coupling beams using longitudinal and transverse reinforcement, similar to a ductile beam in a moment-resisting frame.

CSA A23.3 specifies a number of dimensional limitations for diagonally reinforced coupling beams. Such limitations include that the centroid of each group of diagonal reinforcing bars must be centered in the beam, the beam must be centered on the wall pier, and the beam width must be less than or equal to the wall thickness. The amount of diagonal reinforcement and these requirements usually dictate the thickness of the wall piers in the coupled wall direction.

Anchorage of Diagonal Reinforcement

Previous editions of CSA A23.3 required that the wall piers at each end of the coupling beam must have sufficient length so that the diagonal reinforcement can be anchored into the wall with a minimum straight embedment of 1.5 times the development length of the bar.

The current edition, CSA A23.3-14, added some relaxations to these requirements such that, in lieu of providing the required straight embedment, a reduced straight embedment plus a standard hook contained within 'confinement reinforcement' is permitted. Note that 'confinement reinforcement' is a defined term in CSA A23.3 that requires significantly more transverse reinforcement than is usually provided in a concrete wall. In addition, headed and mechanically anchored bars are permitted to supplement a reduced straight embedment length so long as data is available on the seismic performance of the head or mechanical anchorage in tension and compression, and this data is used to determine the anchorage requirements.

CSA A23.3-19, which will be adopted in the next edition of the Code, has new requirements related to the design of coupling beams; the SER is strongly encouraged to consult this document and consider adopting the new, conservative provisions proactively. Of particular importance is the new requirement to explicitly design the beam-wall joint to transfer the probable shear force and probable bending moment

from the coupling beam to the wall pier. The beam-wall joint will experience internal forces similar to a beam-column joint in a moment-resisting frame.

The zone where the diagonal reinforcement intersects with the wall pier is a critical zone because the yielding portion of the diagonal reinforcement will penetrate into the wall in this region. CSA A23.3 requires that the anti-buckling hoops on the diagonal reinforcement extend into the wall at least the compression development length of the diagonal reinforcement, unless the diagonal reinforcement passes through buckling-prevention ties on vertical reinforcement. It is common practice to ensure the "zone" of vertical reinforcement with buckling-prevention ties is large enough so that hoops are not required on the diagonal reinforcement in the wall.

Confinement Reinforcement in Coupling Beams

Research in the United States has resulted in the adoption of an alternative method for constructing diagonally reinforced coupling beams in ACI 318 Building Code Requirements for Structural Concrete. In lieu of providing anti-buckling ties on the diagonal reinforcement, confinement reinforcement is provided around the perimeter of the entire coupling beam. The intent of this alternative approach is to simplify construction by allowing the diagonal reinforcement to be "threaded into place" after the wall reinforcement is in position. Special attention is needed to ensure all untied diagonal reinforcing bars are placed within the required small tolerance on the angle of the diagonal bars. A small change in angle of the diagonal reinforcement may have a significant influence on the resistance of the coupling beam.

CSA A23.3 has not adopted this alternative reinforcement arrangement for use in Canada; headers must be confined as described in CSA A23.3.

Openings in Coupling Beams

In high seismic areas such as the Lower Mainland of BC and Vancouver Island, it is good practice to restrict mechanical openings in the coupling beams. A common example of this is to limit the openings to two maximum 50 mm openings for small pipes such as sprinkler pipes, provided the openings do not interfere with the diagonal reinforcement in the header; however, the SER must use their professional judgment to determine the appropriate limitations for their project.

3.4.4.3 Design of Wall Piers for Axial Load and Bending Moment

Coupled Wall Piers

One of the important requirements for the design of core walls is the capacity design requirement that wall piers must not yield in tension due to uplift from coupling beam shear forces before significant yielding has occurred in the coupling beams. Yielding of the coupling beams is the intended energy dissipation mechanism. CSA A23.3-19 provides the most comprehensive explanation of the requirements.

The axial forces in the wall piers of coupled wall systems are the result of the coupling beam shears. The Linear Dynamic Analysis of the wall system provides an envelope of the coupling beams shears and an envelope of the axial forces in the wall piers associated with the coupling beam shears. The first mode generates an axial force in the wall pier that is equal to the sum of the coupling beam shear for that mode. Higher modes have coupling beam shear forces acting in opposite directions, which reduces the associated axial force in the wall pier.

CSA A23.3 requires that at each level, the axial force determined from the Linear Dynamic Analysis must be increased by the ratio of the 'sum of the coupling beam nominal shear resistances above that level' to the 'sum of factored shear forces in coupling beams above that level.' The sum of the coupling beam shear strengths (or flexural strengths) is used to calculate the overstrength factor; and this factor is used to increase the axial forces in the wall piers. The axial forces in the wall piers are output from the Linear Dynamic Analysis (which accounts for the higher mode effects). That is, the influence of higher modes in reducing the axial force in the wall piers is accounted for.

Cores act as a closed tube to resist torsion. The shear flow around the tube increases the shear force demands on the coupling beams. When determining the overstrength of the coupling beams, the shear force demands from accidental torsion should not be included; this decreases the magnitude of the denominator ('sum of factored forces in coupling beams') and therefore increases the overstrength of the coupling beams.

Plastic Hinge Region

Once the axial forces applied to the wall piers from the coupling beam shear forces have been adjusted based on the nominal overstrength of the coupling beams, the reinforcement required in the wall piers can be confirmed at the critical section. The critical section of the wall piers is at the base of the plastic hinge region, where the vertical reinforcement will first yield. The confirmation of the vertical reinforcement is done by comparing the axial force – bending moment interaction diagrams from plane sections analyses of the wall piers with the various combinations of axial loads due to gravity loads, and axial load and bending moment due to wind and earthquake.

CSA A23.3 states that the properties of the wall cross section that affect the bending resistance of the wall must be maintained over the height of the plastic hinge, thereby suggesting that no wall openings are permitted in the plastic hinge zone. However, the explanation in CSA A23.3-19 has been revised to suggest that this is not the case. The new explanation states that the quantity of vertical reinforcement required at the critical section must not be reduced over the height of the plastic hinge, and the bending resistance of the wall must be maintained without abrupt changes. Depending on the size and location of wall openings, additional vertical reinforcement may be provided to prevent a concentration of inelastic demands at wall openings. A large opening in the wall could significantly reduce the bending resistance over a portion of the plastic hinge height and cause a concentration of larger inelastic demands over that reduced height, which is not acceptable.

Above Plastic Hinge

The factored bending moment envelopes determined from a Linear Dynamic Analysis of the building must be adjusted to ensure that flexural yielding of the wall will not first occur above the plastic hinge region. It is important that yielding occur within the plastic hinge region as that is where the special detailing is provided to ensure a ductile inelastic response.

The factored bending moments of individual wall piers at all elevations above the plastic hinge region must be increased by an overstrength ratio calculated by dividing the 'factored bending moment resistance of the core' by the 'factored bending moment demand on the core,' both calculated at the top of the plastic hinge region. For a discussion on how to calculate the resistance of the entire core in the coupled wall direction, see Section 3.4.4.4 Factored, Nominal, and Probable Flexural Resistances of Core Walls.

The overstrength ratio at the top of the plastic hinge region includes the overstrength of the core at the base of the plastic hinge, the additional overstrength resulting from the constant vertical reinforcement

over the height of the plastic hinge region, and the reduction in factored bending moment over the height of the plastic hinge region.

Note that the axial forces in the wall piers of coupled wall systems that result from the coupling beam shears are adjusted separately from the bending moment envelopes over the height. As mentioned above, at each level, the axial force determined from the Linear Dynamic Analysis is increased by the ratio of the 'sum of the coupling beam nominal resistances above that level' to 'sum of factored forces in coupling beams above that level.'

3.4.4.4 Factored, Nominal, and Probable Flexural Resistances of Core Walls

Three different types of flexural resistances need to be calculated for the reinforced concrete core. These are summarized in Table 1 below.

Type of flexural resistance	Concrete strength	Reinforcement strength	How used (see notes below)
Factored (<i>M</i> _r)	0.65 f _c '	0.85 f _y	(1)
Nominal (<i>M_n</i>)	$1.0 f_{c}'$	$1.0 f_y$	(2)
Probable (M_p)	$1.0 f_c'$	1.25 f _y	(3)

Table 1 Types of flexural resistance

Notes:

- 1. The factored flexural resistance must be greater than the factored flexural demand.
- 2. The nominal flexural resistance is needed for:
 - a) refined estimate of effective stiffness (if needed),
 - b) evaluating ductility of cantilever shear walls (see Section 3.4.4.6 Ductility of Walls),
 - c) refined analysis of subterranean or podium structure (see Section 3.4.5 Refined Analysis of Structure below Plastic Hinge Zone), and
 - d) shear force demands for moderately ductile walls.
- 3. The probable flexural resistance of the core is needed for:
 - a) shear force demands for ductile walls (see Section 3.4.4.5 Design of Walls for Shear), and
 - b) refined analysis of subterranean or podium structure (see Section 3.4.5 Refined Analysis of Structure below Plastic Hinge Zone).

Cantilever Walls

The flexural resistances of cantilever wall piers can be calculated either for individual wall piers (i.e., complete wall pier including "web" and "flange" portions), or can be calculated for the complete core (i.e., all wall piers combined).

Coupled Walls

The factored, nominal and probable flexural resistances of highly coupled core walls (2 or more openings) is a system property that cannot be determined by looking at individual wall piers, as can be done in the cantilever direction or for a lightly coupled wall (1 opening) system. Fig. 2 summarizes the forces at the

PROFESSIONAL PRACTICE GUIDELINES STRUCTURAL ENGINEERING SERVICES FOR TALL CONCRETE BUILDING PROJECTS critical section (location of maximum bending moment) of a highly coupled core wall system with three wall piers subjected to an overturning moment acting in the clockwise direction. The system needs to be analyzed separately for each of the three types of flexural resistance: factored, nominal, and probable.



Fig. 2 – Freebody diagram to determine the flexural resistance of three coupled wall piers.

The following is a description of the component forces acting on the wall piers:

- P₁, P₂, P₃ are the axial loads in the three wall piers due to dead load (1.0D).
- V₁₂ is equal to the axial force in wall pier 1 from Linear Dynamic Analysis times the ratio of 'the sum of pier 1 pier 2 coupling beam (factored, nominal or probable) shear resistances over full height' to 'the sum of factored shear forces in coupling beams without accidental torsion.'
- T_1 is the tension force required in wall pier 1 for equilibrium of vertical forces on wall pier 1. T_1 may be limited by the (factored, nominal or probable) strength of the vertical reinforcement in pier 1, and in that case, the value of V_{12} must be reduced accordingly. Otherwise, T_1 is defined by the capacity of the coupling beams, not by yielding of vertical reinforcement.
- *V*₂₃, at the compression end of the coupled wall, is equal to the axial force in wall pier 3 from Linear Dynamic Analysis times the ratio of 'the sum of pier 2 pier 3 coupling beam (factored, nominal or probable) shear resistances over full height' to 'the sum of factored shear forces in coupling beams without accidental torsion.'
- C2 and C3 are defined by the capacity of the coupling beams and are determined from equilibrium of vertical forces in the individual wall piers.
- *M*₁, *M*₂, and *M*₃ are determined by doing three separate sectional analyses (to determine the maximum) of the individual wall piers subjected to the net axial forces *T*₁, *C*₂, and *C*₃. As the three wall piers are interconnected by rigid floor slabs, they must have compatible curvatures. That is, *M*₁, *M*₂, and *M*₃ must be occurring at the same curvature value. The overturning resistance of the core in the coupled-wall direction is primarily due to the axial forces in the two exterior wall piers (*T*₁ and *C*₃). The flexural resistance of the individual wall piers (*M*₁, *M*₂, and *M*₃) generally provide a small contribution towards the flexural resistance of the entire core.

3.4.4.5 Design of Walls for Shear

One of the most critical aspects of the seismic design of a concrete shear wall building is the shear design. This includes making a safe estimate of the shear force demands over the height of the building

and calculating the shear resistance of the wall, accounting for the deformation demands in the plastic hinge region.

Shear Force Demands

CSA A23.3 requires that the factored shear force demand determined from a Linear Dynamic Analysis of the building must be increased to account for flexural overstrength of the wall, and further increased to account for inelastic effects of higher modes.

To account for flexural overstrength, the factored shear force envelope over the height of the building is increased by the ratio of 'the (probable or nominal) bending moment capacity' to 'the factored bending moment demand', both calculated at the base of the plastic hinge region. The probable flexural overstrength is used for ductile ($R_d \ge 3.5$) wall systems, while nominal flexural overstrength is used for moderately ductile ($R_d \le 2.5$) wall systems.

To account for inelastic effects of higher modes, the factored shear force envelope over the height of the building must be further increased by the higher mode shear amplification factor since the force modification factors ($R_d R_o$) used to determine the design bending moment (accounting for flexural ductility) are also used to determine the design shear force. Flexural yielding at the base of a wall limits the first mode shear forces but does not limit the higher mode shear forces. The higher mode shear amplification factor is a correction to the force modification factors for shear force to account for the additional shear forces (from higher modes) that are transmitted through the plastic hinge at the base.

The parameter that influences the higher mode amplification factor is the net force reduction factor $(R_d R_o / \gamma_{ws})$, where γ_{ws} is the wall overstrength factor for shear equal to the ratio of 'nominal flexural resistance of the wall system' to 'factored bending moment on the wall system'. Any flexural overstrength of the wall reduces the amplification that is required to account for higher mode shear forces. When calculating γ_{ws} , the factored bending moment may be calculated using the design base shear prior to scaling to the minimum lateral earthquake force. That is, the overstrength due to scaling the base shear may be accounted for in the net force reduction factor.

CSA A23.3 limits the amplification factor for inelastic effects of higher modes to a maximum value of 1.5 even though Non-linear Response History Analysis indicates the amplification can be considerably larger. The reasons for this are (Adebar, 2018):

- i. the maximum shear force occurs only once during an earthquake and lasts for a very short time;
- ii. well detailed concrete walls have shear ductility; and
- iii. the maximum shear force generally does not occur when the base rotation is maximum, while the CSA A23.3 shear design procedures for concrete walls assumes that it does.

The amplification factor for higher mode shear forces does not apply to coupled and partially coupled walls.

Example 5 in Appendix B compares the results of Non-linear Dynamic Analysis with the shear force demands according to CSA A23.3.

Shear Resistance – Plastic Hinge Region

CSA A23.3 expresses the shear resistance of a reinforced concrete member as the sum of the steel contribution (V_s) and the concrete contribution(V_c), which is related to the shear that can be transmitted across the critical diagonal cracks. To avoid diagonal crushing of concrete, CSA A23.3 limits the shear

strength to $V_{r,max}$. Shear design is often the critical aspect of the seismic design of tall concrete shear walls; as such, $V_{r,max}$ is usually the most critical aspect of shear design.

Figure 3 shows the plastic hinge region of a concrete shear wall subjected to lateral load acting to the right. A simple strut-and-tie model describes how the forces resisted by the horizontal reinforcement (i.e., the steel contribution, V_s) are assumed to flow in the plastic hinge region of the wall. Within the shaded triangular area (the "fan" region) above the critical flexural crack at the base, the diagonal compression struts concentrate the shear force in the flexural compression zone. The critical section for the design of the vertical reinforcement in the wall is the flexural crack at the base.

The critical section for the design of the horizontal reinforcement is the inclined surface along the top of the "fan" region, which is inclined at an angle (θ) to the vertical axis. The resistance of the horizontal reinforcement that crosses this inclined surface is equal to the steel contribution (V_s). In the plastic hinge region of a shear wall, the angle (θ) depends on the magnitude of axial compression applied to the wall.

The concrete contribution (V_c) that can be added to the steel contribution (V_s) depends on the width of the diagonal cracks in the plastic hinge region. The level of damage in the plastic hinge region, including the width of the diagonal crack, is related to the inelastic rotational demands. The maximum shear resistance ($V_{r,max}$) to avoid diagonal crushing of concrete is also related to the inelastic rotational demands in the plastic hinge region. The calculation inelastic rotational demand is discussed in **Section 3.4.4.6 Ductility of Walls**.



Fig. 3 – Strut-and-tie model describing the force flow associated with the shear resisted by horizontal reinforcement V_s at the base of a shear wall (from Adebar, 2018).

Wall Openings in Plastic Hinge Region

Fig. 3 depicts how the diagonal compression stresses flow towards the flexural compression zone on the right-hand side of the cantilever shear wall. If an opening in the wall was placed in the "path" of these diagonal compression struts, a shear failure could result before the flexural capacity of the wall is reached. Naturally, the critical zone occurs on the opposite side of the wall when the lateral force reverses direction (i.e., the shear force is towards the left).

In many buildings, the 'critical section for vertical reinforcement' (also referred to as the 'base of the plastic hinge') shown in Fig. 3 occurs at grade level.

It is often architecturally desirable and common in many buildings for an additional opening to be added to the core at the main level for the below-grade parking stairs, which needs to be a separate fire compartment from the tower scissor stairs. However, the addition of an opening at the base of the plastic hinge is structurally undesirable because it will interrupt the critical diagonal compression struts that resist the shear force. The SER should consider suggesting alternative layouts to the Architect that meet the architectural requirements without compromising or complicating the structure. Two possible alternatives are:

- i. to have the parking stair within the core stop below grade (i.e., below the critical section) and have a separate stair outside the core leading up to the exit at grade; and
- ii. to have the scissor stairs that goes down from the tower above stop at level 2 and have the exit corridor and stair to grade continue outside of the core.

If the Architect and SER opt for an opening in the cantilever wall at the critical section near the base of the wall, where first yielding of the vertical reinforcement in a wall is expected to occur, the SER must pay particular attention to the shear design, which is critical and typically governs the design in this region.

Similar to what was discussed in **Section 3.4.4.3 Design of Wall Piers for Axial Load and Bending Moment** regarding the effect of wall openings on the flexural resistance of wall piers, CSA A23.3 states that the properties of the wall cross section that affect the shear resistance of the wall must be maintained over the height of the plastic hinge region, suggesting that a wall opening that affects the shear resistance is not permitted. CSA A23.3-19 has revised and clarified this requirement such that the shear resistance must be maintained over the height of the plastic hinge region, and the effect of wall openings must be accounted for.

Strut-and-tie models may be used to confirm that the diagonal compression due to shear forces in a wall can be transmitted around small openings and may be used to determine the additional reinforcement required around an opening.

3.4.4.6 Ductility of Walls

The ductility provisions in CSA A23.3 ensure that the concrete shear walls will not suffer severe damage due to crushing of concrete in compression or fracture of reinforcement in tension during the design level ground shaking.

CSA A23.3 requires the calculation of inelastic rotational demands to be compared with inelastic rotational capacities. The inelastic rotational demands are determined from the top wall displacements, which are determined from the Linear Dynamic Analysis of the building using the effective stiffness values given in CSA A23.3. The effective stiffness is a function of the wall (nominal) overstrength, which is not known until the design of the reinforcement is completed. Thus, the evaluation of ductility is usually done using an initial estimate of top wall displacement based on the minimum overstrength, which results in a lower-bound estimate of effective stiffness and upper-bound estimate of wall displacement. If the ductility requirements are not satisfied (i.e., the inelastic rotational demand exceeds inelastic rotational capacity), refined estimates of effective stiffness should be determined after the reinforcement design is completed in order to make reduced estimates of inelastic rotational demands.

The inelastic rotational demands and capacities need to be evaluated in the plastic hinge region near the base of the core, separately in the cantilever-wall and coupled-wall directions, to limit damage in the wall piers. Additionally, the inelastic rotational demands and capacities of the coupling beams need to be evaluated to limit damage in the coupling beams.

The CSA A23.3 limit of 0.04 for the inelastic rotational demands on diagonally reinforced coupling beams is often the governing ductility requirement. If the requirements are not satisfied, a refined estimate of building displacement should be made in order to reduce the calculated rotational demands. If that is not sufficient, the building design must be modified. The building displacements (and hence the coupling beam rotational demands) can be reduced by increasing the strength of the coupled wall system and/or changing the core geometry. **Section 3.4.4.4 Factored, Nominal, and Probable Flexural Resistances of Core Walls** describes how the quantity of vertical reinforcement in the wall piers influences the nominal overstrength of a coupled wall system. Increasing the length of the coupling beams in order to reduce the coupling beam rotation for a given building displacement may not be effective because the increased coupling beam lengths may result in larger building displacements.

Traditionally, confinement reinforcement (as defined in CSA A23.3) has not been provided in concrete wall piers in BC, and thus the concrete compression strains must be limited to 0.0035. The neutral axis depth (*c*) that is used to determine the inelastic rotational capacity of the wall pier from the maximum compression strain is calculated using the factored compression strength of concrete ($\phi_c f_c'$). This low level of compression stress compensates for not accounting for the variation of compression stress (and

compression strain) across the "flange" of a concrete wall pier due to shear lag effect in the calculation of the neutral axis depth (c).

In addition to ensuring a concrete wall has adequate ductility at all the expected plastic hinge locations, CSA A23.3 requires a check on the compression strain depth to ensure the wall has adequate ductility to tolerate limited yielding of vertical reinforcement due to higher mode bending moments at any point over the height of the wall.

3.4.4.7 Seismic Detailing Requirements

CSA A23.3 specifies a number of detailing requirements that are intended to ensure concrete walls will maintain their strength and displacement capacity while subjected to reverse cyclic demands during an earthquake. Most of these requirements relate to the amount and arrangement of reinforcement; however, there is also a requirement for the minimum wall thickness to prevent buckling failures of wall piers.

The following is a summary of some important detailing requirements in CSA A23.3:

- Wall thickness: The minimum wall thickness is specified as a ratio of the unsupported length of the wall. Usually, this is the unsupported vertical height of wall between floor slabs which provide horizontal support to the wall. If the core is located at the perimeter of the building, it is possible to have a wall between the elevator shaft and the outside of the building that is not supported by any floor slabs. In that case, the unsupported length of the wall is taken as the maximum unsupported horizontal length of wall between two or more lateral supports. A larger minimum wall thickness is required in the plastic hinge region of the wall.
- Reinforcement splices: CSA A23.3 specifies increased lap splice lengths, limitations on the use of mechanical splices, and prohibits reinforcing bars being offset bent. For ductile wall systems (Rd ≥ 3.5), not more than 50% of the reinforcement at each end of the walls in plastic hinge regions can be spliced at the same storey level, and at least one-half of the storey height must be completely clear of lap splices in the concentrated reinforcement.
- Distributed reinforcement: The minimum percentage of distributed vertical and horizontal reinforcement over the full height of the wall is increased, and the maximum spacing of the horizontal distributed reinforcement in the plastic hinge region is reduced.
- Anchorage of horizontal reinforcement: There are special requirements for the anchorage of horizontal reinforcement at the ends of the wall over the full height of the wall, and there are additional requirements in the plastic hinge region.
- Tied concentrated reinforcement: Specially tied concentrated vertical reinforcement must be provided at the ends of all walls over the full height of the walls. The closed ties around the perimeter of the concentrated reinforcement and any crossties must have special seismic hooks that are anchored into the "confined core" within the vertical reinforcement.
- Tie spacing: There are two different maximum spacings of the ties on the concentrated reinforcement.
 - The wider spacing is the standard spacing of ties on (non-seismic) compression members, usually limited to 16 times the diameter of the smallest vertical bar or the least dimension of the member. This spacing is used outside the plastic hinge region, at the wall ends not connected to coupling beams.
 - Over the height of the plastic hinge region, and over the full height of ductile (R_d = 4.0) walls that are connected to coupling beams, the spacing of the ties must be reduced to prevent buckling of the vertical reinforcement under reverse cyclic loading. The ties spacings are usually limited to

the smaller of 6 times the diameter of the smallest vertical bar or one-half of the least dimension of the member.

- Additional vertical reinforcement below the plastic hinge region: Additional vertical reinforcement must be added below the plastic hinge region in the seismic force resisting walls. The portion of wall immediately below the critical section at the base must contain a minimum of 20% additional vertical reinforcement than the wall immediately above the critical section.
- Gravity-load resisting members: CSA A23.3 requires that the more closely spaced ties for concentrated reinforcement that prevent vertical bar buckling also be provided in gravity-load columns over the height that the SFRS is required to be detailed for plastic hinging to occur (i.e., the plastic hinge region). All gravity-load walls must also have tied concentrated vertical reinforcement at each end of the wall and at the ends and intersections of all wall "flanges" over the plastic hinge region. The wider spacing of the ties may be used in the gravity-load walls.

3.4.4.8 Transfer of Horizontal Wall Forces Across Construction Joints

Sliding shear failures during earthquakes have been observed when construction joints are not properly cleaned and roughened. To prevent a sliding shear failure, the interface shear resistance of the construction joint must be equal to or greater than the seismic shear force applied to the wall pier.

CSA A23.3-14 provides general procedures for determining the interface shear resistance that can be applied to construction joints, but provides limited guidance on how the procedures are applied to construction joints in walls. The limited guidance provided in CSA A23.3-14 Clause 14.1.6 was removed in CSA A23.3-19 because of concern that it may not always be appropriate. The Commentary to Clause 21.5.9.1 in the 2015 Canadian Concrete Design Handbook provides additional information on how to calculate the interface shear resistance of construction joints.

3.4.5 REFINED ANALYSIS OF STRUCTURE BELOW PLASTIC HINGE ZONE

When the concrete (tower) shear walls are connected by multiple floor diaphragms to other walls, such as perimeter foundation walls or podium walls, the plastic hinge in the tower walls usually happens above this level. In this case, the system which resists the overturning moment and shear forces below the plastic hinge is indeterminate. The overturning moment can be transferred directly to the foundation below the tower walls, or can be transferred to the foundation walls or podium walls by force couples in two or more floor diaphragms. This second load path is sometimes referred to as the backstay effect.

When a significant portion of the overturning moment is transferred by force couples in the diaphragms, the bending moment gradient (which is equal to the shear force) in the tower walls will reverse below the flexural hinge. This may create large reverse shear forces in the tower walls that are often significantly larger than the base shear force.

To design a safe structure, the Code requires that an assessment be made to determine what portion of the forces in the tower walls may be resisted by each load path. As the assumed stiffness properties of the elements in each load path will significantly influence the forces, and these properties are difficult to determine accurately, the Code requires that the analysis consider a range of possible stiffness properties. To make sure that the design provides adequate strength in the structural elements of each load path, multiple analyses with upper bound or lower bound stiffness properties of the elements must be done to determine the maximum forces in each load path.

In typical US practice, this type of analysis is done as part of the response history analysis of the entire building. CSA A23.3 permits a simplified static analysis of only the structure below the plastic hinge.

Multiple static analyses (with different load cases based on the capacity of the plastic hinge in the tower walls) are used in lieu of a dynamic analysis (with varying forces) to determine the envelope of design forces.

Four different analysis cases with different loading and different member stiffnesses must be done to determine the following information for each case:

- i. maximum bending moments in tower walls below the plastic hinge, and design forces for foundation supporting the tower walls;
- ii. (a) forces in the diaphragms, other walls, and the associated connections;
- ii. (b) maximum (reverse) shear force in tower walls; and
- iii. interstorey drift ratio of tower walls at top of the subterranean or podium structure.

Case (i) provides the design forces from the overturning moment being transferred directly to the foundation below the tower walls. Thus, an upper bound estimate is used for the flexural rigidity of the tower walls and the stiffness of the soil or rock below the foundation, and lower bound estimates of stiffness are used for the other actions and members (shear rigidity of tower walls, stiffness of diaphragms, and stiffness of other walls). The forces applied to the structure below the plastic hinge for Case (i) is the nominal bending moment capacity of tower walls and the associated shear force.

Cases (ii-a) and (ii-b) provide the design forces from the second load path – overturning moment transferred to the foundation walls or podium walls by force couples in two or more floor diaphragms. A lower bound estimate is used for the flexural rigidity of the tower walls, the flexibility of the soil or rock below the foundation must be accounted for (as required by the Code), and upper bound estimates of stiffness are used for the other actions and members. The forces applied to the structure below the plastic hinge for Case (ii – a) is the probable bending moment capacity of tower walls and the associated shear force, while for Case (ii – b) it is also the probable bending moment capacity of tower walls but with a zero-shear force. The case of zero-shear is needed to get the maximum estimate of reverse shear force in the tower walls accounting for higher mode shears using a static analysis.

Case (iii) provides the additional deformations of the base accounting for foundation movement and cracking of concrete in the subterranean structure. The interstorey drift ratio of the tower walls at the top of the subterranean or podium structure must be added to the deformations determined in the global model using a simplified model of the subterranean structure as discussed in **Section 3.4.3.1 Modelling Requirements**. Best estimates can be used for all member stiffnesses.

While it is known whether an upper bound or lower bound stiffness is safe for each member, the range of possible stiffness values is often too large not to refine the estimate of stiffness based on the level of load determined in the analysis. For example, the effective flexural rigidity and effective shear rigidity of the concrete diaphragms range from 100% of the uncracked rigidities at low load levels to as low as 5% of the uncracked section rigidities at the onset of reinforcement yielding (Adebar and Mahmoodi, 2020a). Given the large impact the assumed stiffness can have on the design forces, the SER should consider conducting additional static analyses with refined estimates of upper bound or lower bound stiffness to reduce the design forces.

Additional information on how to conduct the static analyses is given in the Commentary to CSA A23.3-14 Clause 21.5.2.2.9, and an example is given in Chapter 11 of the 2015 Canadian Concrete Design Handbook.

3.4.6 DESIGN OF GRAVITY-LOAD RESISTING FRAMES FOR SEISMIC DEFORMATION DEMANDS

3.4.6.1 Overview of Requirements

Perhaps the most significant change to the Code in the recent edition is the additional requirements for the seismic design of the Gravity-Load Resisting Frames. While these members are not part of the SFRS, they are connected to the SFRS by the floor slabs and thus will be subjected to the same seismically induced deformations. Observations from past earthquakes have shown that the collapse of concrete buildings is often triggered by failure of columns or walls in the Gravity-Load Resisting Frame.

Gravity-Load Resisting Frame members either must be flexible enough to tolerate the displacements while remaining elastic (undamaged), or must be detailed to be sufficiently ductile to tolerate inelastic displacements while continuing to support the gravity loads.

The requirements to prevent collapse of the Gravity-Load Resisting Frames (CSA A23.3 Clause 21.11) do not have to be applied when the seismic displacements are expected to be small. This is the case for any building in regions of low seismicity and for stiff low-rise buildings in all regions. However, the provisions are particularly important for tall concrete buildings in the Lower Mainland of BC and on Vancouver Island as large displacements are expected in these buildings.

As the concrete shear walls in a tall concrete building deform during an earthquake, they will induce force and displacement demands into the surrounding Gravity-Load Resisting Frame in a number of different ways. The most general approach to determining the demands on the Gravity-Load Resisting Frame is response history analysis using a nonlinear model of the complete building; however, this is rarely done. A more practical approach is to use a nonlinear model of the SFRS and a linear model with appropriate effective stiffness properties for the Gravity-Load Resisting Frame. As Non-linear Dynamic Analysis is rarely used for the design of tall concrete buildings in BC, further simplified procedures are provided in the Code to estimate the demands on the Gravity-Load Resisting Frame due to the nonlinear response of the SFRS.

Linear Dynamic Analysis of a tall concrete shear wall building using the effective stiffness properties of the wall (CSA A23.3 Clause 21.2.5.2) can be used to make a good estimate of the maximum displacement at the top of the wall accounting for non-linear response of the concrete walls. While applying the average reduced flexural rigidity ($E_c I_e$) of the shear walls over the full height of the shear walls gives a good estimate of the top wall displacement, it does not give a good estimate of distribution of deformations over the height of the building. Yielding in the plastic hinge region near the base of the building causes a concentration of the bending deformation at that level, which is not accounted for in Linear Dynamic Analysis.

CSA A23.3 Clause 21.11 includes a number of simplified solutions for converting the estimate of top wall displacement to the deformation demands on the Gravity-Load Resisting Frame members at various elevations. These solutions can be used to determine critical deformation demands on the Gravity-Load Resisting Frame without the need to do a complete analysis of the Gravity-Load Resisting Frame. The critical deformation demands include:

- i. bending demands on gravity-load resisting columns and walls in the critical plastic hinge region near the base of the structure;
- ii. deformation demands on slab-column connections (degrading punching shear resistance) over the full height of the building;
- iii. bending demands on gravity-load resisting columns and walls at critical levels; and

iv. increased axial load demands on gravity-load resisting columns and bearing walls at critical levels.

3.4.6.2 Thin Concrete Bearing Walls

Thin concrete walls can be a cost-effective structural component, for example, as partition walls in a lowrise building where the axial load on the wall is low and the building does not experience significant interstorey drift.

Thin concrete walls were commonly used as both gravity-load resisting elements (bearing walls) and lateral load resisting elements (shear walls) in tall concrete building in BC prior to the mid-1980s (Adebar, DeVall and Mutrie, 2017). It is now well known that special attention is needed whenever a thin concrete wall, or any gravity-load resisting wall, is included in a tall concrete building (Adebar, 2013). The axial load must be kept low as heavily loaded thin concrete walls can very suddenly lose all axial load carrying capacity. When concrete walls are used as lightly loaded partition walls in the lower levels of a tall concrete building, they can inadvertently attract significant seismic shear forces and/or add significant torsional eccentricity to the building.

To mitigate the effects and concerns related to thin concrete walls, a number of significant changes were made to CSA A23.3. The following are some of the notable changes:

- the maximum factored axial load resistance $P_{r,max}$ of walls with a thickness less than 300 mm has been reduced by up to 45% over previous editions of the standard;
- thin bearing walls with a single layer of reinforcement cannot be used to resist any gravity loads in a building where the interstorey drift ratio (including the influence of accidental torsion) exceeds 0.005 (0.5%) at any point in the building;
- when assessing the influence of bending moments induced into gravity-load resisting walls due to seismic deformations, a very low calculated bending moment is permitted in thin walls;
- strong axis bending of bearing walls due to lateral deformation of the building due to wind or earthquake must be accounted for, and;
- slenderness effects must be account for in the compression zone of walls subjected to strong axis bending.

3.4.6.3 Design Gravity-Load Columns and Walls in the Plastic Hinge Region

While the interstorey drift ratios are generally smallest near the base of a shear wall building, the rate of change of interstorey drift ratios is maximum in this zone due to the concentrated flexural deformations in the plastic hinges in the concrete shear walls. The rate of change of interstorey drifts ratios (rate of slope change per unit height) is equal to the curvature.

The gravity columns and walls are tied to the shear walls by multiple floor slabs that have very high inplane stiffness. The floor slabs force the gravity-load columns and walls to have the same deflected shape and hence the same curvature distribution as the shear walls. Thus, the maximum curvature demands on the gravity-load columns and walls over the height of the plastic hinge region of the building can be determined without the need for an analysis model of the Gravity-Load Resisting Frame.

As discussed in **Section 3.4.4.6 Ductility of Walls**, CSA A23.3 requires the calculation of inelastic rotational demands on the concrete shear walls. This information can be used to determine the maximum curvature demands on the gravity-load resisting columns and walls.

Over the storeys that the SFRS is required to be detailed for plastic hinging to occur, CSA A23.3 requires that all columns and walls must have a curvature capacity greater than the curvature demand on the concrete shear walls in that direction. Specifically, as discussed in **Section 3.4.4.7 Seismic Detailing Requirements**, CSA A23.3 requires that tied concentrated reinforcement be provided at the ends of gravity-load resisting walls and anti-buckling ties be provided in all gravity-load resisting columns in this region.

Above the plastic hinge region, the gravity-load resisting columns and walls are subjected to bending demands because of a different phenomenon than happens in the plastic hinge region. This is discussed further in **Section 3.4.6.6 Bending Demands on Gravity-Load Columns and Walls.**

3.4.6.4 Distribution of Seismic Demands Over Building Height

CSA A23.3 provides a simplified solution for the distribution of seismic demands over the building height that can be used in lieu of conducting an analysis of the Gravity-Load Resisting Frame.

As described above, Linear Dynamic Analysis with the effective stiffness properties of the wall defined in CSA A23.3 Clause 21.2.5.2 is used to determine the maximum displacement at the top of the walls accounting for non-linear response of the concrete walls. The influence of inherent and accidental torsion must be included in the analysis. The additional interstorey drift ratio calculated at the top of the subterranean or podium level accounting for foundation movement and cracking of concrete in the subterranean structure as discussed in Case (iii) of **Section 3.4.5 Refined Analysis of Structure Below Plastic Hinge Zone** must be added.

The envelope of top wall displacements is used to calculate the maximum top displacement of each Gravity-Load Resisting Frame. A Gravity-Load Resisting Frame may consist of a single column or bearing wall connected to a shear wall by slabs (or beams), or may consist of many interconnected columns and/or walls. There are typically several different Gravity-Load Resisting Frames in each direction of a building, and all Gravity-Load Resisting Frames must be investigated in each direction of loading. Twisting of a building due to inherent and accidental torsion causes parallel Gravity-Load Resisting Frames in one direction of a building to have different maximum top displacements.

CSA A23.3 defines the envelope of interstorey drift ratios that relates the top displacement of the Gravity-Load Resisting Frames to the deformation profile over the height of the building accounting for the nonlinearity of the concrete shear walls. Fig. 21.1 in CSA A23.3-14 provides the envelope to be used in the cantilever wall direction of shear wall buildings, while the envelope in the coupled wall direction is given in Fig. N21.11.2.2 (a) of the Commentary to CSA A23.3-14, or Fig. 21.1 in CSA A23.3-19.

The envelope of interstorey drift ratios, called "building interstorey drift ratios," are equal to 'the difference in lateral displacement of the building per storey' divided by 'the storey height.' How the building drifts influence the demands on the members of the Gravity-Load Resisting Frame depends on the relative bending stiffness of the floors and the columns/walls.

When assessing the influence of seismic displacement demands on the punching shear resistance of flatplate slabs, the flexibility of the columns can be ignored (column drift is assumed to be zero) for simplicity. The check for punching shear failure is discussed further below.

When assessing the influence of seismic displacement demands on the gravity-load columns and bearing walls, the building interstory drift ratio must first be converted to the column drift ratio (δ_{col}) which is dependent on the relative stiffness of the frame members. The conversion can be done using a simple structural analysis model for one level (or a few levels) of the Gravity-Load Resisting Frame, or can be estimated using the interaction diagram presented in Fig. N21.11.2.2 (b) in the Commentary to CSA

A23.3. The interaction diagram summarizes the analysis results from a range of different Gravity-Load Resisting Frames (Adebar, DeVall and Mutrie, 2014).

Effective Stiffness of Gravity-Load Resisting Frame Members

Except for a few critical members, CSA A23.3 does not specify the effective stiffness to be used for the Gravity-Load Resisting Frame members. The SER must use their professional judgement when conducting the analysis of the Gravity-Load Resisting Frame.

CSA A23.3 defines lower-bound estimates of effective stiffness for the SFRS to make a safe estimate of the design displacement; but upper-bound estimates of effective stiffness must be used for the Gravity-Load Resisting Frame members to make safe estimates of the forces induced in these members by the inelastic displacement profile of the SFRS.

Because of concerns with walls, particularly thin walls, the uncracked section flexural rigidity ($E_c I_e = 1.0E_c I_g$) must be used for both the strong-axis and weak-axis bending of these members, unless they contain compression ties over the full length (CSA A23.3 Clause 21.11.3.3.3).

It is recommended that the SER use a bending moment – curvature analysis (sometimes-called fibre model analysis) of the Gravity-Load Resisting Frame members to determine an appropriate effective stiffness.

3.4.6.5 Slab-Column Connections

CSA A23.3 specifies the reduction in punching shear resistance of concrete slabs due to the building interstorey drift ratio. The punching shear resistance reduces at interstorey drift ratios larger than 0.005 (0.5%). The load combination used to calculate the punching shear stress for the earthquake load combination is 1.0D + 0.5L, while the punching shear resistance without a reduction due to interstorey drifts from earthquake must be sufficient to resist the gravity load combination, 1.25D + 1.5L. Thus, the reduction in punching shear resistance typically does not require shear reinforcement be added in the slab until interstorey drift ratios of about 0.01 (1.0%). See **Section 3.4.2.3 Gravity-Load Resisting Frame** for further discussion.

The envelope of building interstorey drift ratios defined by CSA A23.3, including the effect of inherent and accidental torsion and the additional interstorey drift ratios calculated at the top of the subterranean or podium level accounting for foundation movement and cracking of concrete in the subterranean structure, must be used to evaluate the punching shear resistance of slab-column connections in each Gravity-Load Resisting Frame.

3.4.6.6 Bending Demands on Gravity-Load Columns and Walls

Shear walls apply bending demands to the gravity-load resisting columns and walls through the connecting floors in two different ways. First, due to the very high in-plane rigidity of the closely spaced floor slabs, the gravity-load columns and walls are forced to have the same deflected shape as the shear walls. Throughout most of the height of the building, the curvature demands in the shear walls are low compared to the curvature capacity of the gravity-load columns and walls. This is not the case, however, in the plastic hinge region of the shear walls. As discussed in **Section 3.4.6.3 Design of Gravity-Load Columns and Walls in the Plastic Hinge Region**, the curvature demands in the shear walls cause large bending demands on the gravity-load columns and walls in the plastic hinge region.

The second way that shear walls impose bending demands on the gravity-load resisting columns and walls is through frame action resulting from building drift, which is larger in the upper parts of the building.

As described above, when assessing the bending demands on gravity-load columns and bearing walls from frame action, the building interstorey drift ratio must first be converted to column drift ratio (δ_{col}) using either a simple structural analysis model for one level (or a few levels) of the Gravity-Load Resisting Frame, or the interaction diagram presented in the Commentary to CSA A23.3.

When the Gravity-Load Resisting Frame consists of relatively long-span flat-plate slabs, the column drifts tend to be a small portion of the building drifts. That is, very little bending is induced into the columns or walls. On the other hand, when a deep transfer girder or transfer slab connects to a gravity-load column or bearing wall, very large column bending can be induced into the member.

For most buildings, it is not necessary to determine the bending moment induced into every gravity-load resisting column and bearing wall at every level; but rather to spot check a few cases where the induced bending moments are expected to be larger. Any member supporting a thicker floor member, e.g., transfer, or shorter span floor member should be checked. For a uniform building with uniform slab thicknesses, uniform slab spans and uniform column dimensions over the building height, the maximum bending moment induced in the column will be at the top floor (roof) level because there is only one column framing into the slab at that level, making the relative floor-to-column stiffness twice as large as on any other floor level.

The column lateral displacement per storey height (drift ratio, δ_{col}) can be converted to an induced bending moment in the column or wall using the relationship:

$$M = \frac{6 E_c I_e}{h_s} \cdot \delta_{col}$$

where $E_c I_e$ is the flexural rigidity of the column or wall in the direction of bending and h_s is the storey height.

CSA A23.3 limits the maximum calculated induced bending moment based on whether the member is a column or wall, the level of axial compression applied to the member, and the reinforcement arrangement.

If the calculated induced bending moment is larger than the CSA A23.3 limit, the design of the Gravity-Load Resisting Frame must be modified. The simplest solution is often to increase the ductile detailing in the column or wall to permit higher levels of damage in the member. However, if the bending moment induced in the column or wall is too large, the geometry of the Gravity-Load Resisting Frame members must be modified to reduce the induced bending moment. An example is given in **Section 3.4.6.7 Increased Axial Compression in Gravity-Load Columns** for how the design of very deep transfer girders can be modified to reduce the induced bending moment.

3.4.6.7 Increased Axial Compression in Gravity-Load Columns

In addition to the bending moments induced in the gravity-load columns and walls, the lateral building displacements due to earthquake motions will also cause horizontal members such as slabs or beams to induce additional vertical load into supporting columns and walls. This phenomenon is sometimes referred to as the 'outrigger effect.'

For typical buildings with relatively long-span flat-plate slabs, the additional vertical forces due to earthquake displacements typically do not result in a governing load combination for the column or wall design, as the load combination 1.0E + 1.0D + 0.5L results in a lower factored design force than the load combinations 1.25D + 1.5L + 1.0S or 1.4D.

If the slab has a short span over many stories because the gravity-load columns or walls are located close to the core, or are located close together, significant axial forces may accumulate over the height of the building due to the outrigger effect. In that case, an analysis must be done to determine the magnitude of the axial force by summing the contribution from all levels above the level of interest. Minimum recommended clear spans when outrigger effects are not explicitly modelled is 6 m for column-to-column (LATBSDC guidelines).

For most buildings and similar bending moments, it is sufficient to spot check a few cases where the induced vertical forces in the supporting members are expected to be larger. Any member supporting a thicker member, e.g., transfer or shorter span floor member should be checked. The shear force in the horizontal member (slab or transfer girder) can be determined from a simple structural analysis model for one level (or a few levels) of the Gravity-Load Resisting Frame, using the CSA A23.3 defined building interstorey drift ratio for that level.

The additional vertical force due to seismic deformations does not need to be taken greater than the maximum shear force that can develop due to the nominal flexural resistance of the attached horizontal members. That is, flexural yielding of the horizontal member limits the maximum shear force in that member.

If the calculated induced vertical load in the supporting column or wall is too large, the design of the Gravity-Load Resisting Frame must be modified either by reducing the bending stiffness or bending strength of the horizontal member. An example of how the SER of the Living Shangri-La building achieved this is outlined below.

The 201 m high Living Shangri-La building, which is currently the tallest building in BC, has gravity-load columns that start at the top of the building and are transferred near grade level on 3.6 m deep transfer girders that are supported at one end by the core and the other end by columns. The very deep transfer girders naturally would act as outriggers when the core bends laterally and would overload the gravity-load columns supporting the other end of the transfer girders. To mitigate against this, the 3.6 m deep transfer girders were cast monolithically with the core walls over only the lower 0.9 m of depth and a gap was left over the remaining 2.5 m height of the transfer girders. That is, the transfer girders were designed with a pin support to the core walls (Adebar, DeVall and Mutrie, 2017).

3.4.6.8 Complete Analysis of Gravity-Load Resisting Frame

As described above, two of the four critical demands on Gravity-Load Resisting Frames described in **Section 3.4.6.1 Overview of Requirements** can be determined without an analysis of the Gravity-Load Resisting Frame. These are the critical bending demands on gravity-load resisting columns and walls in the plastic hinge region near the base of the structure and the deformation demands on slab-column connections over the full height of the building.

The bending demands and increased axial load demands on gravity-load resisting columns and walls at arbitrary levels can be determined from the envelope of building interstorey drift ratios using a simple structural analysis model for one level (or a few levels), or using the interaction diagram presented in the Commentary to CSA A23.3. The main challenge is selecting the appropriate model and effective stiffness for the critical members of the Gravity-Load Resisting Frame. An example is the challenge of accurately modelling outrigger slabs accounting for the torsional flexibility of the slabs and the level of cracking commensurate with the lateral displacements of the building. The recommended approach is to spot check critical points in the Gravity-Load Resisting Frame rather than analyze the complete frame. One reason for this is that it is expected that there will be only a few "hot spots" where the Gravity-Load Resisting Frame will need to be modified to reduce induced demands, rather than widespread changes.

There are challenges with using a model of the complete building to determine the bending demands and increased axial load demands on gravity-load resisting columns and walls without doing a Non-linear Dynamic Analysis of the building.

The profile of displacements over the height of the building must reflect the concentration of deformations at the plastic hinge locations in the concrete shear walls (the profile of displacements will not be linear). In lieu of using a non-linear model of the concrete shear walls, a linear model with appropriately reduced section properties at plastic hinge locations may be used to estimate the inelastic displacement profile of the building. The challenge with this relatively simple approach is having the correct length over which the section properties are reduced and having the correct relative reduction in section properties to yield the correct distribution of deformations, as will occur in the non-linear structure.

CSA A23.3 defines the height of the plastic hinge region over which special detailing must be provided; however, the inelastic curvatures are not uniform over this height. To simulate the inelastic curvatures in the plastic hinge region, the height of wall with reduced section properties must be half the height of the plastic hinge region defined by CSA A23.3.

The envelope of interstorey drift ratios over the height of the building results from a number of different modes of the SFRS. The maximum interstorey drift ratios near the top of the building result from the first mode, while the maximum interstorey drift ratios near the mid-height of the building result from higher modes. If a static analysis is used, multiple analyses with different force distributions are required to determine the envelope of interstorey drift ratios.

Shear Strains in Concrete Walls

The additional interstorey drifts resulting from shear strains in the plastic hinge regions of the concrete walls must be accounted for. This complex phenomenon is not accounted for in most non-linear analysis programs but is included in the envelope of interstorey drift ratios defined by CSA A23.3. The shear strains are the result of vertical tension strains due to flexural yielding of the vertical reinforcement in walls with diagonal cracks. The magnitude of the shear strain, which equals the magnitude of the resulting interstorey drift ratio, can be reasonably estimated from inelastic rotational demands on the wall (Adebar, 2018). Over the height of the plastic hinge region of concrete walls, the interstorey drift ratio must not be taken less than 60% of the inelastic rotational demand (i.e., $0.6\theta_{id}$).

3.4.7 Advanced Design Issues

3.4.7.1 Gravity-Induced Lateral Demand Irregularity

The severity of a gravity-induced lateral demand (GILD) irregularity is quantified in the Code in terms of the ratio, α . For a shear wall core, α is equal to the 'gravity-load bending moment applied to the shear wall core at the critical section where flexural yielding will first occur' to the 'bending moment resistance of the shear wall core.' The limits on α depends on whether the SFRS has self-centering characteristics or not. A cantilever shear wall subjected to significant axial compression would be considered self-centering, while a coupled wall system typically would not.

When α is small, the effect of the GILD can be ignored. When α is larger (see Table 2), the displacements of the building must be increased by 20% to account for the "ratcheting" of the displacements in the direction of the GILD. When α is beyond a certain limit (see Table 2), Non-linear Dynamic Analysis must be used to demonstrate that the performance of the building will be acceptable.
Self-centering SFRS	Other SFRS	Requirement
α ≤ 0.1	α ≤ 0.03	None
0.1 < α ≤ 0.2	$0.03 < \alpha \leq 0.06$	Multiply displacements by 1.2
α > 0.2	α > 0.06	Non-linear dynamic analysis required

Table 2 Gravity Induced Lateral Demand severity ratio, a

Vertical acceleration of the mass generating the GILD will increase the severity of the irregularity. Thus, according to the NBC 2020, the analysis must account for the vertical response of the building mass, and the Non-linear Dynamic Analysis must include vertical ground motion time histories in addition to the horizontal ground motion time histories.

The accumulation of building deformations over several earthquake cycles and the resulting residual displacements are very difficult to predict even using the most sophisticated Non-linear Dynamic Analysis methods. To ensure adequate performance of the building, the acceptance criteria for the Non-linear Dynamic Analysis results must be adjusted from what is used for regular building performance. The largest interstorey displacement at any level is limited to 60% of 0.025 h_s (i.e., 0.015 h_s), and the other analysis results (forces and displacements) must be multiplied by 1.5 before comparing with the non-linear acceptance criteria for the building.

3.4.7.2 Sloped-Column Irregularity

An architectural form that is increasingly popular for creating unique buildings involves inclining the gravity-load columns that support the floor slabs, while the shear walls in the central core of the building remain vertical.

When the sloping columns are asymmetrically arranged in a building, they create a GILD on the core (see **Section 3.4.7.1 Gravity-Induced Lateral Demand Irregularity**) as well as significant additional demands that need to be accounted for. These additional demands are discussed in this section.

When the sloping columns are symmetrically arranged in a building, a static analysis would suggest the columns need to be designed for the diagonal components of the vertical gravity force, and horizontal ties (to resist tension) or horizontal struts (to resist compression) may be required between the columns; but there are no demands on the core.

The results of dynamic analyses (Adebar and Mahmoodi, 2020b) have shown that there are significant additional demands that must be accounted for. The differential horizontal movements at the top and bottom of the sloped columns due to seismic deformations cause vertical movements that need to be accounted for in the analysis of the Gravity-Load Resisting Frame. The differential horizontal accelerations at the top and bottom of the inclined columns cause the vertical mass supported by the gravity-load columns to accelerate vertically, thereby generating increased seismic forces (axial loads) in the gravity-load columns, increased shear forces and bending moments in the shear walls, and increased design forces in the diaphragms that connect the inclined gravity-load columns to the shear walls. The same demand increases occur in all symmetrically arranged sloped columns.

Vertical ground motions, which are not accounted for in the Code or standard practice in Canada, may add to the effect and further increase the seismic design forces.

The additional seismic forces are very sensitive to the assumed stiffnesses of the columns and supporting members. The maximum design forces occur when the first vertical mode is coupled with a lateral mode of the shear walls, typically the second mode. Since the effective stiffness of concrete structures is difficult

to determine accurately, a range of stiffness values must be used to make a safe estimate of the dynamic design forces due to sloped columns.

For typical ground motions in Vancouver BC, the vertical components of the design forces applied to gravity-load columns have been found to be up to 3.0 times the forces resulting from the weight supported by the gravity-load columns. (Adebar and Mahmoodi, 2020b)

NBC 2020 Requirements

The NBC 2020 includes a new type of irregularity in buildings. A "sloped-column irregularity" is considered to exist when a vertical member, inclined more than 2 degrees from the vertical, supports a portion of the weight of a structure in axial compression. Given the possible significant increase in demands due to sloped columns discussed above, the SER should consider proactively meeting these requirements if their building includes this type of irregularity.

The additional seismic design forces resulting from both the coupling of horizontal and vertical modes and the effect of vertical ground motion can be determined using Linear Dynamic Analysis and force reduction factors $R_d R_o = 1.0$, and using a structural model that:

- accounts for the vertical acceleration of all mass supported by the inclined vertical member(s), and;
- includes the SFRS, the inclined vertical member(s), and all structural framing elements that transfer inertial forces generated by the vertical acceleration of the mass supported by the inclined vertical member(s).

The additional earthquake forces are sensitive to the degree of coupling between the vertical and horizontal vibrational modes of the building; the range of possible stiffness values for all structural members must be considered to determine the maximum additional forces for design.

Further information, including a simple procedure for scaling the analysis results to avoid having to do multiple analyses with a range of stiffness values, and to avoid having to include vertical ground motions, is provided by Adebar and Mahmoodi, 2020b.

3.4.7.3 Discontinuous Elements Supporting Gravity Loads

For most buildings, the effect of vertical earthquake response does not need to be considered because the gravity load resisting elements have substantial reserve capacity in the seismic load combination; this is because the factored dead and live load combinations prescribed by the Code typically govern the design.

When a significant discontinuity exists in a vertical load carrying element, such as numerous floors of gravity-load column supported on a transfer girder, the vertical building response can significantly amplify the demands. **Section 3.4.8.2 Modelling Considerations** below describes how vertical ground motions must be included in the evaluation of life safety performance using Non-linear Dynamic Analysis.

Currently, there are no requirements in the Code to deal with this matter when modal response spectrum method is used to determine the seismic demands; but it is expected that additional requirements will be added in future editions of the Code (based on NBC 2025).

When a significant discontinuity exists in a vertical-load-carrying element, the SER should consider including the vertical response in the modal response spectrum analysis of the building. The vertical mass must be included in the model with sufficient accuracy in horizontal distribution to determine the numerous vertical modes of response correctly. The Commentary to the NBC 2020 provides guidance on the level of vertical acceleration that should be included in the analysis.

3.4.8 EVALUATION OF LIFE SAFETY PERFORMANCE USING NON-LINEAR DYNAMIC ANALYSIS

3.4.8.1 Introduction

The Code permits Non-linear Dynamic Analysis to be used to determine the seismic demands on a building; however, as a "special study shall be performed," which triggers additional requirements, it has not been common practice to do so.

The Code requires the use of Non-linear Dynamic Analysis to evaluate the performance of a building with a large GILD irregularity.

Evaluating the life safety performance of a building using Non-linear Dynamic Analysis is particularly useful when a building has a new type of significant irregularity that is not one of the ten irregularities currently identified in the Code. Such an irregularity is referred to as an unusual irregularity.

One common misconception is that Non-linear Dynamic Analysis can be used to reduce the design requirements compared to the prescriptive procedures in the Code. That is not the case. The intent of using Non-linear Dynamic Analysis is to extrapolate the Code prescriptive requirements to something different from what the Code was written for. When applied correctly, life safety performance evaluation using Non-linear Dynamic Analysis should give the same result as the Code simplified procedures for the type of building that the simplified procedures were developed.

Peer Review

Whenever Non-linear Dynamic Analysis is used to justify the seismic design of a concrete building, the Code requires that "the non-linear analysis and resulting design shall be reviewed by a qualified independent review panel." This mandatory requirement is clearly stated in CSA A23.3 Clause 21.2.3 and is commonly referred to in the industry as a Peer Review. Refer to **Section 4.1.7 Documented Independent Review of Structural Designs** and **Section 4.3 Peer Review** for more information.

The Peer Review panel must approve the Basis of Design Document (prepared by the SER) before detailed design can commence on the project; as such, it is important that the Peer Review Panel is engaged as early as possible in the design process.

Reference Guidelines

The guidance provided in this section is different than that of the previous sections in that much of this practice is beyond the prescriptive requirements of the Code. As such, the guidance provided in this section is based on the consensus summary of Engineering Professionals who are experts on the life safety performance evaluation of tall concrete buildings in BC, combining their research and expertise with the requirements of guidelines from other jurisdictions. This section of the guidelines should be used in conjunction with one of the following two documents:

- LATBSDC guidelines, or
- PEER TBI guidelines.

This section of the guidelines does not present a comprehensive summary of all the procedures needed to complete the evaluation of life safety performance using Non-linear Dynamic Analysis; where information is not presented here, the procedures described in either the LATBSDC guidelines or PEER

TBI guidelines should be used. The SER is reminded that Canadian Code requirements must always be met; in some instances, the guidance in the two reference guidelines does not meet the minimum Code requirements and should not be applied to the design of tall concrete buildings in BC.

Where no specific Code clauses or references to the LATBSDC guidelines or PEER TBI guidelines are mentioned in this section, the guidance provided is based on expert research and experience. In some cases, research is ongoing and no consensus summary could be reached at this time; in those cases, the necessary considerations for each procedure (based on the LATBSDC guidelines and PEER TBI guidelines) are mentioned and the SER must use their professional judgment to determine which is appropriate for their project.

The SER and Peer Review panel for the project must make sure that the procedure is comprehensive and is an appropriate combination of the procedures described in one or more of the reference guidelines and this document. The complete procedure that is selected must be described in the Basis of Design Document prepared by the SER and approved by the Peer Review panel.

Performance Objectives

The performance objective of the seismic design requirements in the Code is to:

• protect the life and safety of building occupants and the public as the building responds to ground shaking that has a probability of exceedance of 2% in 50 years (annual exceedance probability of 1/2475).

Non-linear Dynamic Analysis is used to evaluate the life safety performance of a building. The life safety performance level corresponds to significant damage in the structure and loss of stiffness; however, at this performance level, the structure still has reserve capacity before reaching the collapse level.

The LATBSDC guidelines and PEER TBI guidelines include procedures for evaluating the "collapse prevention" performance of buildings subjected to risk-targeted maximum considered earthquake (MCE_R).

For normal importance buildings (which these guidelines are written for), the current Code does not have an explicit performance objective requiring that buildings withstand more frequent, more moderateintensity earthquake shaking with limited damage. However, for many buildings, particularly regular buildings, the prescriptive seismic design requirements of the Code will result in limited damage from lower levels of ground shaking that have a higher probability of occurrence.

The NBC 2020 has new requirements for limiting damage caused by ground shaking in normal importance buildings in seismic category SC4 with a height of more than 30 m, specifically:

• structural framing elements not considered part of the SFRS must be designed to remain elastic during 10%-in-50-year level ground shaking.

It is expected that design of buildings with irregular Gravity-Load Resisting Frames will be most influenced by this new requirement. While it is not a requirement of the current Code, the SER should consider meeting this additional performance objective when using Non-linear Dynamic Analysis to design a tall concrete building, particularly if the building has an unusual irregularity.

The Commentary to the NBC 2020 states that where non-linear analysis is used to determine the seismic demands on a building, all of the general and specific requirements of Subsection 4.1.8. of the NBC 2020 still apply. Thus, a building designed using Non-linear Dynamic Analysis must meet the minimum strength requirements of the Code. Similarly, the guidance discussed elsewhere in **Section 3.4 Design for Earthquake Ground Motions** still applies, unless superseded by the requirements of this section.

In certain cases, Non-linear Dynamic Analysis will result in higher demands than Linear Analysis. Example 1 in Appendix B presents the results from Non-linear Dynamic Analysis on a building with two towers on a common podium, where the Non-linear Dynamic Analysis resulted in higher demands than Linear Analysis.

Simplified Procedures in CSA A23.3

The procedures used for Non-linear Dynamic Analysis have advanced considerably in recent years; however, like any engineering "tool," they have limitations. One well-known limitation is the inability to account for all the complexities of shear demands on reinforced concrete. The fibre models used for concrete shear walls give an accurate estimate of the non-linear response of walls subjected to axial load and bending moment, but do not account for all aspects of shear stresses and shear strains, some of which can be significant. For example, the plastic hinge region of a concrete wall with diagonal cracks will experience significant shear strains (interstorey drift ratios) in the absence of any applied shear force but shear spring models are not able to account for that effect.

CSA A23.3 contains a number of simplified solutions for complex non-linear problems. For example, the simplified envelope of interstorey drift demands on Gravity-Load Resisting Frames (CSA A23.3 Clause 21.11) accounts for the interstorey drift ratio resulting from the shear strains in the plastic hinge regions of walls. Other examples include simple static procedure for determining backstay forces, simple estimates of non-linear magnification of higher mode shear accounting for shear ductility, and procedures for ensuring the maximum compression strains in concrete walls are within acceptable limits.

In some cases below, options are given for either using the methods in CSA A23.3, or the procedures given in the LATBSDC guidelines or PEER TBI guidelines. For example, the maximum strains in a concrete wall can evaluated using the inelastic rotational capacity/demand procedures in CSA A23.3, or can be evaluated from strains directly. The later approach requires a sensitivity analysis to confirm that a sufficient number of elements have been used in the model to make a good estimate of the maximum strain demand.

In other cases, the procedures given in CSA A23.3 are mandatory because the guidance provided in the two reference guidelines do not meet or exceed the requirements of the Code. An example is that the minimum interstorey drift ratio of a building over the height of the plastic hinge must be greater than the interstorey drift ratio resulting from the shear strains in the plastic hinge regions of walls.

3.4.8.2 Modelling Considerations

System Idealization

A three-dimensional model of the building should be used to represent the spatial distribution of (horizontal and vertical) mass, and the stiffness of the structure. It is important that the model incorporate realistic estimates of stiffness and damping considering the expected levels of excitation and damage.

The characteristics of the non-linear cyclic response of the structural elements in the model, such as stiffness, strength, ductility capacity, and hysteretic behaviour, must be representative of the behaviour of actual elements that have been subjected to reversed cyclic loading tests in the non-linear range.

The material properties that are to be used in the analysis are discussed further in **Section 3.4.8.5 Evaluation of Life Safety Performance**.

Gravity-Load Resisting Elements

The SFRS is designed to resist 100% of the seismic demands determined using Linear Analysis as discussed above. The non-linear model needs to include the Gravity-Load Resisting Frame members to:

- accurately model the entire structure,
- capture any influence of the Gravity-Load Resisting Frame, and
- evaluate the life safety performance of this part of the structure.

The collapse of many concrete buildings in earthquakes originated within the Gravity-Load Resisting Frame. To accurately account for second-order (P-delta) demands in a building including the variation of lateral drift at different points on floor, all gravity load columns and other important elements in the Gravity-Load Resisting Frame need to be included in the three-dimensional model of the building. The stiffness of these members is expected to degrade more rapidly due to seismic demands, and this must be accounted for.

An ideal Gravity-Load Resisting Frame does not attract significant seismic loads. This would be the case, for example, when thin flat-plate slabs are supported on widely spaced flexible columns. When Gravity-Load Resisting Frames have significant lateral stiffness, the reduced period of the building increases the force demands on the SFRS.

A common way for the Gravity-Load Resisting Frame to resist lateral loads is by the floor slab (or beams) and columns acting as a moment-resisting frame. This phenomenon is commonly referred to as the "outrigger effect." The lateral stiffness of the Gravity-Load Resisting Frame increases as the stiffness of the floor slab increases or when the columns are more closely spaced.

Appendix C of the LATBSDC guidelines provides recommendations on how to model the coupling of the slab between the core and gravity-load columns or between two gravity-load columns using outrigger beams. Following the guidance in that document, it is recommended that the outrigger effect is explicitly modelled when a column is located within 6 metres of the core, or when two columns are spaced at less than 3 metres. These limits are applicable to thin flat-plate slabs, and proportionally larger spacing limits apply for thicker floor systems.

The Gravity-Load Resisting Frame must be designed to resist any forces that it attracts. As the failure mode of Gravity-Load Resisting Frame members may be very brittle, a safe estimate of the force must be made. Rather than using an upper-bound estimate of Gravity-Load Resisting Frame stiffness, which will reduce the displacement demands on the building, a factor of safety is applied to the estimate of the critical force demands. A good example of critical force demands is the axial compression that develops in the columns due to the outrigger effect.

Any non-structural components, such as architectural walls, that influence the displacements demands on the structure (e.g., reducing displacements on one side of the building and increasing displacements on the opposite side) must be accounted for.

Floor Diaphragms

When the concrete walls in a building are relatively uniform over many levels, the concrete slabs that interconnect these walls can be modelled as rigid, in-plane elements over those levels. Conversely, if there is a significant change or discontinuity in the walls or in any of the vertical elements in the Gravity-Load Resisting Frame, the flexibility of the diaphragms must be modeled in order to obtain a reasonable estimate of the force transferred by the diaphragms. The diaphragms must also be explicitly modeled if

there are irregularities in the diaphragm such as re-entrant corners or large openings in order to determine the edge (chord) forces, as well as the shear, axial, and bending stresses in the diaphragms.

Diaphragms are normally designed to remain elastic and hence can be modeled using elastic finite elements using an effective stiffness that depends on the expected level of cracking of concrete. One challenge is that the range of possible effective stiffness is very large and therefore it is difficult to make an accurate estimate of the effective stiffness until some estimate of the forces is known. An appropriate finite-element mesh is needed to correctly model the diaphragm flexibility,

Horizontal Mass

The horizontal seismic mass is determined based on the expected seismic weight of the building, including the dead load, and other loads as specified in Article 4.1.8.2. of the Code.

The mass must be accurately distributed in plan in order to determine the torsional inertial effects.

While the mass of the ground floor should be included in the model, it is not a simple issue to determine whether the mass of the below-grade structure should also be included. As the lateral stiffness of the below-grade soil is normally not accounted for, the mass of the full below-grade structure is also not normally included. The LATBSDC guidelines provides additional guidance on this matter.

Vertical Mass

For most buildings, the vertical mass does not need to be included in the analysis of the building subjected to horizontal ground accelerations.

Whenever the structural configuration is such that the horizontal motions in the building can induce vertical motions, the vertical mass must be included in the analysis. An example of where the vertical mass must be included is an inclined member, such as a sloped column, which will connect the horizontal and vertical modes of the building. See **Section 3.4.7.2 Sloped-Column Irregularity** for more information.

When the vertical mass is included in the analysis, the mass must be included in the model with sufficient accuracy in horizontal distribution to determine the numerous vertical modes of response correctly.

Vertical Ground Motions

For most buildings, the effect of vertical ground accelerations can be ignored as the vertical-load-carrying members are designed for a minimum axial load equal to 1.4 times the dead load as part of the gravity-load design of the structure. The vertical ground motions need to be included in the analysis for any of the following cases:

- significant discontinuity exists in a vertical-load-carrying element such as a gravity-load column supported on a transfer slab or girder,
- a GILD irregularity exists in the building according to the Code, or
- a vertical member, inclined more than 2 degrees from the vertical, supports a portion of the weight of the building in axial compression (Type 10 irregularity according to NBC 2020).

Where vertical ground motions are included in the analysis, the vertical component of mass must be included in the model with sufficient accuracy in horizontal distribution to determine the numerous vertical modes of response correctly.

Damping

In non-linear analysis, the damping provided by hysteretic energy dissipation of structural members is modeled explicitly. An additional small amount of equivalent viscous damping may be included in the model to account for the inherent damping of the structure that is not associated with the response of non-linear elements. Damping is reduced in tall concrete buildings compared to low-rise buildings primarily because the relative damping contributions from foundations is smaller.

Following the LATBSDC guidelines, it is recommended that the effective additional modal or viscous damping for the primary modes of response must not exceed the following fraction of critical damping:

$$\zeta_{critcal} = \frac{0.20}{\sqrt{H}}$$

where *H* is the height of the roof in metres, excluding mechanical penthouses, measured from grade level. The fraction of critical damping ($\zeta_{critcal}$) must not be taken more than 0.05, and need not be taken less than 0.025.

Viscous damping may be modelled using modal damping, Rayleigh damping, or a combination of the two. Use of modal damping for all modes may results in overestimation of floor acceleration according to the LATBSDC guidelines. To alleviate this problem, the LATBSDC guidelines recommend using a combination of modal damping and stiffness-proportional damping, or linearly increasing damping from 0.2T to the period of 0 seconds such that the damping values are less than or equal to the specified critical damping for the entire period range of interest (0.2T to 2T).

P-Delta

Geometric non-linearity due to second-order bending moments (P-delta) must be taken into account in the non-linear analysis using the appropriate gravity loads in accordance with Article 4.1.3.2. of the Code, regardless of whether any elastic analysis indicates that such effects are important. The total gravity loads for the entire building must be included, and these loads must be accurately distributed to capture the influence of both building translation and twist.

Gravity Load

Superposition of design forces cannot be used with non-linear analysis results. Therefore, the gravity loads that occur simultaneously with the earthquake forces must be applied to the model of the building for the non-linear earthquake analysis.

The gravity loads that need to be considered in the non-linear model must be consistent with the Code load combinations. According to the Code, the companion loads, 50% live load (0.5L) and 25% snow load (0.25S), are only applied if they have a detrimental effect. Thus, the two load combinations to be considered are:

1.0D + 1.0E + 0.5L + 0.25S and

Normally, it is not necessary to repeat the nonlinear analysis with the second load combination; however, consideration should be given to the effect of the reduced gravity loads on the structure. The PEER TBI guidelines provide guidance on when the second load combination should be considered. The Basis of Design Document prepared by the SER and approved by the Peer Review panel must address this issue.

Torsion

The distribution of horizontal mass in the model must reflect the actual conditions in the building so that any inherent torsional eccentricity will be accounted for in the analysis.

When accidental eccentricity (causing torsion) must be added to the structure, this should be done by displacing the centre of mass by 5% of the building dimension perpendicular to the direction under consideration. Where earthquake forces are applied concurrently in two orthogonal directions, the required 5% displacement of the center-of-mass need not be applied in both of the orthogonal directions at the same time, but should be applied in the direction that produces the greater effect.

Shifting the centre of mass in four different directions significantly increases the number of non-linear analyses that need to be done. In order to reduce the number of non-linear analyses, both the LATBSDC guidelines and the PEER TBI guidelines suggest that accidental eccentricity need not be added to the non-linear model when a building has low torsional sensitivity.

The LATBSDC guidelines recommend using the results of Linear Dynamic Analysis with only the inherent torsional eccentricity (no accidental eccentricity), to calculate the twisting index:

$$A = \left(\frac{\delta_{max,t}}{1.2\delta_{avg,t}}\right)^2$$

If *A* exceeds 1.5 for any floor where the maximum average drift ratio exceeds 0.010, then accidental eccentricity must be considered during non-linear analysis.

The PEER TBI guidelines approach requires two separate analyses using either the modal response spectrum method or the equivalent lateral force procedure. The floor level displacements are calculated considering only inherent torsional eccentricity in the first, while accidental eccentricity (causing torsion) is also applied in the second. The accidental torsion is generated by displacing the centre of mass each way from its actual location by a distance equal to 5% of the dimension of the structure perpendicular to the direction of the applied forces. The results of the two analyses are used to calculate the twisting index:

$$A = \left(\frac{\delta_{max,ta}}{\delta_{avg,t}}\right)$$

If A > 1.2 at any level, accidental eccentricity must be included in non-linear analysis.

A recommendation for the approach to be used in all cases to account for accidental eccentricity (causing torsion) is not provided at this time. The SER must determine which approach best applies to their project, provide justification in the Basis of Design Document, and have it approved by the Peer Review panel before commencing design.

Backstay Effect

When the plastic hinge in the core occurs immediately above grade level, the multiple static analysis procedure described in **Section 3.4.5 Refined Analysis of Structure Below Plastic Hinge Zone** can be used to determine the design forces in the structure below the plastic hinge including the foundation forces. This avoids having to do multiple Non-linear Dynamic Analyses with varying effective stiffnesses for the elements below the plastic hinge.

When the plastic hinge occurs above podium levels that include significant mass contributing to the seismic demands below the plastic hinge, the calculation of design forces below the plastic hinge should be determined using multiple non-linear dynamic analyses.

The structure below the plastic hinge is typically an indeterminate system with multiple load paths for the lateral loads. The shear and bending moment in the core can be transmitted directly to the foundation, or can be transferred to other walls by the diaphragms that interconnect the walls. The results of the analyses are very sensitive to the assumed in-plane stiffness of the diaphragms. If the forces in the diaphragms are low, the stiffness will be very high; but as the diaphragms crack due to applied forces, the stiffnesses reduce rapidly. As a result, multiple analyses must be done to bound the solution.

Appendix A of PEER/ATC-72-1 Modelling and Acceptance Criteria for Seismic Design and Analysis of Tall Buildings (ATC-72-1) and Moehle et al. (2016) provide further discussion and guidance on design and modelling considerations to address the backstay effect.

Foundation Modelling

The LATBSDC guidelines presents a summary of different approaches that can be used to model the subterranean levels, including the foundation.

The recommended approach is to model the concrete structure down to the foundation level while excluding the surrounding soil. The subterranean structure is typically a stiff indeterminate system of walls consisting of the core walls, the perimeter foundation walls and other columns and walls, interconnected by the floor diaphragms. Appropriate assumptions need to be made for effective stiffnesses of the subterranean elements, particularly the diaphragms.

The Code requires that the increased displacements of the structure resulting from foundation movement (soil flexibility) be accounted for. This effect can be easily incorporated into the static analyses done in accordance with **Section 3.4.5 Refined Analysis of Structure Below Plastic Hinge Zone**, and does not need to be included in the Non-linear Dynamic Analysis if the CSA A23.3 static analysis approach is used to determine the increased displacements of the structure resulting from foundation movements and cracking of the subterranean structure.

The earthquake ground motions should be applied at the base of the subterranean structure and can be either free-field motions or modified motions due to kinematic interaction effects. The optional soil-structure interaction can typically be ignored in the non-linear analysis of tall concrete buildings. The National Institute of Standards and Technology provides guidelines about when soil-structure interaction is likely to significantly affect the fundamental-mode response of buildings depending on the structure height, fixed-base building period and soil shear wave velocity. This condition rarely applies to tall concrete buildings.

Modelling of Structural Components

Component monotonic backbone curves and cyclic deterioration characteristics must be established from physical test data or from analytical approaches that have been benchmarked to physical test data.

The following sources of deterioration in concrete structures must be accounted for unless precluded by detailing and/or capacity design:

- Concrete cracking, crushing, and spalling;
- Rebar yielding, buckling, and fracture;
- Rebar bond slip and anchorage failure;
- Shear friction sliding and failure;
- Concrete dilation; and
- Confinement steel yielding and failure.

Analysis models for overall structural system response range from concentrated hinge or spring models, to fibre elements, to detailed continuum finite-element models. All models must be calibrated to physical test data, at either the material, subcomponent, or component level.

The valid range of deformation capacities for components should be established from analytical models validated by physical test data, directly from physical test data or taken from ASCE 41 Seismic Evaluation and Retrofit of Existing Buildings (ASCE 41). The ASCE 41 component force versus deformation models can be used as first-cycle envelope curves; however, in reality, the decrease of resistance beyond the point of peak strength indicated by ASCE 41 is not likely as rapid unless fracture occurs. This rapid decrease of resistance may cause numerical instabilities in the analysis process. Alternatively, the modelling options presented in Guidelines for Nonlinear Structural Analysis for Design of Buildings, Part I – General (National Institute of Standards and Technology, 2017) and ATC-72-1 may be used.

The component models must account for post-peak strength and stiffness deterioration due to cyclic loading, or the ultimate deformation of the component must be limited to the point at which the model fails to accurately represent the response. The recommended approach is to explicitly model the strength and stiffness deterioration that occurs under cyclic loading using an algorithm that adjusts the response from the monotonic response to some deteriorated response that is a function of cyclic loading.

Concrete Walls

The response of concrete walls subjected to axial load and bending moment is modelled using plane sections analysis. The vertical normal strain in the walls are assumed to vary linearly, and stress-strain relationships for the concrete and reinforcement account for the influence of cyclic degradation.

Typical concrete stress-strain curves are given by Collins and Mitchell (1997) and suitable adjustments to account for confinement are described by Mander et al. (1988) and Saatcioglu and Razvi (1992). High-strength concrete is considerably more linear and more brittle than normal strength concrete; this effect must be accounted for when selecting a stress-strain curve to be used in the fibre model.

The stress-strain response of reinforcement under cyclic load are highly non-linear due to the Bauschinger effect. It is difficult to include deterioration due to reinforcement localized buckling and fracture in the steel stress-strain curve, and thus the vertical strain in the wall must be limited to account for these critical deterioration modes.

The height of the fibre element in the wall must be limited to ensure a reasonable estimate of maximum inelastic strains in the plastic hinge region of the wall. The inelastic strains in a wall vary approximately linearly in the plastic hinge region, but it is common to assume the maximum inelastic strains are uniform over an idealized plastic hinge height (that is half the height that the inelastic strains actually vary linearly). The two different variations of inelastic curvatures give similar top wall displacements. The height over which the inelastic strains vary linearly defines where the special detailing is required in the wall. CSA A23.3 defines this height as $0.5l_w + 0.1h_w$, where l_w is the length of the wall and h_w is the height of the wall. A reasonable estimate of the height over which the inelastic strains can be assumed to be approximately uniform is $0.2l_w + 0.05h_w$. The height of the elements should not exceed this height or the storey height. For tall concrete buildings, the storey height usually governs.

When compression strains in the wall are large, and therefore critical, it may be necessary to use multiple elements over the length of the wall in order to make a good estimate of the maximum compression strain at the ends of the wall.

A fibre model should be used over the full height of the building in order to accurately estimate the higher mode shear demands. In the early practices of Non-linear Time History Analysis of tall concrete buildings, it was common to model the wall outside the plastic hinge region using elastic elements. However, this practice cannot accurately capture the flexural cracking and small amount of vertical reinforcement yielding near mid-height of the wall present in the higher mode analysis and may therefore overestimate the higher mode shear demands.

Coupling Beams

Coupling beams in BC typically contain diagonal reinforcement.

The strength of the coupling beams controls the capacity of coupled wall systems. Any overstrength in the coupling beams that is not correctly accounted for will result in larger tension and shear demands on the wall piers.

As a coupling beam is subjected to reverse cyclic demands, the beam tends to "grow" in length and the concrete slab that surrounds the coupling beam will restrain this "growth." The resulting axial compression applied to the coupling beam will increase the flexural (and shear) capacity when it is diagonally reinforced. Longitudinal reinforcement in the slab adjacent to the coupling beam will provide additional overstrength.

Caution is needed when fitting a backbone curve to test results to ensure the overstrength is correctly included.

Transfer Slabs

Appendix C in the LATBSDC guidelines provides guidance on the modelling of slab-column frames using linear elastic outrigger beams. The methodology was developed for cases where the slabs are relatively thin.

Thick transfer slabs are sometimes used in tall concrete buildings in BC. These members can have a very pronounced influence on the demands on the gravity-load columns, and even influence the demands on the core. Thus, special attention needs to be paid to the accurate modelling of these elements.

Slab-Column Connections

Slab–column connections can be represented using either an effective beam width model or an equivalent-frame model. Where deformations exceed the yield point at a connection, it may be convenient to insert a non-linear rotational spring between the components representing the slab and the column. Further information is given in ATC-72-1 and ASCE 41.

3.4.8.3 Required Number of Analyses and Assumed Component Strengths

Types of Demands (Actions)

Seismic demands (actions) can be classified as either Deformation-Controlled Demands or Force-Controlled Demands.

Deformation-Controlled Demands include deformations and forces associated with a ductile non-linear response under reversed cyclic loading. This includes:

- inelastic rotation of concrete walls;
- inelastic rotation of coupling beams, and;

• deformation demands on ductile elements of the Gravity-Load Resisting Frame.

Deformation-Controlled Actions are permitted in SFRS elements that are specifically designed and detailed in accordance with CSA A23.3 to exhibit a ductile non-linear response under reversed cyclic loading. CSA A23.3 Clause 21.11 also specifies the detailing required in Gravity-Load Resisting Frame members to tolerate the imposed deformation demands.

Force-Controlled Demands in a high-rise core wall building include:

- shear force demand on the walls;
- forces in diaphragms at podium levels and other levels of discontinuity in the SFRS,
- overturning moment applied to the foundation, and
- forces applied to the Gravity-Load Resisting Frame members, except bending moments when the member is modelled as a non-linear element.

NBC Commentary

The Commentary to NBC 2015 states that two full sets of non-linear analyses need to be done with different component strengths to determine separately the Deformation-Controlled Demands and the Force-Controlled Demands. As per the NBC 2015, lower-bound component strengths need to be used when determining the Deformation-Controlled Demands, while upper-bound component strengths need to be used to determine the Force-Controlled Actions.

The lower-bound strength recommended by NBC 2015 is 1.1 times the nominal strength, which corresponds to component strengths calculated using concrete and reinforcement material strengths of $1.1f_c'$ and $1.1f_y$, respectively. A lower-bound estimate for the increase in reinforcement stress due to strain hardening should be included in the model. These lower-bound strength values result in upper-bound estimates of Deformation-Controlled Demands on the SFRS.

The upper-bound strengths recommended by NBC 2015 to determined Force-Controlled Demands are 1.2 times the probable resistance, which corresponds to $1.2f'_c$ and $1.5f_y$ ($1.2 \times 1.25f_y$). An upper-bound model for the increase in reinforcement stress due to strain hardening must also be included in the model.

Highrise Buildings in BC

The LATBSDC guidelines and PEER TBI guidelines, which have been used for the design of many core wall buildings, require a minimum of one set of non-linear analyses with one set of 11 ground motions, and use expected component strengths calculated using concrete and reinforcement material strengths of 1.3 f'_c and 1.17 f_v , respectively.

The unique seismicity in BC requires that at least two sets of 11 ground motions be used for the nonlinear analysis; see subsection **Number of Ground Motions** under **Section 3.4.8.4 Seismic Hazard** for more information. These analyses need to be repeated four times if accidental torsion is included, and even more times if the backstay forces are to be calculated using non-linear analysis.

It is recommended that one set of component strengths be used, calculated using concrete and reinforcement material strengths of $1.2f'_c$ and $1.2f_v$, respectively.

The recommendation for the component strengths mentioned above is based on the following. The typical grade of reinforcement in BC is 400W, meeting CSA G30.18 Carbon Steel Bars for Concrete Reinforcement, which has a minimum yield strength of 400 MPa and a maximum yield strength of 525 MPa. Suppliers typically target mid-way between these limits, i.e., 460 MPa. The minimum ultimate

strength according to CSA G30.18 is the larger of 540 MPa and 1.15 times the actual yield strength. Thus, reinforcement typically used in BC will often have an actual yield strength of about 460 MPa and minimum ultimate strength of 540 MPa.

3.4.8.4 Seismic Hazard

This section provides guidance for the selection and scaling of time histories to be used in the Non-linear Time History Analysis of tall concrete buildings. It generally follows the procedures given in Commentary J of the Structural Commentaries of NBC; with modifications based on the consensus of recommended practice in BC.

As the determination of seismic hazard values and the Non-linear Time History Analysis of tall concrete buildings are very specialized areas of practice, the SER and GER should work together to determine the division of responsibilities amongst themselves and/or specialists under their direct supervision. The GER is responsible for determining the required soil properties and their uncertainties, and the responsibility of the following items may vary by project and expertise of the Registered Professionals of Record:

- Selecting a suitable suite of input ground motions;
- Performing SSRA; and
- Where required, interpreting the results in a manner conducive for use with PSHA.

Regardless of who is responsible, the SER should understand the principles of the site-specific investigation and include the results of the site-specific investigation and analysis in the Basis of Design Document, and participate in any conversations required between the Registered Professionals of Record and Peer Review panel to agree on the appropriate approach for the project.

Design Spectrum

The design spectrum used for ground-motion selection is as specified by the Code for Linear Dynamic Analysis except that at periods less than 0.5 s, no "cut-off" (plateau) is required. To determine spectral acceleration values at other period values, 'Log (T) - Log (S)' interpolation should be used, as linear interpolation of acceleration at widely spaced periods (2, 5, 10 s) results in a highly distorted displacement spectrum.

Site-specific PSHA can be performed to develop an alternative spectrum; the *Sixth Generation Seismic Hazard Model of Canada* (Kolaj et. al, 2020), which was developed for the seismic design values in NBC 2020, should be used to determine seismic hazard at the site.

For a very tall concrete building (greater than 20 storeys) with an unusual irregularity in the Lower Mainland of BC, a site-specific PSHA should be performed using the *Sixth Generation Seismic Hazard Model of Canada* plus the explicit consideration of basin effect.

Canada's sixth generation seismic hazard model retains most of the seismic source model from the fifth generation (used for seismic data in NBC 2015 and BCBC 2015); but updates the earthquake sources for the deep in-slab earthquakes under the Strait of Georgia and adds the Leech River - Devil's Mountain fault near Victoria. The rate of magnitude ~9 Cascadia earthquakes is also increased to match new paleoseismic information. Two major changes are updating ground motions models and use and adaptation of various ground motion models to directly calculate hazard on various site classes with representative V_{s30} values, rather than providing hazard values on a reference Class C site and applying F(T) factors, as in the fifth generation hazard mode used in NBC 2015. The sixth generation seismic hazard model accounts for basin effects in an implicit way.

Shear Wave Velocity

For a discussion on how to determine V_{s30} , see the subsection on *Site Class* in Section 3.4.3.2 Seismic **Demands According to NBC**.

Site-Specific Response Analysis

Site-specific response analysis (SSRA), which is also called site-specific ground response analysis, can be used to determine the spectrum for a site. The resulting spectrum cannot fall below 80% of the Code uniform hazard spectrum.

SSRA involves analysis of wave propagation through the soil medium to assess the effect of local geology on the ground motion. Thus, SSRA can be more accurate than the Code uniform hazard spectrum modified by a site class when done correctly; however, the procedure to arrive at the spectrum includes assumptions and judgement that may strongly influence the result. Thus, the Peer Review panel must review the SSRA results to ensure the analysis was done correctly. See **Section 4.3 Peer Review** for more information.

A reduced spectrum can be described as reduced demands on the building due to "yielding" of the soil below the building. Any higher than expected soil strength (overstrength) will result in higher demands on the building. Thus, upper-bound estimates of soil strengths must be considered in the analysis.

SSRA does not provide a valid representation of site effects for periods beyond the elongated fundamental period of the soil column used in the analysis. Special procedures are required for merging the results of SSRA at short periods with ergodic models at long periods to reduce the potential for bias (Stewart et al., 2014).

Period Range

A period range (T_R) with a lower bound (T_{min}) and an upper bound (T_{max}) must be defined such that it includes the periods of the structure's significant modes of vibration (see Fig. 4). T_{min} is taken as the smaller of 0.15 T_1 or $T_{90\%}$, where T_1 is the fundamental period of the structure based on the effective stiffness of concrete walls given in CSA A23.3 (as a function of elastic bending moment to strength of the wall) and $T_{90\%}$ is the lowest period of the modes necessary to achieve 90% mass participation. T_{max} is taken as the larger of 2.0 T_1 and 1.5 s.

The upper bound range of period may be reduced to $1.5T_1$ if it can be shown that the average period elongation obtained from the analysis using the suite of ground motions does not exceed $1.5T_1$. This requirement is another example of guidance which is based on consensus summary of experts, considering requirements of the Code and guidance provided in the LATBSDC guidelines and PEER TBI guidelines.

If the non-linear analysis results are not used for design of subterranean elements, $T_{90\%}$ can include only the mass of superstructure.

Where vertical response is considered (i.e., where vertical mass must be included as described in **Section 3.4.8.2 Modelling Requirements)**, the lower bound of the period range may not be taken less than the larger of 0.1 s or $T_{90\%}$ in the vertical direction.



Fig. 4 – Period range used for selection and scaling of ground motions

Appendix X of Commentary J of NBC 2015 recommends a minimum of one scenario-specific period range (T_{RS}) for each tectonic environment (or source) contributing to the hazard including crustal, in-slab, and subduction interface earthquakes (i.e., three T_{RS} comprised of one each: $T_{RS \text{ Crustal}}$, $T_{RS \text{ Subcrustal}}$, and $T_{RS \text{ Interface}}$) in Southwest British Columbia. Based on the consensus of experts consulted in the development of these guidelines, it is acceptable to combine crustal and in-slab sources and have one specific period range $T_{RS \text{ short}}$ over the short period range according to disaggregation results. The second specific period range $T_{RS \text{ long}}$ must be developed over the long period range for subduction interface motions.

The site-specific PSHA disaggregation should be performed to select motions that are compatible with the tectonic regime (e.g., active crustal regions, subduction zones) and controlling distance, magnitude, and site condition.

Method A and B of Appendix X of Commentary J of NBC 2015 can be used to develop the target response spectra ($S_T(T)$) for the horizontal component of ground motions.

Disaggregation results should be used to determine the dominant tectonic regime, magnitude, and distance contributing over the period range (T_R) and divide the period range into scenario-specific period range (T_{RS}).

Recent hazard models developed for NBC 2020 provide data only up to a period of 10 s and therefore caution should be used when the fundamental lateral period of the building (T_1) is greater 5 s.

Number of Ground Motions

A minimum of two sets of 11 ground motions should be used (a minimum of 22 ground motions in total). One set of motions are matched to the target spectrum over $T_{RS \ short}$ (combined crustal and in-slab sources period range), and the other set is matched over $T_{RS \ long}$ (interface subduction source period range).

While the Commentary to NBC 2015 recommends not less than 11 ground motions over three scenario period ranges (33 motions in total), it permits as few as 3 sets of 5 ground motions (15 motions in total). Based on the consensus of experts, 11 ground motions over two scenarios (22 ground motions) is the recommended practice in BC.

No more than two ground motion records should be selected from the same earthquake event for short period (crustal and in-slab) sources. Due to scarcity of recordings of large magnitude interface subduction events, it is permitted to use up to 4 (out of 11) ground motions from the same interface subduction event.

The selected ground motions should reasonably reflect the anticipated duration of the design earthquake. For this reason, it is recommended to make sure that the mean significant duration (such as D_{5-95}) of selected interface ground motion records reflects the long duration effect of subduction interface scenario in BC.

Depending on the disaggregation results, it may be appropriate to include near-fault records to account for rupture directivity and fling-step effect.

Scaling of Ground Motions

Pairs of horizontal ground motions components should be scaled with a single factor so that the geometric mean of the spectra of the two horizontal components matches the target spectrum. The recommended approach based on expert consensus summary is that scale factors less than 0.5 or greater than 4 should not be used.

When linear scaling technique is used, the average of the geometric mean spectra from all ground motions must not fall below 90% of the target spectrum at every period of T_{RS} . When the spectral matching technique is used, the average of the geometric mean spectra from all ground motions should not fall below 110% of the target spectrum at every period of T_{RS} .

The vertical component of ground motions should be scaled by the same factor as the corresponding horizontal ground motion components. It is important to check for compatibility of the scaled vertical component spectra with the target vertical spectra. Alternative methods may be considered where significant incompatibility is observed. Vertical target spectrum may be developed using relationships between vertical and horizontal spectra that depend on site and soil conditions (Stewart et al., 2016; Bozorgnia et al., 2010; Gülerce and Abrahamson, 2011).

3.4.8.5 Evaluation of Life Safety Performance

Evaluation Criteria

To ensure the building meets the life safety performance level, the calculated response must satisfy the following:

- Deformation demands on deformation-controlled actions or elements are within the limits specified in CSA A23.3;
- Strength demands on force-controlled actions or elements are smaller than the factored strengths calculated in accordance with CSA A23.3;
- A maximum of one unacceptable response occurs for the suite of 11 ground motions; and
- Peak transient drifts and residual drifts are within acceptable levels.

The demand on the structure is determined from non-linear analysis using a model of the building having component strengths calculated using the "expected" concrete and reinforcement material strengths of $1.2f'_c$ and $1.2f_v$, respectively.

The deformation capacities and strength capacities are calculated using the procedures in CSA A23.3 with factored material strengths calculated from the specified material strengths, f'_c and f_y , times the resistance factor, 0.65 for concrete and 0.85 for reinforcement.

Design Seismic Demand Parameter

Two suites of 11 ground motions selected and scaled over scenario-specific period ranges should be used to conduct the non-linear analyses.

When there is no unacceptable response for the suite of 11 ground motions, the mean of the maximum values for each ground motion is determined.

When there is one unacceptable response for the suite of 11 ground motions, the demand is determined as 120% of the median value from the complete suite including the unacceptable case, but not less than the mean of the values for the 10 ground motions producing acceptable responses.

Finally, the design seismic demand parameter is equal to the larger demand determined from the two suites of ground motions.

Unacceptable Response

If spectral matching is not used to scale the two suites of 11 ground motion records, one unacceptable response is permitted. Otherwise, no unacceptable response is permitted.

The following are examples of unacceptable response:

- Analysis stops due to convergence issues;
- Demand on deformation-controlled element exceeds the valid range of modelling;
- Demand on force-controlled element exceeds the element capacity;
- Peak transient storey drift exceeds 4%, and;
- Residual storey drift exceeds 1.5%.

Global Response

Peak Transient Storey Drift

The mean interstorey drift ratio demands must not exceed the regular limit of 2.5%, as specified in the Code. In addition, the maximum interstorey drift ratio from any one record must not exceed 4%.

Residual Storey Drift

The mean of the absolute values of residual drift ratios must not exceed 1%. In addition, the maximum residual storey drift ratio in any one analysis must not exceed 1.5%, unless approved by the Peer Review panel. See **Section 4.3 Peer Review** for more information.

Limiting the residual storey drift will protect against excessive post-earthquake deformations that likely will cause the building to be unrepairable. Large residual drifts are of particular concern for tall concrete buildings because of the danger a leaning building poses to the surrounding community. However, residual drift is not a life safety performance issue, and residual drifts are difficult to predict.

Evaluation of the residual drift is particularly important in a building that has a GILD irregularity. During an earthquake, the lateral displacements of the building "ratchet" in the direction of the GILD. See Example 2 in Appendix B.

Evaluation of Core Walls

Core walls are designed to dissipate energy by flexural yielding of the wall piers and flexural/shear yielding of the coupling beams. The deformation demands on the wall piers are evaluated in the first

section below, while the deformation demands on coupling beams are evaluated in the second. Finally, the shear force demands on ductile wall piers are evaluated in the third section.

Deformation Demands on SFRS – Wall Piers

Within Plastic Hinge Region – Core walls are usually designed for flexural yielding to occur within the "plastic hinge regions" defined in CSA A23.3-14 Clause 21.5.2.1. This region contains special detailing as described in **Section 3.4.4.7 Seismic Detailing Requirements**. As a result, this region of the wall is able to tolerate larger strain demands than the region of the wall outside the plastic hinge region; this is discussed separately below.

There are two procedures to evaluate the deformation demands on wall piers. The first is in terms of inelastic rotational demands and capacities and the second is in terms of maximum strains.

Procedure 1: The inelastic deformation demands on wall piers are investigated in terms of wall rotations, which are the result of the inelastic curvatures over a height of wall equal to about half the height of the 'plastic hinge region' where special seismic detailing is provided. The inelastic rotational demands must be less than the (factored) inelastic rotational capacity.

The inelastic rotational demand on the wall piers can be determined from the procedures in CSA A23.3 Clause 21.5.7.2 using the maximum top wall displacement determined from non-linear analysis, or can be determined directly from the non-linear analysis as the maximum slope change over the plastic hinge region of the wall.

The inelastic rotational capacity of the wall is calculated according to CSA A23.3 Clause 21.5.7.3, where the compression strain depth of the wall is calculated using the factored compression strength of concrete per CSA A23.3 Clause 21.5.7.4. Both the maximum compression strain and maximum tension strain limit the inelastic rotational capacity of the wall.

Procedure 2: The inelastic deformation demands on wall piers are investigated directly in terms compression and tension strains. The estimated maximum strains in a wall are very sensitive to the modelling assumptions, such as the height of the elements used to discretize the wall. Thus, a sensitivity analysis is required to confirm that a sufficient number of elements have been used to make a good estimate of the maximum strain demand. Analysis has shown that up to four elements per storey may be needed to make a good estimate of the maximum compression strain (LATBSDC guideinesguidelines).

The maximum compression strains determined directly from the non-linear analysis must be increased by a factor of 2.0 to account for the high concrete compression strength $(1.2f_c')$ that is used in the non-linear analysis compared to the factored strength of concrete $(0.65f_c')$ to be used with the compression strain limits given in CSA A23.3. The maximum compression strain of concrete (2.0 times the value determined from non-linear analysis) must be limited to 0.0035 unless the compression region of the wall contains confinement reinforcement, and then the maximum compression strain must be limited as a function of the amount of confinement reinforcement per CSA A23.3 Clause 21.5.7.5.

The maximum reinforcement tension strain must be limited to 0.05 to avoid fracture of the reinforcement accounting for tension stiffening, which causes a localization of the strains at the crack.

Outside plastic hinge region – These regions of the wall have less special seismic detailing; lower strain limits are appropriate. The maximum compression strains in concrete (after multiplying by the factor of 2.0 described above) should be limited to 0.002 if the reinforcement at the end of the wall is tied as a compression member in accordance with CSA A23.3 Clause 7.6.5, and limited to 0.003 if the reinforcement at the end of the wall has buckling-prevention ties as per CSA A23.3.

The maximum tension strains in the reinforcement should be limited to 0.01.

When non-linear analysis indicates yielding of the wall outside the plastic hinge region due to higher mode bending moments, the inelastic curvatures (and strains) are usually relatively small. If the analysis indicates significant yielding in the upper regions of the wall due to an irregularity in the building, such as a cut-off wall, or a transfer member framing into the core, the region should be designated as an additional plastic hinge region consistent with CSA A23.3 Clause 21.5.2.1.4, and the procedures described above for the plastic hinge region used to evaluate the deformation demands. One of the advantages of a non-linear analysis is that it will reveal the effect of such irregularities (see Example 3 in Appendix B).

Deformation Demands on SFRS – Coupling Beams

The deformation demands on coupling beams must be limited using either one of two procedures. The first considers only the inelastic portion of the coupling beam rotations consistent with the procedures in CSA A23.3, while the second considers the total rotational demands on coupling beams.

Procedure 1 – the inelastic rotational demands on the coupling beams must be limited to the values given in CSA A23.3 Clause 21.5.8.4.5 as follows:

- 0.04 for coupling beams with diagonal reinforcement meeting all requirements of CSA A23.3 Clause 21.5.8.2, or
- 0.02 for coupling beams without diagonal reinforcement meeting all requirements of CSA A23.3 Clause 21.5.8.1.

The inelastic rotational demands on the coupling beams can be determined from the top wall displacements using the procedures in CSA A23.3 Clause 21.5.8.4.4, or can be taken directly from the non-linear analysis.

Procedure 2 – the total rotational demands on coupling beams must be limited as follows:

- 0.06 for coupling beams with diagonal reinforcement meeting all requirements of CSA A23.3 Clause 21.5.8.2, or
- 0.03 for coupling beams without diagonal reinforcement meeting all requirements of CSA A23.3 Clause 21.5.8.1.

Shear Force Demands on Wall Piers

The mean shear force demand determined from non-linear analysis must be less than the factored shear resistance calculated using the procedures in CSA A23.3 Clause 21.5.9 with the regular resistance factors from CSA A23.3 applied to the specified material strengths. If the maximum shear force demand from a ground motion is greater than the nominal resistance calculated using resistance factors equal to 1.0 applied to the specified material strengths, it is considered an unacceptable response. See subsection **Evaluation Criteria** in **Section 3.4.8.5 Evaluation of Life Safety Performance** for more information on unacceptable responses.

The mean shear force demand determined from Non-linear Dynamic Analysis does not need to be increased (by the 1.3 or 1.5 factor used by LABSDC guidelines and PEER TBI guidelines, respectively) because the shear resistance determined from CSA A23.3 Clause 21.5.9 includes a safe limit on the diagonal compression stresses in concrete shear walls to avoid brittle compression-shear failure.

As described in **Section 3.4.4.5 Design of Walls for Shear**, within the plastic hinge region, the shear resistance is reduced as a function of the inelastic rotational demands calculated as part of the assessment of deformation demands on wall piers.

Example 5 in Appendix B compares the shear force demands from Non-linear Dynamic Analysis with the design shear force specified by CSA A23.3 for two buildings. Non-linear Dynamic Analysis generally gives an upper-bound estimate of the shear force demands compared with the procedures in CSA A23.3 for estimating the same.

Force Demands on Other Members

All elements of the structure, including the Gravity-Load Resisting Frame members, must be checked for actions resulting from the combined gravity load and the demands from earthquake ground motions.

Gravity-load resisting elements can be included in the model of the structure or can be checked independently based on the results (deformations) determined from the Non-linear Dynamic Analysis. The gravity-load members can be modeled as linear-elastic elements allowing the Force-Controlled Demands to be assessed, or, where appropriate, modeled as non-linear elements allowing the deformation demands (bending moment) and Force-Controlled Demands (shear and axial force) to be assessed.

Critical Force-Controlled Actions

Member actions are classified as either Deformation-Controlled Actions or Force-Controlled Actions. Force-Controlled Actions are further classified into different categories of criticality. The Basis of Design Document prepared by the SER and approved by the Peer Review panel must identify the critical Force-Controlled Actions for the building.

The following are examples of what is usually considered a critical Force-Controlled Action in a tall core wall building:

- Shear demands on gravity-load columns,
- Axial load demands on gravity-load columns acting as (unintentional or intentional) outriggers,
- Shear and bending moment demands on transfer slabs and girders,
- In-plane shear demand on transfer diaphragms,
- Force transfer between diaphragms and vertical elements of the SFRS, and
- Shear force demands on foundation elements.

For critical force-controlled elements, the mean force demand determined from non-linear analysis must be less than the factored resistance calculated using the regular resistance factors from CSA A23.3 applied to the specified material strengths. When the maximum demand from a ground motion is greater than the nominal resistance, calculated using resistance factors equal to 1.0 applied to the specified material strengths, it is considered an unacceptable response. See subsection Unacceptable Response in Section 3.4.8.5 Evaluation of Life Safety Performance for more information on unacceptable responses.

For force-controlled demands that are not considered critical, it may be appropriate to compare the mean force demand with a calculated resistance larger than the factored resistance calculated using the regular resistance factors from CSA A23.3 applied to the specified material strengths. This issue should be addressed in the Basis of Design Document prepared by the SER and approved by the Peer Review panel.

Slab-Column Connections

The demands on slab–column connections can be treated as a deformation-controlled action, and the requirement for shear reinforcement can be determined in accordance with CSA A23.3 Clause 21.11.4, with the interstorey drift ratio determined from Non-linear Dynamic Analysis.

Interstorey Drift Ratio Due to Shear Strain

The fibre models used for concrete shear walls give an accurate estimate of the non-linear response of walls subjected to axial load and bending moment, but do not account for all aspects of shear stresses and shear strains. The plastic hinge region of a concrete wall with diagonal cracks will experience significant shear strains (interstorey drift ratios) in the absence of any applied shear force. Consistent with the simplified envelope of interstorey drift demands on Gravity-Load Resisting Frames, given in CSA A23.3 Clause 21.11, the magnitude of the shear strain, which equals the magnitude of the resulting interstorey drift ratio, can be estimated as 60% of the inelastic rotational demand $(0.6\theta_{id})$. If the interstorey drift ratio determined by the Non-linear Dynamic Analysis is less than this value over the height of the plastic hinge, the influence of the additional interstorey drift ratios must be accounted for by separate analysis.

Sloped Columns

If the building includes inclined vertical members, the structural model must account for the vertical accelerations of all mass supported by the inclined vertical members and must include all structural framing elements that transfer inertial forces generated by the vertical accelerations of the mass supported by the inclined vertical members. To accurately model the coupling of the horizontal modes of the SFRS with the vertical modes of the Gravity-Load Resisting Frame, the structural model may require the complete gravity load system. Finally, the analysis must include appropriate vertical ground motion components.

4.0 QUALITY MANAGEMENT IN PROFESSIONAL PRACTICE

4.1 ENGINEERS AND GEOSCIENTISTS BC QUALITY MANAGEMENT REQUIREMENTS

Engineering Professionals must adhere to applicable quality management requirements during all phases of the work, in accordance with the Engineers and Geoscientists BC Bylaws and quality management standards.

To meet the intent of the quality management requirements, Engineering Professionals must establish and maintain documented quality management processes for the following activities:

- Use of relevant professional practice guidelines
- Authentication of professional documents by application of the professional seal
- Direct supervision of delegated professional engineering activities
- Retention of complete project documentation
- Regular, documented checks using a written quality control process
- Documented field reviews of engineering designs and/or recommendations during implementation or construction
- Where applicable, documented independent review of structural designs prior to construction
- Where applicable, documented independent review of high-risk professional activities or work prior to implementation or construction

4.1.1 USE OF PROFESSIONAL PRACTICE GUIDELINES

Engineering Professionals are required to comply with the intent of any applicable professional practice guidelines related to the engineering work they undertake. As such, Engineering Professionals must implement and follow documented procedures to ensure they stay informed of, knowledgeable about, and meet the intent of professional practice guidelines that are relevant to their professional activities or services. These procedures should include periodic checks of the Engineers and Geoscientists BC website to ensure that the latest versions of available guidance is being used.

For more information, refer to *Guide to the Standard for the Use of Professional Practice Guidelines* (Engineers and Geoscientists BC 2021a), which also contains guidance for how an Engineering Professional can appropriately depart from the guidance provided in professional practice guidelines.

4.1.2 AUTHENTICATING DOCUMENTS

Engineering Professionals are required to authenticate all Documents, including electronic files that they prepare or deliver in their professional capacity to others who will rely on the information contained in them. This applies to Documents that Engineering Professionals have personally prepared and those that others have prepared under their direct supervision.

Failure to appropriately authenticate Documents is a breach of the Bylaws.

For more information, refer to *Guide to the Standard for the Authentication of Documents* (Engineers and Geoscientists BC 2021b).

4.1.3 DIRECT SUPERVISION

Engineering Professionals are required to directly supervise any engineering work they delegate. When working under the direct supervision of an Engineering Professional, an individual may assist in performing engineering work, but they may not assume responsibility for it. Engineering Professionals who are professional licensees engineering may only directly supervise work within the scope of their licence.

When determining which aspects of the work may be appropriately delegated using the principle of direct supervision, the Engineering Professional having ultimate responsibility for that work should consider:

- the complexity of the project and the nature of the risks associated with the work;
- the training and experience of individuals to whom the work is delegated; and
- the amount of instruction, supervision, and review required.

Careful consideration must be given to delegating field reviews. Due to the complex nature of field reviews, Engineering Professionals with overall responsibility should exercise judgment when relying on delegated field observations, and should conduct a sufficient level of review to have confidence in the quality and accuracy of the field observations. When delegating field review activities, Engineering Professionals must document the field review instructions given to a subordinate. (See Section 4.1.6 Documented Field Reviews During Implementation or Construction.)

Due to the amount of work that needs to go into the design of a tall concrete building project, it is common for the SER to delegate specific components to a number of other Engineering Professionals and Engineers in Training. The design of the Gravity-Load Resisting Frame and the Lateral Load Resisting System are often delegated to different people, and even components of each (e.g., columns, slabs, foundations) might be further delegated; it is the SER's responsibility to determine which components may be delegated, and to whom, considering each delegate's education, training, and experience. The SER must have the adequate education, training, and experience to take responsibility for all aspects of the design and be actively involved throughout the design of each component. They must oversee the design, coordination, and integration of all components and facilitate any coordination required between delegated. The SER is ultimately responsible for all components of the design, regardless of whether they were delegated to other Engineering Professionals who themselves have adequate education, training, and experience to take responsibility on their own.

For more information, refer to *Guide to the Standard for Direct Supervision* (Engineers and Geoscientists BC 2021c).

4.1.4 RETENTION OF PROJECT DOCUMENTATION

Engineering Professionals are required to establish and maintain documented quality management processes to retain complete project documentation for a minimum of ten (10) years after the completion of a project or ten (10) years after an engineering document is no longer in use.

These obligations apply to Engineering Professionals in all sectors. Project documentation in this context includes documentation related to any ongoing engineering work, which may not have a discrete start and end, and may occur in any sector.

Many Engineering Professionals are employed by organizations, which ultimately own the project documentation. Engineering Professionals are considered compliant with this quality management requirement when reasonable steps are taken to confirm that (1) a complete set of project documentation is retained by the organizations that employ them, using means and methods consistent with the Engineers and Geoscientists BC Bylaws and quality management standards; and (2) they consistently adhere to the documented policies and procedures of their organizations while employed there.

For more information, refer to *Guide to the Standard for Retention of Project Documentation* (Engineers and Geoscientists BC 2021d).

4.1.5 DOCUMENTED CHECKS OF ENGINEERING AND GEOSCIENCE WORK

Engineering Professionals are required to perform a documented quality checking process of engineering work, appropriate to the risk associated with that work. All Engineering Professionals must meet this quality management requirement.

The checking process should be comprehensive and address all stages of the execution of the engineering work. This process would normally involve an internal check by another Engineering Professional within the same organization. Where an appropriate internal checker is not available, an external checker (i.e., one outside the organization) must be engaged. In some instances, self-checking may be appropriate. Where internal, external, or self-checking has been carried out, the details of the check must be documented. The documented quality checking process must include checks of all professional deliverables before being finalized and delivered.

Engineering Professionals are responsible for ensuring that the checks being performed are appropriate to the level of risk associated with the item being checked. Considerations for the level of checking should include:

- the type of item being checked;
- the complexity of the subject matter and underlying conditions related to the item;
- the quality and reliability of associated background information, field data, and elements at risk; and
- the Engineering Professional's training and experience.

As determined by the Engineering Professional, the individual doing the checking must have current expertise in the discipline of the type of work being checked, be sufficiently experienced and have the required knowledge to identify the elements to be checked, be objective and diligent in recording observations, and understand the checking process and input requirements.

Considering the vast use of software, and in many cases the number of delegates involved, in the design of tall concrete buildings, it is critical that the SER be actively involved in making and/or reviewing the assumptions, input, and output of all models used. The use of technology (i.e., spreadsheets, analysis and modelling software) is an important part of the design of tall concrete buildings. The SER must use their education, training, and experience to continually question the results to make sure they make sense, and, as required, perform independent analyses with different software, simplified models, or hand calculations to verify the results. Modelling considerations for the Gravity-Load Resisting Frame, the Lateral Force Resisting System for wind loads, the Lateral Force Resisting System for seismic loads (i.e., SFRS), and Non-linear Dynamic Analysis are discussed in Sections 3.2 Design for Gravity Loads, respectively.

For more information, refer to *Guide to the Standard for Documented Checks of Engineering and Geoscience Work* (Engineers and Geoscientists BC 2021e).

4.1.6 DOCUMENTED FIELD REVIEWS DURING IMPLEMENTATION OR CONSTRUCTION

Field reviews are reviews conducted at the site of the construction or implementation of the engineering work. They are carried out by an Engineering Professional or a subordinate acting under the Engineering Professional's direct supervision (see **Section 4.1.3 Direct Supervision**).

Field reviews enable the Engineering Professional to ascertain whether the construction or implementation of the work substantially complies in all material respects with the engineering concepts or intent reflected in the engineering documents prepared for the work.

It is important to verify during construction that all assumptions and limitations made during design are appropriately implemented on site. The performance of the building can be significantly and negatively affected by improper implementation of the design requirements.

Concrete walls including shear walls, core walls, and columns require careful review of a number of items. These may include, but are not limited to:

- Cover to wall reinforcement taking into account the applicable environmental and fire exposure:
- Cover, spacing, and geometry of ties;
- Size, spacing, and lap splices of reinforcement;
- Anchorage of horizontal reinforcement (to tie the zones together);
- Location of penetrations, ducts, and conduits, particularly those in and around the Lateral Force Resisting System elements; and
- Pour height of column and wall concrete from level below to not detract from punching shear capacity of slab.

Slabs with sloping for drainage, such as exterior or parking slabs, are another example of critical components to review on site for conformance with structural drawings. If the thickness and placement of reinforcement in the slab is not as expected, the slab will not perform as expected. Some examples of critical items to be verified during Field Reviews of slabs include, but are not limited to, the following:

- Thickness of concrete slabs increased thickness may overload the supporting columns and decreased thickness may cause punching shear, strength, or deflection issues;
- The high and low spots of the concrete slab are as designed;
- Whether the concrete slab itself is sloped (bottom and/or top) or whether topping will be added after;
- Whether the reinforcement is placed in the minimum slab depth or sloped with the topping (only applicable when the concrete is placed monolithically);
- The cover on the reinforcement and arrangement of reinforcement layers;
- Any "puddling" of higher strength concrete or areas of high strength reinforcement; and
- Location of penetrations, ducts, and conduits, particularly those in transfer slabs or beams or in close proximity to columns.
- Ties in correct place in the raft (not on top of the bottom bars)

The above lists of critical items for Field Review does not remove the requirement for the SER, or a person under their direct supervision, to review all components and details of the structural design.

For more information, refer to *Guide to the Standard for Documented Field Reviews During Implementation or Construction* (Engineers and Geoscientists BC 2021f).

4.1.7 DOCUMENTED INDEPENDENT REVIEW OF STRUCTURAL DESIGNS

Engineering Professionals developing structural designs are required to engage an independent review of their structural designs. An independent review is a documented evaluation of the structural design concept, details, and documentation based on a qualitative examination of the substantially complete structural design documents, which occurs before those documents are issued for construction or implementation. It is carried out by an experienced Engineering Professional qualified to practice structural engineering, who has not been involved in preparing the design.

The Registered Professional of Record (i.e., the SER) must conduct a risk-assessment after conceptual design and before detailed design to (1) determine the appropriate frequency of the independent review(s); and (2) determine if it is appropriate for the independent reviewer to be employed by the same firm as the Registered Professional of Record (Type 1 Review), or if the independent reviewer should be employed by a different firm (Type 2 Review).

The risk-assessment may determine that staged reviews are appropriate; however, the final independent review must be completed after checking has been completed and before the documents are issued for construction or implementation. Construction must not proceed on any portion of the structure until an independent review of that portion has been completed.

The documented risk assessment used to determine whether a Type 1 or Type 2 Independent Review is required should consider:

- the consequences of failure,
- the complexity of the structural design,
- the modes of failure,
- the nature of the design assumptions,
- the uniqueness of the structural design, and
- whether a substantially similar structural design by the same Professional of Record was subjected to a Type 2 Independent Review in the reasonably proximate past.

A Type 1 Independent Review would be appropriate for a tall concrete building where the SER and Firm have experience with similar buildings and one of these buildings was recently subjected to a Type 2 Independent Review.

Tall concrete buildings are generally large buildings with many occupants and thus the consequences of a failure are potentially dire. Many tall concrete buildings have unique architecture, which increases the uniqueness of the structural system and the complexity of the structural design. Type 2 Independent Reviews are typically required for tall concrete buildings where there are any irregular or uncommon aspects to the building, or where the structural design involves issues without well-defined solutions. They are especially important when the SER and Firm do not have experience with similar buildings. Multiple towers on a shared large podium structure is an example of a problem without a well-defined solution available in the Code.

When Non-linear Dynamic Analysis is used for the seismic design, a Type 2 Independent Review is required, and a Peer Review is required. The Peer Review requirements are separate from the requirements for document Independent Review of structural designs and are discussed further in **Section 4.3 Peer Review**.

One of the reasons that Type 2 Independent Reviews are generally recommended for tall concrete buildings is that the state-of-the-art knowledge on seismic design is continually evolving, and in the few years that it takes for Provincial and local municipalities to adopt the National Building Code changes, which at the time of publication were state-of-the-art, best practice is likely to have already significantly changed. A related issue is the prevalence of *unusual irregularities* in tall concrete buildings, i.e., significant irregularities that are not accounted for in the current edition of the Building Code.

While Engineers and Geoscientists BC require that the independent review be completed before the structural documents are issued for construction or implementation, some Authorities Having Jurisdiction require that the Independent Review be conducted before the structural documents are issued for building permit. Regardless of whether an independent review is required before building permit, the structural documents must be substantially complete such that the design can be checked for conformance to the Code. Refer to the Practice Advisory Issued for Building Permit Documents (EGBC 2020). In the case where the independent review is required by the AHJ to occur before building permit, regardless of whether significant changes occur, the SER should consider requesting a follow up independent review from the independent reviewer closer to when the structural documents are to be issued for construction.

For more information, refer to *Quality Management Standards – Guide to the Standard for Documented Independent Review of Structural Designs* (Engineers and Geoscientists BC 2021g).

4.1.8 DOCUMENTED INDEPENDENT REVIEW OF HIGH-RISK PROFESSIONAL ACTIVITIES OR WORK

Engineering Professionals must perform a documented risk assessment prior to initiation of a professional activity or work, to determine if that activity or work is high risk and requires a documented independent review.

If the activities or work are deemed high risk, and an independent review is required, the results of the risk assessment must be used to (1) determine the appropriate frequency of the independent review(s); and (2) determine if it is appropriate for the independent reviewer to be employed by the same firm as the Registered Professional of Record, or if the independent reviewer should be employed by a different firm.

The documented independent review of high-risk professional activities or work must be carried out by an Engineering Professional with appropriate experience in the type and scale of the activity or work being reviewed, who has not been involved in preparing the design.

The documented independent review must occur prior to implementation or construction; that is, before the professional activity or work is submitted to those who will be relying on it.

4.2 OTHER QUALITY MANAGEMENT REQUIREMENTS

Engineering Professionals must also be aware of any additional quality management requirements from other sources that are relevant to their work, which may include but are not limited to:

- legislation and regulations at the local, regional, provincial, and federal levels;
- policies of authorities having jurisdiction at the local, regional, provincial, and federal levels;
- agreements and service contracts between clients and Engineering Professionals or their firms; and/or
- standards for engineering firms, particularly those that apply to quality management system certification, such as the ISO 9000 family.

Engineering Professionals should assess any areas of overlap between the Engineers and Geoscientists BC quality management requirements and the requirements of other applicable sources. If the requirements of different sources overlap, Engineering Professionals should attempt to meet the complete intent of all requirements.

Where there are conflicts between requirements, Engineering Professionals should negotiate changes or waivers to any contractual or organizational requirements which may conflict with requirements of legislation, regulation or the Engineers and Geoscientists BC Code of Ethics. Generally, no contractual obligation or organizational policy that may apply to an Engineering Professional will provide justification or excuse for breach of any of the Engineering Professional's obligations under any legislation, regulation, or the Engineers and Geoscientists BC Code of Ethics. Where such conflicts arise and cannot be resolved, Engineering Professionals should consider seeking legal advice from their own legal advisers on their legal rights and obligations in the circumstances of the conflict, and they may also seek practice advice from Engineering and Geoscientists BC on any related ethical dilemma that they may face in the circumstances.

4.3 PEER REVIEW

There may be a number of reasons why a Peer Review is required by the Code and its referenced documents, legislation or regulation, the client or Authority Having Jurisdiction, or another party. As described in **Section 3.4.8 Evaluation of Life Safety Performance Using Non-linear Dynamic Analysis**, whenever Non-linear Dynamic Analysis is used for the seismic design of a concrete building designed to CSA A23.3, "the non-linear analysis and resulting design shall be reviewed by a qualified independent review panel." This mandatory requirement is clearly stated in CSA A23.3 Clause 21.2.3.

CSA A23.3 refers to the LATBSDC guidelines for the requirements for a qualified independent Peer Review panel. The Peer Review panel must include at least three reviewers, including at least one reviewer having recognized expertise in each of the following areas: earthquake resistant design, Nonlinear Time History Analysis, and seismic hazard. It is recommended that at least one reviewer on the Peer Review panel be a Registrant of Engineers and Geoscientists BC.

A Peer Review is a Code requirement, not a direct requirement of Engineers and Geoscientists BC, and therefore is required to be done in addition to a documented Independent Review of structural designs, where applicable. Independent Reviews of structural designs (see Section 4.1.7 of these guidelines) are a mandatory requirement, as per the Bylaws, for the SER to engage one Engineering Professional, who was not previously involved in the work, to conduct a documented qualitative evaluation of the concept, details, and documentation before those documents are issued for construction. The independent review was previously referred to as a concept review, and is generally a high level review of the overall project.

The reasons for using Non-linear Dynamic Analysis for the seismic design of a concrete building (with a Peer Review) will generally also trigger the requirement for a Type 2 Independent Review of structural

design. As described in Section 4.1.7 of these guidelines, any irregular or uncommon aspects to building design (requiring Non-linear Dynamic Analysis), or where the structural design involves issues without well-defined solutions (such as is the case with Non-linear Dynamic Analysis), are reasons for a Type 2 Independent Review.

The Independent Review of structural design cannot be divided up, and assigned to different professionals. For example, the Peer Review panel will be independent experts from outside the SER's Firm and they will deal with aspects of the building design requiring Non-linear Dynamic Analysis. The remaining aspects of the structural design may be such that a Type 1 Independent Review of structural design would be appropriate for dealing with these issues; however, it is not permitted to divide the responsibility for the Independent Review of structural design in this way (i.e., separating the Independent Reviews of the Lateral Force Resisting System and the Gravity-Load Resisting Frame). One Engineering Professional must take responsibility for the complete Independent Review of the structural design.

The SER is responsible for ensuring that both an Independent Review of structural designs, as per the Bylaws for all structural designs, and a full Peer Review, as per the Code for Non-linear Dynamic Analysis, are completed during the design of a tall concrete building, before the documents are issued for construction.

The Peer Review panel must review and approve the Basis of Design Document before the SER commences the detailed design of the building; as such, the Peer Review panel should be engaged as early as possible in the design process.

When an Engineering Professional is involved in the Peer Review of a tall concrete building, they must adhere to the Code of Ethics, specifically tenet 13, which requires that Registrants conduct themselves with fairness, courtesy, and good faith towards clients, colleagues, and others, and give credit where it is due and accept, as well as give, honest and fair professional comment, and should inform (or make every effort to inform) the Registered Professionals of Record when applicable, prior to reviewing their work.

4.4 PRACTICE ADVICE

Engineers and Geoscientists BC provides their Registrants and others with assistance addressing inquiries related to professional practice and ethics.

Practice advisors at Engineers and Geoscientists BC can answer questions regarding the intent or application of the professional practice or quality management aspects of these guidelines.

To contact a practice advisor, email Engineers and Geoscientists BC at practiceadvisor@egbc.ca.

5.0 PROFESSIONAL REGISTRATION & EDUCATION, TRAINING, AND EXPERIENCE

5.1 PROFESSIONAL REGISTRATION

Engineering Professionals have met minimum education, experience, and character requirements for admission to their professions. However, the educational and experience requirements for professional registration do not necessarily constitute an appropriate combination of education and experience for structural engineering services for tall concrete building projects. Professional registration alone does not automatically qualify an Engineering Professional to take professional responsibility for all types and levels of professional services in this area of practice.

It is the responsibility of Engineering Professionals to determine whether they are qualified by training and/or experience to undertake and accept responsibility for carrying out structural engineering services for tall concrete building projects (Code of Ethics Principle 2).

5.2 EDUCATION, TRAINING, AND EXPERIENCE

Structural engineering services for tall concrete building projects, as described in these guidelines, requires minimum levels of education, training, and experience in many overlapping areas of engineering.

Engineering Professionals who take responsibility for the integrity of the structural systems of tall concrete building projects must adhere to the second principle of the Engineers and Geoscientists BC Code of Ethics, which is to "practice only in those fields where training and ability make the registrant professionally competent" and, therefore, must evaluate their own qualifications and must possess the appropriate education, training, and experience to provide the services.

The level of education, training, and experience required of Engineering Professionals should be adequate for the complexity of the project. This section describes indicators that Engineering Professionals can use to determine whether they have an appropriate combination of education and experience.

Note that these indicators are not an exhaustive list of education and experience types that are relevant to structural engineering services for tall concrete building projects. Satisfying one or more of these indicators does not automatically imply competence in this area of practice.

5.2.1 EDUCATIONAL INDICATORS

Certain indicators show that Engineering Professionals have received education that might qualify them to participate professionally in the structural design and related services for tall concrete building projects. Educational indicators are subdivided into formal education (such as university or engineering school) and informal education (such as continuing education).

Formal educational indicators include having obtained or completed one or more of the following:

- An undergraduate-level degree in civil engineering or a related engineering field from an accredited engineering program
- A postgraduate-level degree in structural or a related engineering field from an accredited engineering program

Informal educational indicators include having participated in or undertaken one or more of the following which relate to the structural design or related for tall concrete building projects:

- Training courses facilitated by the Engineering Professional's employer
- Continuing education courses or sessions offered by professional organizations (such as Engineers and Geoscientists BC or the Structural Engineers Association of BC)
- Conferences or industry events
- A rigorous and documented self-study program involving a structured approach that contains materials from textbooks and technical papers

5.2.2 EXPERIENCE INDICATORS

Certain indicators show that Engineering Professionals have an appropriate combination of experience that might qualify them to participate professionally in structural engineering design and related services for tall concrete building projects. To take full responsibility for a tall concrete building project, as the SER, experience indicators include having completed one or more of the following:

- Has significant experience as a senior Engineering Professional, under the direct supervision of the SER, participating in the analysis and design of the Lateral Force Resisting Systems (LFRS) and Gravity-Load Resisting Frames of tall concrete buildings, including the coordination and integration of the two systems.
- Was the SER responsible for the analysis and design of the Lateral Force Resisting Systems (LFRS) and Gravity-Load Resisting Frames of low- or mid-rise concrete buildings.
- Participated in academic or industry working groups that focus on the analysis and design of tall concrete buildings.

6.0 REFERENCES AND RELATED DOCUMENTS

Documents and legislation cited in the main guidelines appear in **Section 6.1 References**; documents cited in appendices appear in the reference list at the end of each corresponding appendix.

Related documents that may be of interest to users of these guidelines but are not formally cited elsewhere in this document appear in **Section 6.2: Related Documents**.

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NBC

NBC Commentary

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BCBC

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VERSION HISTORY

VERSION NUMBER	PUBLISHED DATE	DESCRIPTION OF CHANGES
1.0	Month, DD, YYYY	Initial version.
7.0 APPENDICES

Appendix A: Authors and Reviewers

Appendix B: Non-linear Time History Analysis Examples

Appendix C: Seismicity in Southwestern BC

APPENDIX A: AUTHORS AND REVIEWERS

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APPENDIX B: NON-LINEAR TIME HISTORY ANALYSIS EXAMPLES

Example 1: Two Towers on Common Podium

Non-linear Time History Analysis was used to determine the transfer forces that must be resisted by the diaphragms connecting two towers that share a common podium structure. The figure at right shows how a 42storey tower is connected to a 21-storey tower from level P2 to level 7. The two towers have very different modal properties with the first three modal periods of the taller tower exceeding the first translational period of the shorter tower. The figure at bottom-left shows the results at level 7 for one ground motion, with the maximum value occurring at t = 38.9 s. Average transfer force for 11 pairs of ground motions is 14600 k, which is more than twice as much as the design base shear. The diaphragm at this level must be designed to resist i) tension/compression force, and ii) the shear force from out of phase movement of the two towers.







PROFESSIONAL PRACTICE GUIDELINES STRUCTURAL ENGINEERING SERVICES FOR TALL CONCRETE BUILDING PROJECTS



Example 4: Column in Close Proximity to Core

A gravity-load column, located less than 6 ft. from the core, supports a 58 in. thick transfer slab that is connected to the core at grade level (Fig. top-left). Non-linear Time History Analysis was used to investigate the demands on the column due to the transfer slab acting as an outrigger. The axial force induced in the column is more than four times the axial force from dead plus live load, and thus the column will be subjected to axial tension in one direction of the earthquake and high compression in the other direction of the earthquake (Fig. top-right). In addition, bending moments (Fig. bottom-left) and shear forces (Fig. bottom-right) are induced into the gravity-load column.



Example 5: Inelastic Effects of Higher Mode Shears

The plots below compare the mean shear force demands determined using Non-linear Dynamic Analysis (NLDA) and the design shear force demands specified by CSA A23.3 as a ratio of the shear demands determined from Linear Dynamic Analysis of the building using the force reduction factors specified by the Code.

The mean shear demands on the total core from NLDA is shown as dashed lines, the mean shear demands on individual wall piers is shown as dots, while CSA A23.3 specified shear force demands are shown as solid lines. Separate plots are provided in the two directions of the core. The data in the left plot is from a building that is similar to a typical core wall building in BC with coupled walls in one-direction and cantilever walls in the perpendicular direction, while the data in the right plot is from a building that has coupled walls in two directions.

The shear force demands from Non-linear Dynamic Analysis are the single largest shear force pulse existing in the structure (for a short time) during the ground motion. The design shear force demands specified by CSA A23.3 include a flexural overstrength factor and a dynamic amplification factor for higher modes in the cantilever wall direction. As discussed in Section 3.4.4.5, the dynamic amplification in CSA A23.3 is a lower-bound value because the maximum shear force occurs only once during an earthquake and lasts for a very short time; well detailed concrete walls have shear ductility; and the maximum shear force generally does not occur when the base rotation is maximum, while the CSA A23.3 shear design procedures for concrete walls assumes that it does.

Non-linear Dynamic Analysis indicates different amplification factors for different walls; however, It is important to note that the redistribution of shear forces to individual wall piers in a core depend very much on the local wall shear strains, which are typically not modelled accurately in Non-linear Dynamic Analysis.



APPENDIX C: SEISMCITY IN SOUTHWESTERN BC



Southwestern BC has a unique seismic setting that includes earthquakes from three sources: crustal events, which occur along shallow faults in the earth's crust; in-slab events, which occur deep within subducting tectonic plates; and subduction interface events, which are caused by slip between subducting tectonic plates.

(Figure from the United States Geological Survey)

There are several areal crustal sources which impact the seismic hazard in Southwestern BC. The Geological Survey of Canada has included active faults through to the western coast of Vancouver Island for NBC 2020 including Devil's Mountain Fault and a west-northwestwards extension of this fault called the Leech River Fault, incorporating various fault lengths and rates (Adams et al. 2019, Halchuk et al. 2019, and Open File 8630).

Two in-slab area sources are included in the model to capture the seismicity that occurs in the subducting Juan de Fuca plate including:

1) the Onshore Juan de Fuca Plate Bending and

2) The Georgia Straight/Puget Sound.

The Georgia Straight/Puget Sound was refined in the Canada's 6th generation seismic hazard model to be used in NBC 2020. The 2015 Georgia Straight/Puget Sound was replaced by three sources (western, central and eastern) set at 50, 55, and 60 km depths to better model the dip of the in-slab source (Adams et al. 2019, Open File 8630).

The Juan de Fuca subduction zone was modeled with a series of finite fault models which include the Juan de Fuca segment of the Cascadia subduction zone (termed Cascadia Interface Subduction or CIS source) and the Explorer segment of the Cascadia subduction zone (termed Explorer Interface Subduction source). Also included along with the interface sources are two thrust fault sources: the Winona Thrust Fault and Haida Gwaii Thrust Fault.



The disaggregation results in Vancouver $V_{s30} = 450$ m/s using 6th generation of hazard models show that shallow crustal earthquakes with a magnitude of 5-7.5 at a distance of less than 30 km have minor contribution at short periods (Peak Ground Acceleration PGA, up to 0.8 sec). A large in-slab contribution is observed from magnitude 6-7.5 earthquakes at distances of 50-150 km from PGA up to T = 1~2 seconds. A significant interface (subduction) contribution is seen from magnitude 8-9 earthquakes at distances of 100-150 km for the period of 1.0 second and greater.

6.1 - APPENDIX A

Pursuant to the *Professional Governance Act,* S.B.C. 2018, c. 47

BYLAWS OF ENGINEERS AND GEOSCIENTISTS BC

DATED FEBRUARY 5, 2021AS AMENDED JUNE 25, 2021





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1 Definitions and Communications

1.1 Definitions

(1) In these Bylaws the following definitions apply:

"Abuse of Process" means the complaint process is not being fairly or honestly used, or where multiple or successive complaints are made to cause vexation or oppression.

"Accounting Records" means true accounts of

- (a) the assets and liabilities of EGBC,
- (b) the sums of money received and expended by EGBC, and
- (c) the manner in respect of which such receipt and expenditure takes place.

"Alternative Complaint Resolution" means a process or processes for the full or partial resolution of one or more matters to be dealt with at a discipline hearing and includes

- (a) negotiation,
- (b) mediation, or
- (c) other processes the parties agree to.

"**Applicant**" means the same as set out in section 1(1) of the PGA [*Definitions and interpretation*].

"Audit and Practice Review Committee" means the audit and practice review committee established pursuant to section 63(1) of the PGA [Audits and practice reviews].

"Authenticate" means the act of a Professional Registrant Manually Authenticating or Digitally Authenticating a Document.

"**Bad Faith**" refers to a complaint that was made with untruthful, misleading, or unduly insensitive intent where the Complainant is motivated by malice or financial gain.

"Branch" means a geographical group of Registrants.

"Branch Representatives' Chair" means an individual who is appointed by the Council to chair meetings of representatives of each Branch and to act as a liaison between those representatives and the Council.

"Bylaws" means the bylaws of EGBC under the PGA.

"**Certificate Authority**" means a third party approved by EGBC to issue Digital Certificates to Professional Registrants.



"Code of Conduct" means the document created or adopted by a Registrant Firm pursuant to section 7.7.3(1)(a) of the Bylaws.

"Code of Ethics" means the Code of Ethics of EGBC set out in Schedule A of the Bylaws.

"**Committee**" means the same as defined in section 1(1) of the PGA [*Definitions and interpretation*].

"**Communications and Leadership Learning**" means Continuing Education Activities related to advancing an individual Registrant's non-technical knowledge and skills, including communications and leadership skills.

"**Complainant**" means a person who files a complaint against a Registrant and includes a member of the public or another Registrant.

"Conduct of Concern" means the same as defined in section 76(1) of the PGA [Conduct in another jurisdiction].

"**Conduct Unbecoming a Registrant**" means the same as defined in section 1(1) of the PGA [*Definitions and interpretation*].

"**Continuing Education Activity**" means an activity related to advancing an individual Registrant's knowledge in the categories of Ethical Learning, Regulatory Learning, Communications and Leadership Learning, or Technical Learning.

"**Continuing Education Hour**" means one hour of a Continuing Education Activity that contributes to an individual Registrant's maintenance of competency within the individual Registrant's

- (a) current area(s) of practice, including any anticipated future area(s) of practice, if the individual Registrant is a Professional Registrant, or
- (b) former area(s) of practice, if the individual Registrant is a non-practising Registrant or a life member or life limited licensee.

"**Council**" means the same as defined in section 1(1) of the PGA [*Definitions and interpretation*].

"**Credentials Committee**" means the credentials committee established pursuant to section 44(1) of the PGA [*Credentials committee*].

"Decision Maker" means

- (a) the Registrar in the case of a credentials hearing pursuant to section 5.19 of the Bylaws, and
- (b) the Discipline Hearing Panel in the case of a discipline hearing pursuant to section 10.7 of the Bylaws.



"**Delegated**" means, in relation to Direct Supervision, a Subordinate being directed to undertake certain activities, work, or decisions related to the Regulated Practice on behalf of a Professional Registrant who takes professional responsibility for the work of the Subordinate.

"**Deputy Registrar**" means any individual appointed by the Council as deputy registrar pursuant to section 31(1) of the PGA [*Registrar and register for regulatory body*].

"Different Governing Body" means the same as defined in section 76(1) of the PGA [Conduct in another jurisdiction].

"Digital Certificate" means a certificate issued to a Professional Registrant by a Certificate Authority that attests to the legitimacy of information through the use of encryption.

"**Digitally Authenticating**" means a Professional Registrant applying all of the following to a Document:

- (a) the Professional Registrant's Digital Seal;
- (b) a digital image of the Professional Registrant's signature;
- (c) a digital image of the date of authentication;
- (d) the Professional Registrant's Digital Certificate.

"**Digital Seal**" means a digital image of a Professional Registrant's Manual Seal, with no material variation in format or wording.

"**Direct Supervision**" means the responsibility for the control and conduct of the activities, work, or decisions related to the Regulated Practice that have been Delegated to a Subordinate.

"Disciplinary Order" means any of the following:

- (a) an order made pursuant to section 66(2)(a)(i) of the PGA [*Investigations*];
- (b) an order made pursuant to section 67(1) of the PGA [*Extraordinary action*];
- (c) a consent or undertaking given pursuant to section 72(1) of the PGA [*Reprimand* or remedial action by consent];
- (d) a consent order made pursuant to section 73(2)(a) or (b) of the PGA [*Consent* orders];
- (e) any agreement reached through the Alternative Complaint Resolution process pursuant to section 74 of the PGA [*Alternative complaint resolution*];
- (f) a determination made pursuant to sections 75(5)(b), 75(6), or 75(7) of the PGA [*Discipline hearings*], as applicable;
- (g) an assessment of costs made pursuant to section 81(1) of the PGA [Costs].



"**Discipline Committee**" means the discipline committee established pursuant to section 75(1) of the PGA [*Discipline hearings*].

"**Discipline Hearing Panel**" means a panel of at least 3 members of the Discipline Committee, one of whom must be a Lay Committee Member, that is established by the chair of the Discipline Committee pursuant to section 77(1) of the PGA [*Discipline committee to conduct hearings*] for the purpose of conducting a discipline hearing pursuant to section 75 of the PGA [*Discipline hearings*], or for the purpose of taking action pursuant to section 76 of the PGA [*Conduct in another jurisdiction*].

"**Discipline Resolution Panel**" means a panel of at least 3 members of the Discipline Committee, one of whom must be a Lay Committee Member, that is established by the chair of the Discipline Committee for the purpose of attempting to resolve one or more matters set out in a citation by means other than a discipline hearing pursuant to sections 72 to 74 of the PGA.

"**Document**" includes any physical or electronic record, including but not limited to a report, certificate, memo, specification, drawing, map, or plan, that conveys a design, direction, estimate, calculation, opinion, interpretation, observation, model, or simulation that relates to the Regulated Practice.

"EGA" means the Engineers and Geoscientists Act, R.S.B.C. 1996, c. 116.

"EGBC" means the Association of Professional Engineers and Geoscientists of the Province of British Columbia, also operating as Engineers and Geoscientists BC.

"Electronic Means" includes videoconference, telephone conference, and webcasting.

Ethical Learning", means Continuing Education Activities related to advancing an individual Registrant's knowledge of how to act ethically and meet the ethical obligations of Registrants pursuant to the PGA, regulations, Bylaws, and Code of Ethics.

"**Executive Director**" means the individual appointed by the Council as the chief executive officer of EGBC pursuant to section 32(1)(a) of the PGA [*Officers and committees*], who may also be the Registrar.

"Extraordinary Action Panel" means a panel of at least 3 members of the Discipline Committee, one of whom must be a Lay Committee Member, that is established by the chair of the Discipline Committee for the purpose of considering action that may be taken pursuant to section 67 of the PGA [*Extraordinary action*].

"Firm" means the same as defined in section 1(1) of the PGA [Definitions and interpretation].

"**Frivolous**" refers to a complaint that is obviously unsustainable in law or that displays no reasonable cause for complaint in law.

"Government Registrant" means the same as defined in section 1(1) of the PGA [Definitions and interpretation].



"Incompetent" means the same as defined in section 1(1) of the PGA [Definitions and interpretation].

"Individual With Authority" means an individual that is:

- (a) in respect of a Firm that is a corporation, a director or senior officer;
- (b) in respect of a Firm that is a partnership, a partner;
- (c) in respect of a Firm that is a sole proprietorship, an owner; or
- (d) any other individual that is authorized by a Firm to act in a similar capacity as a director, senior officer, or partner and to make legally binding decisions and take binding action on behalf of the Firm.

"In Good Standing" means a Registrant meets all of the following criteria:

- (a) the Registrant's registration is not suspended;
- (b) the Registrant has paid any annual fee owing to EGBC; and
- (c) if the Registrant is a Registrant Firm,
 - (i) the Registrant Firm's registration and Permit to Practice are not suspended, and
 - (ii) there are no conditions on the Registrant Firm's registration and Permit to Practice prohibiting it from engaging in the Regulated Practice.

"**Inspector**" means the Registrar and any person appointed as an inspector pursuant to section 68 of the PGA [*Inspectors*].

"Investigation Committee" means the investigation committee established pursuant to section 64 of the PGA [*Investigation committee*].

"Investigation Subcommittee" means any number of members of the Investigation Committee authorized by the Investigation Committee to carry out an investigation or oversee and take responsibility for an investigation carried out by an Investigator, which members may be the same as those serving on a Resolution Subcommittee.

"Investigator" means any of the following individuals:

- (a) a member of an Investigation Subcommittee;
- (b) an officer or an employee of EGBC or a contractor retained by EGBC who is authorized by the Investigation Committee to carry out an investigation pursuant to section 66(1)(a) of the PGA [Investigations];



(c) an Inspector appointed by the Investigation Committee pursuant to section 68(1) of the PGA [*Inspectors*].

"Lay Committee Member" means the same as defined in section 21 of the PGA [Definition].

"Lay Councillor" means the same as defined in section 1(1) of the PGA [Definitions and interpretation].

"Major Non-Conformance" means a situation in which, based on the evidence provided to the assessor,

- (a) there is systemic failure by a Registrant subject to a compliance audit to meet an applicable regulatory requirement(s), or
- (b) there are reasonable and probable grounds to believe that a Registrant subject to a compliance audit may be engaged in the Regulated Practice in a manner that may pose a risk of significant harm to the environment or to the health or safety of the public or a group of people.

"Manually Authenticating" means a Professional Registrant applying all of the following to a Document:

- (a) the Professional Registrant's Manual Seal;
- (b) the Professional Registrant's handwritten signature;
- (c) the date of authentication.

"Manual Seal" means the ink stamp or embossing machine issued to a Professional Registrant by EGBC that can create an impression on a Document.

"Minor Non-Conformance" means a situation in which, based on the evidence provided to the assessor,

- (a) there has been failure by a Registrant subject to a compliance audit to meet an applicable regulatory requirement(s), but such failure is not systemic, and
- (b) there are no reasonable and probable grounds to believe that the Registrant subject to a compliance audit may be engaged in the Regulated Practice in a manner that may pose a risk of significant harm to the environment or to the health or safety of the public or a group of people.

"Nomination Committee" means the nomination committee established pursuant to section 26(1) of the PGA [*Election of registrant councillors*].

"**Non-Contentious Decision**" means a decision which, pursuant to a policy approved by the Council, may be made by an officer in relation to an application for enrolment, admission, or reinstatement pursuant to the Bylaws.



"Panel" means one or more of the following:

- (a) Extraordinary Action Panel;
- (b) Discipline Resolution Panel;
- (c) Discipline Hearing Panel.

"**Permit to Practice**" means a certificate bearing a Permit to Practice Number that is issued to a Registrant Firm by EGBC and confirms that the Registrant Firm is entitled to engage in the Reserved Practice in British Columbia, subject to any suspensions, limitations, conditions, or restrictions on the Registrant Firm's registration.

"**Permit to Practice Number**" means the unique number that is issued to a Registrant Firm by EGBC and appears on the Permit to Practice.

"PGA" means the Professional Governance Act, S.B.C. 2018, c. 47.

"**Practice Advice Program**" means a program offered by EGBC to assist Registrants in dealing with professional or ethical issues, as required by section 57(1)(d) of the PGA [*Standards of conduct and competence*].

"**Practice Advisor**" means an individual Registrant employed or retained by EGBC who receives and responds to professional or ethical inquiries of Registrants through the Practice Advice Program.

"**Private Sector Firm**" means a Registrant Firm that is designated as a Private Sector Firm pursuant to section 5.12.2(2) of the Bylaws.

"Proceeding" means a motion, application, pre-hearing conference or hearing.

"Practice of Professional Engineering" means the same as defined in Schedule 1, section 5 of the PGA [*Definitions in respect of the Association of Professional Engineers and Geoscientists of the Province of British Columbia*] and prescribed by the *Engineers and Geoscientists Regulation*, B.C. Reg. 14/2021.

"Practice of Professional Geoscience" means the same as defined in Schedule 1, section 5 of the PGA [*Definitions in respect of the Association of Professional Engineers and Geoscientists of the Province of British Columbia*] and prescribed by the *Engineers and Geoscientists Regulation*, B.C. Reg. 14/2021.

"**Professional Misconduct**" means the same as defined in section 1(1) of the PGA [*Definitions and interpretation*].

"**Professional of Record**" means the Professional Registrant who is professionally responsible for activities, work, or Documents related to the Regulated Practice.



"**Professional Practice Management Plan**" means a document that is developed and maintained by a Registrant Firm and must meet the requirements set out in section 7.7.3 of the Bylaws.

"**Professional Registrant**" means a Registrant who is registered in one of the following categories of Registrants:

- (a) professional engineer;
- (b) professional geoscientist;
- (c) professional licensee engineering;
- (d) professional licensee geoscience;
- (e) life member prior to 1998;
- (f) honorary life member.

"**Public Sector Firm**" means a Registrant Firm that is designated as a Public Sector Firm pursuant to section 5.12.1(2) of the Bylaws.

"Recent Historical Member" means the same as defined in section 1.4 of the *Professional Governance General Regulation*, B.C. Reg. 107/2019 [*Definitions*].

"**Register**" means the register on a publicly available website maintained by or on behalf of EGBC pursuant to section 31(3) of the PGA [*Registrar and register for regulatory body*].

"**Registrant**" means the same as defined in Schedule 1, section 5 of the PGA [*Definitions in respect of the Association of Professional Engineers and Geoscientists of the Province of British Columbia*].

"Registrant Firm" means a Firm that is registered with EGBC as a Registrant.

"**Registrar**" means the individual appointed by the Council as registrar pursuant to section 31(1) of the PGA [*Registrar and register for regulatory body*], who may also be the Executive Director.

"**Regulated Practice**" means the same as defined in Schedule 1 section 5 of the PGA [Definitions in respect of the Association of Professional Engineers and Geoscientists of the Province of British Columbia] and prescribed by the Engineers and Geoscientists Regulation. <u>B.C. Reg. 14/2021</u>.

"Regulation of Firms Training Program" means the training program designated by EGBC for providing training and information to Responsible Registrants of Registrant Firms.

"**Regulatory Authority**" means a licensing or certification body for regulating engineering or geoscience in Canada, or an institution in another country that is, in the opinion of the Council, equivalent to EGBC.



"**Regulatory Learning**", means Continuing Education Activities related to advancing an individual Registrant's knowledge of the relevant regulatory requirements, including the PGA, regulations, Bylaws, Code of Ethics, codes, standards, policies, and requirements in relevant legislation.

"**Reporting Year**" means the period beginning on July 1 of a calendar year and ending on June 30 of the following calendar year.

"Reserved Practice" means the same as prescribed by the *Engineers and Geoscientists* Regulation, <u>B.C. Reg. 14/2021.</u>, pursuant to section 51(1)(b) of the PGA [Exclusivity of reserved titles and right of practice of reserved practice].

"**Resolution Subcommittee**" means any number of members of the Investigation Committee authorized by the Investigation Committee to attempt to resolve or oversee an attempt to resolve one or more matters subject to investigation pursuant to sections 72 to 74 of the PGA, which members may be the same as those serving on an Investigation Subcommittee.

"**Respondent**" means the same as defined in section 1(1) of the PGA [*Definitions and interpretation*].

"**Responsible Officer**" means an individual who has been designated by a Registrant Firm pursuant to section 5.12(13) of the Bylaws, must meet the requirements set out in sections 5.12(14), (15), (16) and (17) of the Bylaws, and has the responsibilities set out in section 5.12(18) of the Bylaws.

"**Responsible Registrant**" means a Professional Registrant who has been designated by a Registrant Firm pursuant to section 5.12(5) of the Bylaws, must meet the criteria set out in sections 5.12(7) and (8) of the Bylaws, and has the responsibilities set out in section 5.12(9) of the Bylaws.

"**Robert's Rules of Order**" means the procedural rules set out in the guide published by the Robert's Rules Association under the title "Robert's Rules of Order Newly Revised".

"Sole Practitioner" means a Professional Registrant who practises on their own, either in an incorporated or unincorporated manner.

"Structural Design" means a design of a Structure.

"**Structure**" means a series of connected, interrelated elements that form a system that provides adequate rigidity and can resist a series of external load effects applied to it, including its own weight. Examples include temporary or permanent structures such as buildings, retaining walls, large signage, support towers, bridges, dams, and tunnels.

"Subordinate" means any individual who engages in the Regulated Practice under the Direct Supervision of a Professional Registrant.



"Technical Learning" means Continuing Education Activities related to advancing an individual Registrant's technical and professional knowledge and skills within an individual Registrant's area(s) of practice, including any anticipated future area(s) of practice.

"Three-Year Rolling Period" means a period of 3 consecutive Reporting Years, with a new period starting on the first day of each Reporting Year. For greater clarity, Reporting Years 1, 2 and 3 is one period, Reporting Years 2, 3 and 4 is one period, and Reporting Years 3, 4 and 5 is one period, with the pattern continuing.

"Trainee" means the same as defined in section 1(1) of the PGA [*Definitions and interpretation*].

"Trivial" refers to a complaint that has no merit and does not warrant further investigation.

"**Vexatious**" refers to a complaint that has the intent of annoying, harassing, embarrassing, or abusing another party, or abusing the complaint process.

1.2 Written Notice to Registrants

- (1) In all instances where written notice is required to be provided to an individual Registrant pursuant to the PGA or the Bylaws, written notice to the individual Registrant may be provided by way of the individual Registrant's personal and unique email address.
- (2) In all instances where written notice is required to be provided to a Registrant Firm pursuant to the PGA or the Bylaws, written notice to the Registrant Firm may be provided by way of the personal and unique email address of the Responsible Officer or any of the Responsible Registrants of the Registrant Firm.



2 Governance

2.1 Committees Established

- (1) The Nomination Committee is established pursuant to section 26(1) of the PGA [*Election of registrant councillors*].
- (2) The Credentials Committee is established pursuant to section 44(1) of the PGA [*Credentials committee*].
- (3) The Audit and Practice Review Committee is established pursuant to section 63(1) of the PGA [*Audits and practice reviews*].
- (4) The Investigation Committee is established pursuant to section 64 of the PGA [*Investigation committee*].
- (5) The Discipline Committee is established pursuant to section 75(1) of the PGA [*Discipline hearings*].

2.2 Chairs, Vice-Chairs, and Members of Committees

- (1) Except as otherwise prescribed by the Lieutenant Governor in Council or provided in the Bylaws, the Council must appoint a chair of a Committee in accordance with the process and merit-based selection principles prescribed by the Lieutenant Governor in Council pursuant to section 25(1) of the PGA [Selection principles and criteria].
- (2) Except as otherwise prescribed by the Lieutenant Governor in Council or provided in the Bylaws, the Council may appoint a vice-chair of a Committee in accordance with the process and merit-based selection principles prescribed by the Lieutenant Governor in Council pursuant to section 25(1) of the PGA [*Selection principles and criteria*].
- (3) Any vice-chair appointed pursuant to subsection (2) may assume the role of chair in the following situations:
 - (a) whenever the chair is unavailable to act, but not for a term that is longer than the remainder of the term of the chair;
 - (b) whenever there is no chair appointed, until a chair is appointed by the Council or the term of the vice-chair expires.
- (4) At a meeting of a Committee, if neither the chair nor any vice-chair of the Committee attends the meeting in person or by Electronic Means at its appointed time, the Committee members may choose one of their number to chair the meeting.
- (5) A Registrant without the ability to engage in Reserved Practice pursuant to the PGA and Bylaws is not eligible for appointment to any Committee.



- (6) A member, a vice-chair, or a chair of a committee who ceases to be a Registrant In Good Standing is no longer eligible to serve on the Committee and must be removed from the Committee by Council.
- (7) A Committee member serves on a Committee at the pleasure of the Council and may be removed by the Council from a Committee without prior notice to the Committee member.

2.3 Conduct of Committee Meetings

- (1) A Committee may meet or adjourn as it sees fit, including meeting by any combination of Committee members attending in person or by Electronic Means.
- (2) Questions arising at a meeting of a Committee must be decided by a majority of the Committee members attending in person or by Electronic Means, who may each cast one vote on a matter put to a vote.
- (3) Despite subsection (2), the chair of a meeting of a Committee may only vote on a matter put to a vote in the case of an equality of votes, in which case the chair will have a casting vote.
- (4) A resolution that is assented to and adopted by Committee members in writing, although not passed during a meeting of the Committee, is of the same force and effect as if it had been duly passed at a meeting of the Committee.

2.4 Conduct of Council Meetings

- (1) The Council may meet or adjourn as it sees fit, including meeting by any combination of councillors attending in person or by Electronic Means.
- (2) The Council may adopt or establish policies, procedures, or rules of order, consistent with the PGA, applicable regulations, and the Bylaws, for the purpose of regulating the conduct of a meeting of the Council.
- (3) The rules contained in Robert's Rules of Order must govern the conduct of Council meetings, as applicable, except where Robert's Rules of Order are inconsistent with the Bylaws or any policies, procedures, or rules of order adopted or established by Council pursuant to subsection (2).
- (4) A meeting of the Council is open to the public.
- (5) Despite subsection (4), the Council is authorized to hold any meeting or a portion of any meeting in the absence of the public or any other person who is not a councillor pursuant to section 35(2) of the PGA [*Bylaws of council*].
- (6) The Executive Director must
 - (a) call a meeting of the Council at the request of the president of the Council or any 3 councillors, and



- (b) provide reasonable written notice to the Council of the date, hour, place, and purpose of a meeting of the Council.
- (7) At a meeting of the Council, if neither the president of the Council nor the vice president of the Council attend the meeting in person or by Electronic Means at its appointed time, the Council may choose one of their number to chair the meeting, and the chair so chosen may exercise all of the functions and authority of the president of the Council for the conduct of the meeting.
- (8) Questions arising at a meeting of the Council must be decided by a majority of the voting councillors attending in person or by Electronic Means, who may each cast one vote on a matter put to a vote.
- (9) Despite subsection (8), the chair of a meeting of the Council may only vote on a matter put to a vote in the case of an equality of votes, in which case the chair will have a casting vote.
- (10) A resolution that is assented to and adopted by the councillors in writing, although not passed at a meeting of the Council, is of the same force and effect as if it had been duly passed at a meeting of the Council.
- (11) The Executive Director must ensure that minutes are taken at each meeting of the Council.

2.5 Deputy Registrar(s)

(1) Pursuant to section 31(2) of the PGA [*Registrar and register for regulatory body*] the Council authorizes any Deputy Registrar(s) appointed by the Council to exercise any of the powers and perform any of the duties of the Registrar set out in the Bylaws.

2.6 Accounting Records of EGBC

- (1) Accounting Records must be maintained by EGBC and must be available for inspection by the Council.
- (2) No Registrant, other than a Registrant who is on the Council, has any right to inspect any Accounting Records of EGBC, except as authorized by the Council or as required by law.
- (3) The Council may determine whether, to what extent, at what time(s) and place(s), and under what conditions or regulations Accounting Records may be open to the inspection of Registrants that are not on the Council.

2.7 Financial Statements and Audit

(1) Financial statements must be drawn up annually, and such financial statements, together with the books of EGBC, must be audited annually by a chartered professional accountant appointed by the Council as an auditor.



- (2) A report duly signed by the auditor appointed pursuant to subsection (1) must be presented to Registrants, and the Council must cause such report, together with the financial statements of EGBC, to be made available to all Registrants at least 15 days prior to the annual general meeting.
- (3) The auditor's report and the financial statements of EGBC required pursuant to subsection (2) must be accompanied by a report of the Executive Director as to the state of the affairs of EGBC, which must be published on a public website maintained by EGBC at least 15 days prior to the annual general meeting.

2.8 Seal of EGBC

- (1) EGBC must have a seal.
- (2) EGBC's seal must be affixed by the Executive Director or those persons designated by the Executive Director, to those instruments determined by the Executive Director.

2.9 Branches

(1) Pursuant to section 35(1)(g) of the PGA [*Bylaws of council*], the Council may continue or establish Branches.



3 General Meetings

3.1 Conduct of General Meetings

- (1) A general meeting must be held in the manner provided in section 33 of the PGA [General meetings of regulatory bodies].
- (2) At the discretion of the Council, a general meeting may be held with Registrants attending
 - (a) in person,
 - (b) by Electronic Means, or
 - (c) in any combination of Registrants attending in person or by Electronic Means.
- (3) The Council may adopt or establish policies, procedures, or rules of order, consistent with the PGA, applicable regulations, and the Bylaws, for the purpose of regulating the conduct of a general meeting.
- (4) The rules contained in Robert's Rules of Order must govern the conduct of general meetings, as applicable, except where Robert's Rules of Order are inconsistent with the Bylaws or any policies, procedures, or rules of order adopted or established by Council pursuant to subsection (3).
- (5) Any policies, procedures, or rules of order adopted or established by the Council prior to the general meeting pursuant to subsection (3) must be published on a public website maintained by EGBC prior to the general meeting to which the policies, procedures, or rules of order are to apply.
- (6) The Executive Director must ensure that minutes are taken at each general meeting.

3.2 Request for General Meetings

(1) A written request that the Council call a general meeting pursuant to section 33(4) of the PGA [*General meetings of regulatory bodies*] must be accompanied by a notice setting out specifically the business to be transacted at the general meeting.

3.3 Notice of General Meetings

- (1) Notice of the time and place of a general meeting must be
 - (a) published on a public website maintained by EGBC, and
 - (b) provided in writing to Registrants In Good Standing,

at least 21 days prior to the general meeting.



- (2) If the Council has determined pursuant to section 3.1(2) of the Bylaws that a general meeting will be held by Electronic Means, or by any combination of Registrants attending in person or by Electronic Means, this determination must be included in the notice of the general meeting that is published pursuant to subsection (1).
- (3) Accidental omissions in the delivery of notice or non-receipt of a notice required pursuant to subsection (1) by any Registrant entitled to receive notice does not invalidate the proceedings at a general meeting.

3.4 Chair of General Meetings

- (1) The president of the Council must act as chair of a general meeting.
- (2) Despite subsection (1), the vice president of the Council must act as chair of a general meeting if the president of the Council
 - (a) does not attend in person or by Electronic Means at the time appointed for holding the general meeting, or
 - (b) is not willing to act as chair of the general meeting.
- (3) Despite subsections (1) and (2), the Council may choose one of their number to chair the general meeting if both the president of the Council and the vice president of the Council
 - (a) do not attend the general meeting in person or by Electronic Means at its appointed time, or
 - (b) are not willing to act as chair of the general meeting.

3.5 Quorum for General Meetings

- (1) The quorum requirement for a general meeting is 50 individual Registrants In Good Standing, whether attending the general meeting
 - (a) in person, or
 - (b) by Electronic Means, if the Council has determined that Registrants may attend the general meeting by Electronic Means pursuant to section 3.1(2) of the Bylaws.

3.6 Eligibility and Entitlement to Vote

- (1) A Registrant is eligible to vote in a resolution, a referendum, and an election of the Council if the Registrant, at the time the Registrant casts the Registrant's vote
 - (a) is In Good Standing, and
 - (b) belongs to one of the following categories of Registrants:



- (i) Trainee;
- (ii) professional engineer;
- (iii) professional geoscientist;
- (iv) professional licensee engineering;
- (v) professional licensee geoscience;
- (vi) life member prior to 1998;
- (vii) honorary life member;
- (viii) non-practising;
- (ix) life members or life limited licensees.

3.7 Resolutions Proposed by Registrants

- (1) A Registrant who has voting rights pursuant to section 3.6 of the Bylaws may deliver a written notice to the Executive Director not fewer than 30 days before the date set for a general meeting requesting the consideration of a resolution at the general meeting.
- (2) A written notice delivered by a Registrant pursuant to subsection (1) must
 - (a) identify the Registrant as the mover of the resolution,
 - (b) identify another Registrant who has voting rights pursuant to section 3.6 of the Bylaws as a seconder of the resolution, and
 - (c) contain the text of the resolution, which must not include a preamble.
- (3) A resolution delivered by a Registrant pursuant to subsections (1) and (2) must be reviewed by the Executive Director to ensure the resolution is eligible for consideration at a general meeting, in accordance with any policies, procedures, or rules of order adopted or applicable pursuant to sections 3.1(3) and (4) of the Bylaws.
- (4) If a resolution is eligible for consideration at the general meeting pursuant to subsection
 (3) the Executive Director must do all of the following at least 14 days before the date of the general meeting:
 - (a) deliver written notice of the resolution to Registrants who have voting rights pursuant to section 3.6 of the Bylaws;
 - (b) publish notice of the resolution, including the text of the resolution, on a public website maintained by EGBC.



(5) The accidental omission to deliver written notice of a resolution to, or the non-receipt of written notice by, any Registrant entitled to receive notice does not invalidate the resolution.

3.8 Voting on Resolutions

- (1) A vote of a general meeting may be taken in the manner determined by the Council, subject to the PGA, applicable regulations, and the Bylaws.
- (2) When a resolution is decided by a vote of a general meeting,
 - (a) the chair of the general meeting must declare that the resolution has been carried or lost, and
 - (b) minutes made that the resolution has been carried or lost are conclusive evidence of that fact, without proof of the number or proportion of the votes recorded in favour or against the resolution.
- (3) A Registrant must have one vote in a resolution put to a vote of the general meeting if the Registrant has voting rights pursuant to section 3.6 of the Bylaws and is attending the general meeting
 - (a) in person, or
 - (b) by Electronic Means, if the Council has determined that Registrants may attend the general meeting by Electronic Means pursuant to section 3.1(2) of the Bylaws.
- (4) Despite subsection (3), the chair of a general meeting may only vote on a resolution put to a vote in the case of an equality of votes, in which case the chair will have a casting vote.
- (5) Except as provided in section 34 of the PGA [*Implementing resolutions of general meetings*], a resolution approved at a general meeting does not bind the Council, any Committee, or any officer, employee, or agent of EGBC in the exercise of its or their powers or in performance of its or their duties under the PGA or any other enactment.

3.9 Adjourning General Meetings

- (1) The chair of a general meeting may adjourn the general meeting from time to time and from place to place.
- (2) The only business that may be transacted at an adjourned general meeting is that business left unfinished at the meeting from which the adjournment took place.
- (3) When a general meeting is adjourned for less than 30 days, it is not necessary for EGBC to give notice of the adjourned general meeting, or of the business to be transacted at the adjourned general meeting.



(4) When a general meeting is adjourned for 30 days or more, notice of the adjourned general meeting must be given by EGBC in the same manner as notice of the original meeting.



4 Nominations and Election of Council

4.1 Nomination Committee Composition

- (1) The Nomination Committee must be composed of between 5 and 7 members appointed by the Council.
- (2) The members of the Nomination Committee appointed by the Council pursuant to subsection (1) must include
 - (a) the immediate past president of EGBC, who will serve as chair of the Nomination Committee,
 - (b) at least one Lay Committee Member, and
 - (c) the Branch Representatives Chair.
- (3) If the immediate past president of EGBC cannot be appointed as or serve as chair of the Nomination Committee, the Council must appoint a Lay Councillor as the chair of the Nomination Committee.
- (4) If the Branch Representatives Chair cannot be appointed to or serve on the Nomination Committee, the Council must appoint a delegate.
- (5) No member of the Council may be appointed to or serve on the Nomination Committee, except
 - (a) the immediate past president of EGBC, or
 - (b) a Lay Councillor, if the immediate past president of EGBC is unable to serve as chair of the Nomination Committee.

4.2 **Powers of the Nomination Committee**

(1) The Nomination Committee has the functions and duties assigned to it in the PGA.

4.3 Criteria for Nomination of Candidates

- (1) Pursuant to section 25(2)(a) of the PGA [Selection principles and criteria], a candidate nominated by the Nomination Committee for a position as Registrant councillor, including the position of president of the Council, must be a Registrant In Good Standing.
- (2) Pursuant to section 25(2)(a) of the PGA [*Selection principles and criteria*], a candidate nominated by the Nomination Committee for the position of president of the Council must meet at least one of the following experience requirements prior to the date of taking office, if such a candidate is available for nomination:
 - (a) one year of experience as a councillor for EGBC;



- (b) equivalent experience as determined by the Nomination Committee.
- (3) A Registrant who is not In Good Standing must not be nominated by the Nomination Committee for a position as Registrant councillor, including the position of president of the Council.

4.4 List of Candidates

- (1) The list of candidates nominated by the Nomination Committee must be
 - (a) signed by the chair of the Nomination Committee,
 - (b) accompanied by the written consent of all candidates,
 - (c) provided to the Executive Director, and
 - (d) published on a public website maintained by EGBC

at least 90 days prior to the annual general meeting.

4.5 Election Procedures

- (1) The election of Registrant councillors, including the president of the Council, must be by paper ballot or electronic ballot, as determined by the Council.
- (2) The Executive Director must prepare a ballot containing the names of all candidates nominated by the Nomination Committee.
- (3) Voting must be closed at noon on the 15th day prior to the annual general meeting, and ballots received after that time must not be counted.
- (4) Voting for more than one president of the Council or more than the number of Registrant councillors to be elected will render the applicable part of the ballot invalid.
- (5) Voting for less than one president of the Council or less than the number of Registrant councillors to be elected will not invalidate the ballot.
- (6) Ballots cast in an election must be tabulated at least 10 days prior to the annual general meeting.
- (7) The candidate for the position of president of the Council who receives the most votes in the election is elected to that position.
- (8) The candidates for positions as Registrant councillors who receive the most votes in the election are elected to those positions.


- (9) If there are any vacancies in the Council to be filled because of an election, the candidate or candidates receiving the next highest number of votes must be elected for the unexpired term or terms to be filled.
- (10) If there is a tie vote between 2 or more candidates, the Executive Director must hold a random draw to determine the successful candidate.
- (11) The Executive Director must inform each candidate in the election of the results of the election as soon as practicable, and the results of the election must be announced at the annual general meeting.
- (12) The successful candidates for positions as Registrant councillors, including the position of president of the Council, must take office at the close of the annual general meeting.
- (13) The Executive Director must not authorize the destruction of any paper ballots or the deletion of any electronic ballots cast in an election until 3 months after the date on which the annual general meeting was held.

4.6 Term Lengths

- (1) At each election of Registrant councillors held pursuant to the Bylaws,
 - (a) the president of the Council must be elected for a one-year term, pursuant to section 24(3)(a) of the PGA [*Term limits*] and
 - (b) one-third of the other Registrant councillors must be elected for a 3-year term, pursuant to section 24(1) of the PGA [*Term limits*].
- (2) After each election held pursuant to the Bylaws, the vice president of the Council must be selected by the Council from among the Registrant councillors for a one-year term pursuant to section 24(3)(b) of the PGA [*Term limits*].



5 Credentials and Registrants

5.1 Powers of the Credentials Committee

- (1) The Credentials Committee has the functions and duties assigned to it in the PGA and delegated to it by Council in subsections (2) and (3).
- (2) The Council authorizes the Credentials Committee to exercise the Council's powers pursuant to the following sections of the PGA, other than the Council's bylaw-making authority:
 - (a) section 32(1)(b) [Officers and committees], in order to appoint officers for the purpose of carrying out the powers delegated pursuant to subsection (3)(b);
 - (b) section 66(2)(a)(ii) [*Investigations*] with respect to applications for registration as an individual Registrant.
- (3) The Council authorizes the Credentials Committee to act pursuant to the following sections of the PGA:
 - (a) section 45 [*Application for enrolment, admission or reinstatement as registrant*] with respect to applications for registration as an individual Registrant;
 - (b) section 32(5)(b) [Officers and committees], to delegate the powers pursuant to section 45(1) of the PGA [Application for enrolment, admission or reinstatement as registrant] to one or more officers for the sole purpose of the officer(s) making a Non-Contentious Decision with respect to applications for registration as an individual Registrant.

5.2 Powers of the Audit and Practice Review Committee

- (1) The Audit and Practice Review Committee has the functions and duties assigned to it in the PGA and delegated to it by the Council in this section of the Bylaws with respect to applications for registration as a Registrant Firm.
- (2) The Council authorizes the Audit and Practice Review Committee to exercise the Council's powers pursuant to the following sections of the PGA, other than the Council's bylaw-making authority:
 - (a) section 32(1)(b) [Officers and committees], in order to appoint officers for the purpose of carrying out the powers delegated to the Audit and Practice Review Committee pursuant to subsection (3)(b);
 - (b) section 66(2)(a)(ii) [*Investigations*] with respect to applications for registration as a Registrant Firm.
- (3) The Council authorizes the Audit and Practice Review Committee to act pursuant to the following sections of the PGA:



- (a) section 45 [*Application for enrolment, admission or reinstatement as registrant*], with respect to applications for registration as a Registrant Firm;
- (b) section 32(5)(b) [Officers and committees], to delegate to one or more officers the powers granted to the Audit and Practice Review Committee by the Council pursuant to this section of the Bylaws, with respect to applications for registration as a Registrant Firm.

5.3 Powers of the Registrar

(1) The Council authorizes the Registrar to exercise the Council's powers pursuant to sections 48(1), 48(2), 48(3), and 48(4) of the PGA [*Review on the record*] for the purpose of conducting reviews on the record pursuant to section 5.22 of the Bylaws.

5.4 Categories of Registrants

(1) The following categories and subcategories of Registrants are set out in sections 5.5 to 5.16 of the Bylaws:

Category of Registrant	Subcategory of Registrant	Bylaw Section
Trainee	Engineer-in-Training Geoscientist-in-Training	5.5 5.5.1 5.5.2
Professional Engineer	Designated Structural Engineer	5.6 5.6.1
Professional Geoscientist		5.7
Professional Licensee Engineering		5.8
Professional Licensee Geoscience		5.9
Life Member Prior to 1998		5.10
Honorary Life Member		5.11
Registrant Firm	Public Sector Firm Private Sector Firm	5.12 5.12.1 5.12.2
Non-Practising Individual Registrant		5.13
Non-Practising Registrant Firm		5.14
Life Member or Life Limited Licensee		5.15
Honorary Member		5.16



5.5 Trainees

- (1) The category of Registrant called "Trainee" is established pursuant to section 42(2) of the PGA [*Categories of registrants and bylaws for categories of registrants*].
- (2) A Trainee must not serve as a Registrant councillor, or as a member of any Committee.

5.5.1 Engineer-in-Training

- (1) The subcategory of Registrant called "engineer-in-training" is established under the category of Trainee pursuant to section 42(2) of the PGA [*Categories of registrants and bylaws for categories of registrants*].
- (2) Only a Registrant who is designated an engineer-in-training may hold themselves out to be an engineer-in-training and use the post-nominal "EIT".
- (3) An engineer-in-training may only use a title containing the word "engineer" or any form or abbreviation of the word "engineer", if the designation "engineer-in-training" or "EIT" is used next to the title and given the same degree of prominence.
- (4) An engineer-in-training must not represent themselves as a Professional Registrant.
- (5) An engineer-in-training must not engage in any area of the Reserved Practice except under the Direct Supervision of an individual who is legally entitled to independently practise in that area of the Reserved Practice, and that area of the Reserved Practice is of the type that may be provided under supervision pursuant to section 54(2) of the PGA [*Prohibitions regarding reserved practice*].
- (6) Pursuant to section 46(1) of the PGA [*Enrolment of trainees*], an Applicant for enrolment as an engineer-in-training must provide the following to the Credentials Committee:
 - (a) a completed application for enrolment as an engineer-in-training;
 - (b) any applicable application, examination, interview, or other applicable fees specified in section 6.1(1) and Schedule C of the Bylaws;
 - (c) evidence satisfactory to the Credentials Committee of the following:
 - (i) the Applicant's identity and legal name;
 - (ii) that the Applicant is of good character and good repute;
 - (iii) that the Applicant has
 - (A) graduated in applied science, engineering, or geoscience from an institute of learning approved by the Credentials Committee in a program approved by the Credentials Committee, or



- (B) the equivalent of
 - a university-level bachelor's degree in applied science or engineering, from an institution of learning not approved by the Credentials Committee, or in a program not approved by the Credentials Committee, but has passed
 - (1) examinations, assigned by the Credentials Committee from the syllabus published by the Credentials Committee, in the discipline of engineering of the Applicant's degree, that demonstrate that the Applicant's knowledge is equivalent to the knowledge of those who have graduated from an institute of learning approved by the Credentials Committee in a program in applied science or engineering approved by the Credentials Committee, or
 - (2) examinations, requiring special knowledge in branches of learning specified by the Credentials Committee, of an association or institute approved by the Credentials Committee, or
 - (II) 4 years of full-time post-secondary education in applied science, engineering, geoscience, science, or technology, and has demonstrated equivalency to graduation from an institute of learning approved by the Credentials Committee in a program in applied science, engineering, or geoscience approved by the Credentials Committee, by passing the Credentials Committee assigned
 - (1) examinations or coursework, applicable to the discipline or area of practice in which the Applicant wishes to be examined, to address deficiencies in syllabus or knowledge requirements coverage as determined by the Credentials Committee, or
 - (2) examinations, requiring special knowledge in branches of learning specified by the Credentials Committee, of an association or institute approved by the Credentials Committee.

5.5.2 Geoscientist-in-Training

(1) The subcategory of Registrant called "geoscientist-in-training" is established under the category of Trainee pursuant to section 42(2) of the PGA [*Categories of registrants and bylaws for categories of registrants*].



- (2) Only a Registrant who is designated a geoscientist-in-training may hold themselves out to be a geoscientist-in-training and use the post-nominal "GIT".
- (3) A geoscientist-in-training may only use a title containing the word "geologist", "geophysicist", "geochemist", or "geoscientist", or any form or abbreviation thereof if the designation "geoscientist-in-training" or "GIT" is used next to the title and given the same degree of prominence.
- (4) A geoscientist-in-training must not represent themselves as a Professional Registrant.
- (5) A geoscientist-in-training must not engage in any area of the Reserved Practice except under the Direct Supervision of an individual who is legally entitled to independently practise in that area of the Reserved Practice, and that area of the Reserved Practice is of the type that may be provided under supervision pursuant to section 54(2) of the PGA [*Prohibitions regarding reserved practice*].
- (6) Pursuant to section 46(1) of the PGA [*Enrolment of trainees*], an Applicant for enrolment as a geoscientist-in training must provide the following to the Credentials Committee:
 - (a) a completed application for enrolment as a geoscientist-in-training;
 - (b) any applicable application, examination, interview or other applicable fees specified in section 6.1(1) and Schedule C of the Bylaws;
 - (c) evidence satisfactory to the Credentials Committee of the following:
 - (i) the Applicant's identity and legal name;
 - (ii) that the Applicant is of good character and good repute;
 - (iii) that the Applicant has
 - (A) graduated in applied science, geoscience, or science from an institute of learning approved by the Credentials Committee in a program approved by the Credentials Committee, or
 - (B) the equivalent of 4 years of full-time post-secondary education in applied science, engineering, geoscience, science, or technology, and has demonstrated equivalency to graduation from an institute of learning approved by the Credentials Committee in a program in applied science, geoscience, or science approved by the Credentials Committee, by passing the Credentials Committee assigned
 - examinations or coursework, applicable to the discipline or area of practice in which the Applicant wishes to be examined, to address deficiencies in syllabus or knowledge requirements coverage as determined by the Credentials Committee, or



 examinations, requiring special knowledge in branches of learning specified by the Credentials Committee, of an association or institute approved by the Credentials Committee.

5.6 Professional Engineer

- (1) The category of Registrant called "professional engineer" is established pursuant to section 42(2) of the PGA [*Categories of registrants and bylaws for categories of registrants*].
- (2) Only a Registrant who is designated a professional engineer may hold themselves out to be a professional engineer and use the post-nominal "P.Eng.".
- (3) A professional engineer may engage in the Reserved Practice.
- (4) Pursuant to section 47(1) of the PGA [*Admission and reinstatement of registrants*], an Applicant for registration as a professional engineer must provide the following to the Credentials Committee:
 - (a) a completed application for registration as a professional engineer;
 - (b) any applicable application, examination, interview, course, or other applicable fees specified in section 6.1(1) and Schedule C of the Bylaws;
 - (c) evidence satisfactory to the Credentials Committee of the following:
 - (i) the Applicant's identity and legal name;
 - (ii) that the Applicant is of good character and good repute;
 - (iii) that the Applicant has obtained the necessary level of competency in English to engage in the Regulated Practice in British Columbia;
 - (iv) that the Applicant has completed the academic requirements pursuant to section 5.5.1(6)(c)(iii) of the Bylaws;
 - (v) that the Applicant has engineering experience that
 - (A) is sufficiently current to demonstrate competency with current practices,
 - (B) is supported by the Applicant's academic subjects of study, continuing education, or examinations assigned by the Credentials Committee,
 - (C) is broad-based and at the level of complexity and responsibility that demonstrates that the Applicant
 - (I) has applied engineering principles at an appropriate level,



- (II) is ready to accept the full professional responsibility to engage in the Regulated Practice, and
- (III) has reached the level of professional maturity needed to judge when the Applicant is out of the Applicant's area of professional competence,
- (D) is validated by
 - a minimum of 4 Professional Registrants, or equivalent licensed engineering or geoscience practitioners from a Regulatory Authority, who
 - (1) practise in the same discipline of engineering as the Applicant or a related discipline, and
 - (2) have detailed knowledge of the work of the Applicant, or
 - validators satisfactory to the Credentials Committee, where the Credentials Committee is satisfied that the Applicant cannot comply with the requirement in paragraph (c)(v)(D)(I),
- (E) is in conformance with general and discipline-specific experience guidelines published by the Credentials Committee,
- (F) demonstrates that the Applicant has achieved the key competencies established by the Council at the required level of competence established by the Council in a minimum of 4 years, and
- (G) demonstrates that the Applicant is competent to practise in British Columbia through achievement of Canadian environment competencies established by the Council at the required level of competence established by the Council, or by any alternative means established by the Council;
- (vi) that the Applicant has the requisite knowledge of the PGA, the Bylaws, the Code of Ethics, and professional practice issues, demonstrated by successful completion of
 - (A) a course in law and ethics approved by the Council, and
 - (B) an examination in professional practice approved by the Council.
- (5) Despite subsection (4)(c), the Credentials Committee may accept the following qualifications without further examination:
 - (a) the qualifications required by subsections (4)(c)(iii) to (4)(c)(vi) if the Applicant



- (i) holds registration or licensure as the equivalent of a professional engineer in good standing with a Regulatory Authority for engineering in another jurisdiction in Canada, and
- (ii) is not subject to any practice limitations, restrictions, or conditions in the jurisdiction of the Regulatory Authority that are relevant to practice in British Columbia;
- (b) the qualifications required by subsections (4)(c)(iv) and (4)(c)(v) if the Applicant
 - (i) holds registration or licensure as the equivalent of a professional engineer in good standing with a Regulatory Authority in another country that is, in the opinion of the Council, equivalent to EGBC, and
 - (ii) is not subject to any practice limitations, restrictions, or conditions in the jurisdiction of the Regulatory Authority that are relevant to practice in British Columbia.

5.6.1 Designated Structural Engineer

- (1) The subcategory of Registrant called "designated structural engineer" is established as a subcategory of professional engineer pursuant to section 42(2) of the PGA [*Categories of registrants and bylaws for categories of registrants*].
- (2) Only a professional engineer who is a Professional Registrant and who is designated a designated structural engineer may hold themselves out to be a designated structural engineer and use the post-nominal "Struct.Eng.".
- (3) Pursuant to section 42(2)(d) of the PGA [*Categories of registrants and bylaws for categories of registrants*], the Credentials Committee may designate a professional engineer as a designated structural engineer when the Credentials Committee is satisfied that the professional engineer demonstrates the requisite qualifications to be designated as a designated structural engineer.
- (4) Pursuant to section 42(2)(d) of the PGA [*Categories of registrants and bylaws for categories of registrants*], to be designated as a designated structural engineer, a professional engineer must provide the following:
 - (a) a completed application for designation as a designated structural engineer;
 - (b) any applicable application, examination, or other applicable fees specified in section 6.1(2) and Schedule C of the Bylaws;
 - (c) evidence satisfactory to the Credentials Committee that the professional engineer
 - (i) is of good character and good repute,



- (ii) has at least 6 years of significant post-graduation structural engineering experience as specified by the Council, including 2 years in responsible charge of significant engineering work as specified by the Council, that includes seismic design of buildings or other Structures in significant seismic regions as specified by the Council,
- (iii) has completed examination(s) in structural engineering knowledge, solutions, codes and practice, as specified by the Council, and
- (iv) has demonstrated active practice and completion of continuing education, as specified by the Council.
- (5) To maintain accreditation as a designated structural engineer, a designated structural engineer must
 - (a) actively practise structural engineering for at least 750 hours each year and provide confirmation of such to EGBC by 11:59 PM (Pacific Time) on the last day of each Reporting Year,
 - (b) comply with all applicable continuing education requirements set out in section 7.6 of the Bylaws, and
 - (c) comply with any additional requirements to maintain accreditation as a designated structural engineer, as determined by the Council.

5.7 Professional Geoscientist

- (1) The category of Registrant called "professional geoscientist" is established pursuant to section 42(2) of the PGA [*Categories of registrants and bylaws for categories of registrants*].
- (2) Only a Registrant who is designated a professional geoscientist may hold themselves out as a professional geoscientist and use the post-nominal "P.Geo.".
- (3) A professional geoscientist may engage in the Reserved Practice.
- (4) Pursuant to section 47(1) of the PGA [*Admission and reinstatement of registrants*], an Applicant for registration as a professional geoscientist must provide the following to the Credentials Committee:
 - (a) a completed application for registration as a professional geoscientist;
 - (b) any applicable application, examination, interview, course, or other applicable fees specified in section 6.1(1) and Schedule C of the Bylaws;
 - (c) evidence satisfactory to the Credentials Committee of the following:
 - (i) of the Applicant's identity and legal name;



- (ii) that the Applicant is of good character and good repute;
- (iii) that the Applicant has obtained the necessary level of competency in English to engage in the Regulated Practice in British Columbia;
- (iv) that the Applicant has completed the academic requirements pursuant to section 5.5.2 (6)(c)(iii) of the Bylaws;
- (v) that the Applicant has geoscience experience that
 - (A) is sufficiently current to demonstrate competency with current practices,
 - (B) is supported by the Applicant's academic subjects of study, continuing education or examinations assigned by the Credentials Committee,
 - (C) is broad-based and at the level of complexity and responsibility that demonstrates that the Applicant
 - (I) has applied geoscience principles at an appropriate level,
 - (II) is ready to accept the full professional responsibility to engage in the Regulated Practice, and
 - (III) has reached the level of professional maturity needed to judge when the Applicant is out of the Applicant's area of professional competence,
 - (D) is validated by
 - a minimum of 4 Professional Registrants, or equivalent licensed engineering or geoscience practitioners from a Regulatory Authority, who
 - (1) practise in the same discipline of geoscience as the Applicant or a related discipline, and
 - (2) have detailed knowledge of the work of the Applicant, or
 - validators satisfactory to the Credentials Committee, where the Credentials Committee is satisfied that the Applicant cannot comply with the requirement in paragraph (c)(v)(D)(I),
 - (E) is in conformance with general and discipline-specific experience guidelines published by the Credentials Committee,
 - (F) demonstrates that the Applicant has achieved the work experience competencies established by the Council in a minimum of 4 years, and



- (G) demonstrates that the Applicant is competent to practise in British Columbia through achievement of Canadian environment competencies established by the Council at the required level of competence established by the Council, or by any alternative means established by the Council;
- (vi) that the Applicant has the requisite knowledge of the PGA, the Bylaws, the Code of Ethics and professional practice issues, demonstrated by successful completion of
 - (1) a course in law and ethics approved by the Council, and
 - (2) an examination in professional practice approved by the Council.
- (5) Despite subsection (4)(c), the Credentials Committee may accept the following qualifications without further examination:
 - (a) the qualifications required by subsections (4)(c)(iii) to (4)(c)(vi) if the Applicant
 - holds registration or licensure as the equivalent of a professional geoscientist in good standing with a Regulatory Authority for geoscience in another jurisdiction in Canada, and
 - (ii) is not subject to any practice limitations, restrictions, or conditions in the jurisdiction of the Regulatory Authority that are relevant to practice in British Columbia;
 - (b) the qualifications required by subsections (4)(c)(iv) and (4)(c)(v) if the Applicant
 - (i) holds registration or licensure as the equivalent of a professional geoscientist in good standing with a Regulatory Authority in another country that is, in the opinion of the Council, equivalent to EGBC, and
 - (ii) is not subject to any practice limitations, restrictions, or conditions in the jurisdiction of the Regulatory Authority that are relevant to practice in British Columbia.

5.8 Professional Licensee Engineering

- (1) The category of Registrant called "professional licensee engineering" is established pursuant to section 42(2) of the PGA [*Categories of registrants and bylaws for categories of registrants*].
- (2) On the coming into force of the PGA, individuals who held a limited licence to practise professional engineering pursuant to the EGA are continued as professional licensees engineering.



- (3) Only a Registrant who is designated as a professional licensee engineering may hold themselves out to be a professional licensee engineering and use the post-nominal "P.L.Eng.".
- (4) A professional licensee engineering may only engage in the authorized area of the Reserved Practice that is specified on their licence.
- (5) Pursuant to section 47(1) of the PGA [*Admission and reinstatement of registrants*], an Applicant for registration as a professional licensee engineering must provide the following to the Credentials Committee:
 - (a) a completed application for registration as a professional licensee engineering;
 - (b) any applicable application, examination, interview, course, or other applicable fees specified in section 6.1(1) and Schedule C of the Bylaws;
 - (c) a proposed authorized area of practice;
 - (d) evidence satisfactory to the Credentials Committee of the following:
 - (i) the Applicant's identity and legal name;
 - (ii) that the Applicant is of good character and good repute;
 - (iii) that the Applicant has obtained the necessary level of competency in English to engage in the Regulated Practice in British Columbia;
 - (iv) that the Applicant understands the role and obligations of a professional licensee engineering;
 - (v) that the Applicant undertakes to practise within the authorized area of practice approved by the Credentials Committee and in accordance with other requirements related to practice that may be specified by the Credentials Committee;
 - (vi) that the Applicant has a science degree in a discipline and from a university program approved by the Council, a degree or diploma in engineering technology from an institution approved by the Council in a program approved by the Council, or other academic qualifications acceptable to the Council;
 - (vii) that the Applicant has completed any examinations assigned by the Credentials Committee;
 - (viii) that the Applicant has a minimum of 8 years of experience in engineering that
 - (A) includes up to 4 of the years spent by the Applicant in obtaining the academic qualifications referred to in paragraph (d)(vi),



- (B) concludes with at least 2 years of experience within the proposed authorized area of practice to which the licence is to apply,
- (C) is sufficiently current to demonstrate competency with current practices,
- (D) is supported by the Applicant's academic subjects of study, continuing education or examinations assigned by the Credentials Committee,
- (E) is at the level of complexity and responsibility that demonstrates that the Applicant
 - (I) has applied engineering principles at an appropriate level,
 - (II) is ready to accept the full professional responsibility to engage in the Applicant's proposed authorized area of practice, and
 - (III) has reached the level of professional maturity needed to judge when the Applicant is out of the Applicant's area of professional competence,
- (F) is validated by
 - a minimum of 4 Professional Registrants, or equivalent licensed engineering or geoscience practitioners from a Regulatory Authority, who
 - (1) practise in the same discipline of engineering as the Applicant or a related discipline, and
 - (2) have detailed knowledge of the work of the Applicant, or
 - validators satisfactory to the Credentials Committee, where the Credentials Committee is satisfied that the Applicant cannot comply with the requirement in paragraph (d)(viii)(F)(I),
- (G) is in conformance with general and discipline-specific experience guidelines published by the Credentials Committee,
- (H) demonstrates that, within the proposed authorized area of practice, the Applicant has achieved the key competencies established by the Council at the required level of competence established by the Council in a minimum of 4 years, and
- (I) demonstrates that the Applicant is competent to practise in British Columbia within the proposed authorized area of practice through achievement of Canadian environment competencies established by the Council at the required level of competence established by the Council, or by any alternative means established by the Council;



- (ix) that the Applicant has the requisite knowledge of the PGA, the Bylaws, the Code of Ethics and professional practice issues, demonstrated by successful completion of
 - (A) a course in law and ethics approved by the Council, and
 - (B) an examination in professional practice approved by the Council.
- (6) Despite subsection (5)(d), the Credentials Committee may accept the qualifications required by subsections (5)(d)(vi) to (5)(d)(ix) without further examination if the Applicant
 - (a) holds registration or licensure as the equivalent of a professional licensee engineering in good standing with a Regulatory Authority for engineering in another jurisdiction in Canada, and
 - (b) is not subject to any practice limitations, restrictions, or conditions in the jurisdiction of the Regulatory Authority that are relevant to practice in British Columbia.

5.9 Professional Licensee Geoscience

- (1) The category of Registrant called "professional licensee geoscience" is established pursuant to section 42(2) of the PGA [*Categories of registrants and bylaws for categories of registrants*].
- (2) On the coming into force of the PGA, individuals who held a limited licence to practise professional geoscience pursuant to the EGA are continued as professional licensees geoscience.
- (3) Only a Registrant who is designated as a professional licensee geoscience may hold themselves out to be a professional licensee geoscience and use the post-nominal "P.L.Geo.".
- (4) A professional licensee geoscience may only engage in the authorized area of the Reserved Practice that is specified on their licence.
- (5) Pursuant to section 47(1) of the PGA [*Admission and reinstatement of registrants*], an Applicant for registration as a professional licensee geoscience must provide the following to the Credentials Committee:
 - (a) a completed application for registration as a professional licensee geoscience;
 - (b) any applicable application, examination, interview, course, or other applicable fees specified in section 6.1(1) and Schedule C of the Bylaws;
 - (c) a proposed authorized area of practice;
 - (d) evidence satisfactory to the Credentials Committee of the following:



- (i) the Applicant's identity and legal name;
- (ii) that the Applicant is of good character and good repute;
- (iii) that the Applicant has obtained the necessary level of competency in English to engage in the Regulated Practice in British Columbia;
- (iv) that the Applicant understands the role and obligations of a professional licensee geoscience;
- (v) that the Applicant undertakes to practise within the authorized area of practice approved by the Credentials Committee and in accordance with other requirements related to practice that may be specified by the Credentials Committee;
- (vi) that the Applicant has a science degree in a discipline and from a university program approved by the Council, a degree or diploma in geoscience technology from an institution approved by the Council in a program approved by the Council, or other academic qualifications acceptable to the Council;
- (vii) that the Applicant has completed any examinations assigned by the Credentials Committee;
- (viii) that the Applicant has a minimum of 8 years of experience in geoscience that
 - (A) includes up to 4 of the years spent by the Applicant in obtaining the academic qualifications referred to in paragraph (d)(vi),
 - (B) concludes with at least 2 years of experience within the proposed authorized area of practice to which the licence is to apply,
 - (C) is sufficiently current to demonstrate competency with current practices,
 - (D) is supported by the Applicant's academic subjects of study, continuing education or examinations assigned by the Credentials Committee,
 - (E) is at the level of complexity and responsibility that demonstrates that the Applicant
 - (I) has applied geoscience principles at an appropriate level,
 - (II) is ready to accept the full professional responsibility to engage in the proposed authorized area of practice, and
 - (III) has reached the level of professional maturity needed to judge when the Applicant is out of the Applicant's area of professional competence,



- (F) is validated by
 - a minimum of 4 Professional Registrants, or equivalent licensed engineering or geoscience practitioners from a Regulatory Authority, who
 - (1) practise in the same discipline of geoscience as the Applicant or a related discipline, and
 - (2) have detailed knowledge of the work of the Applicant, or
 - validators satisfactory to the Credentials Committee, where the Credentials Committee is satisfied that the Applicant cannot comply with the requirement in paragraph (d)(viii)(F)(I),
- (G) is in conformance with general and discipline-specific experience guidelines published by the Credential Committee,
- (H) demonstrates that, within the proposed authorized area of practice, the Applicant has achieved the key competencies established by the Council at the required level of competence established by the Council in a minimum of 4 years, and
- demonstrates that the Applicant is competent to practise in British Columbia within the proposed authorized area of practice through achievement of Canadian environment competencies established by the Council at the required level of competence established by the Council, or by any alternative means established by the Council;
- (ix) that the Applicant has the requisite knowledge of the PGA, the Bylaws, the Code of Ethics and professional practice issues, demonstrated by successful completion of
 - (A) a course in law and ethics approved by the Council, and
 - (B) an examination in professional practice approved by the Council.
- (6) Despite subsection (5)(d), the Credentials Committee may accept the qualifications required by subsections (5)(d)(vi) to (5)(d)(ix) without further examination if the Applicant
 - (a) holds registration or licensure as the equivalent of a professional licensee geoscience in good standing with a Regulatory Authority for geoscience in another jurisdiction in Canada, and
 - (b) is not subject to any practice limitations, restrictions, or conditions in the jurisdiction of the Regulatory Authority that are relevant to practice in British Columbia.



5.10 Life Member Prior to 1998

- (1) The category of Registrant called "life member prior to 1998" is established only for life members whose status had vested pursuant to the prior EGBC bylaws before December 31, 1997 pursuant to section 42(2) of the PGA [*Categories of registrants and bylaws for categories of registrants*].
- (2) No individuals other than those described in subsection (1) may be granted registration in the category of Registrant called "life member prior to 1998".
- (3) A life member whose status had vested pursuant to the prior EGBC bylaws before December 31, 1997 retains the rights and privileges of the category of professional engineer established pursuant to section 5.6 of the Bylaws without payment of the annual fee.
- (4) A life member whose status had vested pursuant to the prior EGBC bylaws before December 31, 1997 has the obligations of a Professional Registrant pursuant to the PGA and the Bylaws, including applicable continuing education requirements.

5.11 Honorary Life Member

- (1) The category of Registrant called "honorary life member" is established only for honorary life members whose status had vested pursuant to the prior EGBC bylaw 10(c.2) [Honorary Life Membership or Licensure] pursuant to section 42(2) of the PGA [Categories of registrants and bylaws for categories of registrants].
- (2) No individuals other than those described in subsection (1) may be granted registration in the category of Registrant called "honorary life member".
- (3) An honorary life member whose status had vested pursuant to the prior bylaw 10(c.2) [Honorary Life Membership or Licensure] retains the rights and privileges of the category of professional engineer established pursuant to section 5.6 of the Bylaws, or professional geoscientist established pursuant to section 5.7 of the Bylaws, as applicable, without payment of the annual fee.
- (4) An honorary life member whose status had vested pursuant to the prior bylaw 10(c.2) [Honorary Life Membership or Licensure] has the obligations of a Professional Registrant pursuant to the PGA and the Bylaws, including applicable continuing education requirements.

5.12 Registrant Firm

- (1) The category of Registrant called "Registrant Firm" is established pursuant to section 42(2) of the PGA [*Categories of registrants and bylaws for categories of registrants*].
- (2) A Registrant Firm may carry out the Reserved Practice and may have appropriately qualified individuals employed by or under contract with the Registrant Firm carry out the Reserved Practice on its behalf.



- (3) A Registrant Firm must not serve as a member of Council or any Committee.
- (4) Pursuant to section 47(1) of the PGA [*Admission and reinstatement of registrants*], an Applicant for registration as a Registrant Firm must provide the following to the Audit and Practice Review Committee:
 - (a) the names of
 - (i) the Applicant's Responsible Officer,
 - (ii) the Applicant's Responsible Registrant(s), and
 - (iii) all individual Registrants employed by or under contract with the Applicant;
 - (b) the number of individuals employed by or under contract with the Registrant Firm who are registrants of each regulatory body under the PGA other than EGBC;
 - (c) a completed declaration by each of the Applicant's Responsible Registrant(s), in the form set out in Schedule D;
 - (d) a completed declaration by the Applicant's Responsible Officer, in the form set out in Schedule E;
 - (e) all names, both registered and unregistered, under which the Applicant does or has done business over the past 10 years within Canada;
 - (f) the Applicant's industry or industries of practice and area(s) of practice;
 - (g) if the Applicant is a corporation:
 - (i) the Applicant's incorporation number;
 - (ii) the date of the Applicant's incorporation;
 - (iii) a copy of the Applicant's certificate of incorporation, certificate of amalgamation, certificate of continuation, or equivalent, from the home jurisdiction of the Applicant;
 - (iv) any certificate of name change or certificate of restoration, if applicable;
 - (v) a copy of the Applicant's shareholder register, unless the Applicant is a publicly traded corporation, in which case the Applicant is exempt from this paragraph;
 - (vi) a copy of the Applicant's register of directors and officers;



- (h) if the Applicant is a partnership:
 - (i) the Applicant's registered business name, if applicable;
 - (ii) a copy of the register of partners;
- (i) if the Applicant is a sole proprietorship:
 - (i) the Applicant's registered business name, if applicable;
 - (ii) the name of the owner of the sole proprietorship;
- a statement confirming whether EGBC or a Different Governing Body has ever cancelled, suspended, or restricted the ability to engage in the Regulated Practice of the Applicant or another person with a direct or indirect ownership interest in the Applicant as the result of a disciplinary process;
- (k) the addresses of all of the Applicant's offices in British Columbia, or, if the Applicant does not have any offices in British Columbia, all of the business location(s) in British Columbia where Professional Registrants will be engaged in the Regulated Practice on behalf of the Applicant;
- (I) any applicable application fees and annual fees specified in sections 6.1(1), 6.4(2), 6.4(5), and Schedule C of the Bylaws;
- (m) any additional information or documentation
 - (i) regarding indirect ownership of the Applicant, or
 - (ii) that may otherwise be requested by the Audit and Practice Review Committee or an officer appointed by the Audit and Practice Review Committee.
- (5) A Registrant Firm must designate at least one individual as a Responsible Registrant for each area of practice engaged in by the Registrant Firm.
- (6) A Responsible Registrant may be designated for more than one area of practice at a Registrant Firm.
- (7) An individual designated as a Responsible Registrant of a Registrant Firm pursuant to subsection (5) must be a Professional Registrant In Good Standing who is employed by or under contract with the Registrant Firm and who has the ability to engage in the Reserved <u>Practice</u>.
- (8) An individual designated as a Responsible Registrant of a Registrant Firm pursuant to subsection (5) must submit a completed declaration to EGBC in the form set out at Schedule D.



- (9) A Responsible Registrant must ensure that the Regulated Practice undertaken by Professional Registrants on behalf of the Registrant Firm meets the ethical, quality management, and continuing education requirements pursuant to the Bylaws.
- (10) If all Responsible Registrants designated for an area of practice at a Registrant Firm cease to meet any of the criteria set out in subsections (7) and (8), the Registrant Firm must immediately designate at least one new Responsible Registrant for that area of practice.
- (11) If a Registrant Firm fails to comply with subsections (5) or (10), the Audit and Practice Review Committee or an officer appointed by the Audit and Practice Review Committee must place a condition on the Registrant Firm's registration and Permit to Practice prohibiting it from engaging in the Regulated Practice until such time as the Registrant Firm has complied with subsections (5) or (10).
- (12) An individual may act as a Responsible Registrant for more than one Registrant Firm.
- (13) A Registrant Firm must designate one individual as the Responsible Officer of the Registrant Firm, who may also be a Responsible Registrant.
- (14) An individual designated as the Responsible Officer of a Registrant Firm pursuant to subsection (13) must be an individual who is employed by or under contract with the Registrant Firm.
- (15) If an individual designated as the Responsible Officer by a Registrant Firm pursuant to subsection (13) is also a Registrant, the individual must be a Registrant In Good Standing who is employed by or under contract with the Registrant Firm.
- (16) An individual designated as the Responsible Officer of a Registrant Firm pursuant to subsection (13) must submit a completed declaration to EGBC in the form set out at Schedule E.
- (17) A Responsible Officer must be an Individual With Authority at the Registrant Firm.
- (18) A Responsible Officer must ensure that the Registrant Firm meets its obligations pursuant to the PGA and the Bylaws.
- (19) If the Responsible Officer of a Registrant Firm ceases to meet any of the criteria set out in subsections (14), (15), (16), or (17), the Registrant Firm must immediately designate a new Responsible Officer.
- (20) If a Registrant Firm fails to comply with subsections (13) or (19), the Audit and Practice Review Committee or an officer appointed by the Audit and Practice Review Committee must place a condition on the Registrant Firm's registration and Permit to Practice prohibiting it from engaging in the Regulated Practice until such time as the Registrant Firm has complied with subsections (13) or (19).



(21) Any oral submissions made on behalf of a Registrant Firm pursuant to the Bylaws may be made by an Individual With Authority at the Registrant Firm.

5.12.1 Public Sector Firm

- (1) The subcategory of Registrant called "Public Sector Firm" is established under the category of Registrant Firm pursuant to section 42(2) of the PGA [*Categories of registrants and bylaws for categories of registrants*].
- (2) Pursuant to section 42(2)(d) of the PGA [*Categories of registrants and bylaws for categories of registrants*], the Audit and Practice Review Committee or an officer appointed by the Audit and Practice Review Committee may designate a Registrant Firm as a Public Sector Firm where the Audit and Practice Review Committee or an officer appointed by the Audit and Practice Review Committee is satisfied that
 - (a) the Registrant Firm is a Government Registrant, or
 - (b) the Registrant Firm is a local public body as defined in schedule 1 of the *Freedom of Information and Protection of Privacy Act,* R.S.B.C. 1996, c. 165.
- (3) If a decision is made pursuant to the PGA or the Bylaws to suspend or cancel the registration and Permit to Practice of a Public Sector Firm, or to put a condition on a Public Sector Firm's registration and Permit to Practice prohibiting it from engaging in the Regulated Practice, then
 - (a) EGBC must notify the Office of the Superintendent of Professional Governance of the decision,
 - (b) any suspension, cancellation, or condition on a Public Sector Firm's registration and Permit to Practice prohibiting it from engaging in the Regulated Practice must take effect no earlier than 10 days after the notice pursuant to paragraph (a) has been provided, and
 - (c) publication of the decision must be delayed until the earlier of
 - (i) 10 days after the notice pursuant to paragraph (a) has been provided, or
 - (ii) the date on which a decision of the Lieutenant Governor in Council with respect to exercising the power at section 83 of the PGA becomes known to the public.
- (4) The Audit and Practice Review Committee or an officer appointed by the Audit and Practice Review Committee may change the subcategory of a Registrant Firm from Public Sector Firm to Private Sector Firm if the Registrant Firm no longer meets the criteria set out in subsection (2).



5.12.2 Private Sector Firm

- (1) The subcategory of Registrant called "Private Sector Firm" is established under the category of Registrant Firm pursuant to section 42(2) of the PGA [*Categories of registrants and bylaws for categories of registrants*].
- (2) Pursuant to section 42(2)(d) of the PGA [*Categories of registrants and bylaws for categories of registrants*], any Registrant Firm that the Audit and Practice Review Committee or an officer appointed by the Audit and Practice Review Committee has not designated as Public Sector Firm must be designated as a Private Sector Firm.
- (3) The Audit and Practice Review Committee or an officer appointed by the Audit and Practice Review Committee may change the subcategory of a Registrant Firm from Private Sector Firm to Public Sector Firm if the Audit and Practice Review Committee or an officer appointed by the Audit and Practice Review Committee determines that the Registrant Firm meets the criteria set out in section 5.12.1(2) of the Bylaws.

5.13 Non-Practising Individual Registrant

- (1) The category of Registrant called "non-practising individual Registrant" is established pursuant to section 42(2) of the PGA [*Categories of registrants and bylaws for categories of registrants*].
- (2) Any Professional Registrant In Good Standing may apply to the Registrar to change their category of registration to non-practising.
- (3) A non-practising individual Registrant must not engage in the Reserved Practice.
- (4) A non-practising individual Registrant must annually commit to the Council not to engage in the Reserved Practice until released from the commitment by the Council in writing.
- (5) A non-practising individual Registrant must only use the following professional designation(s), as applicable:

Engineers

- (a) Professional Engineer (Non-Practising);
- (b) P.Eng. (Non-Practising);
- (c) Professional Engineer (Retired);
- (d) P.Eng. (Retired);

Geoscientists

(e) Professional Geoscientist (Non-Practising);



- (f) P.Geo. (Non-Practising);
- (g) Professional Geoscientist (Retired);
- (h) P.Geo. (Retired);

Licensees

- (i) Professional Licensee Engineering (Non-Practising);
- (j) P.L.Eng. (Non-Practising);
- (k) Professional Licensee Engineering (Retired);
- (I) P.L.Eng. (Retired);
- (m) Professional Licensee Geoscience (Non-Practising);
- (n) P.L.Geo. (Non-Practising);
- (o) Professional Licensee Geoscience (Retired);
- (p) P.L.Geo. (Retired).
- (6) A non-practising individual Registrant who applies to reinstate status as a Professional Registrant must
 - (a) pay the applicable fees as set out in section 6.1(1) and Schedule C of the Bylaws, and
 - (b) demonstrate compliance with the requirements for reinstatement of status as a Professional Registrant set out in section 5.23 of the Bylaws.

5.14 Non-Practising Registrant Firm

- (1) The category of Registrant called "non-practising Registrant Firm" is established pursuant to section 42(2) of the PGA [*Categories of registrants and bylaws for categories of registrants*].
- (2) Any Registrant Firm In Good Standing may apply to the Audit and Practice Review Committee to change its category of registration to non-practising.
- (3) A non-practising Registrant Firm must not engage in the Reserved Practice and must not authorize any individual Registrant to engage in the Reserved Practice on behalf of the non-practising Registrant Firm.
- (4) A non-practising Registrant Firm must annually commit to the Council not to engage in the Reserved Practice until released from the commitment by the Council in writing.



- (5) A non-practising Registrant Firm must not advertise or hold itself out as providing any services related to or requiring the application of the Reserved Practice.
- (6) A non-practising Registrant Firm must
 - (a) clearly and visibly include the designation "non-practising" after the Registrant Firm's name or Permit to Practice Number wherever it is used in any way related to the Regulated Practice, and
 - (b) expressly advise of the Registrant Firm's non-practising status in any oral communications on behalf of the Registrant Firm that are in any way related to the Regulated Practice.
- (7) A non-practising Registrant Firm must continue to meet all requirements set out in the PGA, regulations, and the Bylaws, except where expressly exempted from such requirements, and nothing in this section postpones or defers the deadlines or requirements set out in the PGA, regulations, and Bylaws.
- (8) A non-practising Registrant Firm that applies for reinstatement of status as a Registrant Firm must demonstrate compliance with the requirements for reinstatement of status as a Registrant Firm set out in section 5.24 of the Bylaws.
- (9) If a non-practising Registrant Firm does not have its status as a Registrant Firm reinstated within 2 years of the date on which the Registrant Firm's status was changed to nonpractising, the non-practising Registrant Firm's registration and Permit to Practice must be cancelled.

5.15 Life Member or Life Limited Licensee

- (1) The category of Registrant called "life member or life limited licensee" is established only for:
 - (a) life members or life limited licensees whose status had vested pursuant to the prior bylaw 10(c.1) [*Life Membership or Licensure*], pursuant to section 42(2) of the PGA [*Categories of registrants and bylaws for categories of registrants*].
 - (b) Registrants previously in the registration categories of "life member prior to 1998" or <u>"honorary life member" who elect to change their registration category to life member</u> <u>or life limited licensee.</u>
- (1)(2) No individuals other than those described in subsection (1) may be granted registration in the category of Registrant called "life member or life limited licensee".
- (2)(3) A life member or life limited licensee retains voting privileges without payment of the annual fee but does not have the right to engage in the Reserved Practice.
- (3)(4) A life member or life limited licensee must not engage in the Reserved Practice.



- (4)(5) A life member or life limited licensee must annually commit to the Council not to engage in the Reserved Practice until released from the commitment by the Council in writing.
- (5)(6) A life member or life limited licensee must only use the following professional designation(s), as applicable:

Engineers

- (a) Professional Engineer (Non-Practising);
- (b) P.Eng. (Non-Practising);
- (c) Professional Engineer (Retired);
- (d) P.Eng. (Retired);

Geoscientists

- (e) Professional Geoscientist (Non-Practising);
- (f) P.Geo. (Non-Practising);
- (g) Professional Geoscientist (Retired);
- (h) P.Geo. (Retired);

Licensees

- (i) Professional Licensee Engineering (Non-Practising);
- (j) P.L.Eng. (Non-Practising);
- (k) Professional Licensee Engineering (Retired);
- (I) P.L.Eng. (Retired);
- (m) Professional Licensee Geoscience (Non-Practising);
- (n) P.L.Geo. (Non-Practising);
- (o) Professional Licensee Geoscience (Retired);
- (p) P.L.Geo. (Retired).
- (6)(7) A Registrant whose life status vested pursuant to the prior EGBC bylaw 10(c.1) [Life Membership or Licensure] who applies to reinstate status as a Professional Registrant must



- (a) pay the applicable fees as set out in section 6.1(1) and Schedule C of the Bylaws, and
- (b) demonstrate compliance with the requirements for reinstatement of status as a Professional Registrant set out in section 5.23 of the Bylaws.

5.16 Honorary Member

- (1) The category of Registrant called "honorary member" is established only for honorary members whose status had vested pursuant to the prior EGBC bylaw 10(d) [Honorary Membership], pursuant to section 42(2) of the PGA [Categories of registrants and bylaws for categories of registrants].
- (2) No individuals other than those described in subsection (1) may be granted registration in the category of Registrant called "honorary member".
- (3) An honorary member whose status had vested pursuant to the prior EGBC bylaw 10(d) [*Honorary Membership*] retains honorary status with EGBC without the payment of fees.
- (4) Honorary status is a ceremonial designation and does not on its own accord confer any rights or responsibilities under the PGA or the Bylaws.
- (5) An honorary member's status continues at the pleasure of the Council and may be revoked at the Council's discretion without prior notice to the honorary member.

5.17 Registration and Exemptions from Registration as a Registrant Firm

- (1) Subject to the PGA, associated regulations, and subsection (3), every Firm that engages in the Regulated Practice and is owned by or employs at least one Professional Registrant must register as a Registrant Firm and obtain a Permit to Practice from EGBC.
- (2) If the Audit and Practice Review Committee learns that a Firm is registered as a Registrant Firm, but does not, or at the time of registration did not, engage in the Regulated Practice or meet any one of the other requirements for registration pursuant to section 5.12, the Audit and Practice Review Committee must cause a condition to be placed on the Registrant Firm's registration and Permit to Practice prohibiting it from engaging in the Regulated Practice until the necessary requirements are met.
- (3) A Firm may apply in writing to the Audit and Practice Review Committee for an exemption from the requirement to register as a Registrant Firm and obtain a Permit to Practice from EGBC if any of the following apply:
 - (a) EGBC has an agreement in place with another regulatory body that exempts the Firm from registration with EGBC;
 - (b) the Firm is solely conducting research or providing education.



- (4) An application for an exemption submitted by a Firm pursuant to subsection (3) must include:
 - (a) a clear indication of how the Firm qualifies for an exemption;
 - (b) any evidence that supports the Firm's application for an exemption; and
 - (c) a declaration confirming that if the Firm no longer qualifies for the exemption, the Firm will submit an application for registration pursuant to the Bylaws.

5.18 Decisions Regarding Applications for Enrolment, Admission, and Reinstatement

- (1) On receiving an application for enrolment, admission, or reinstatement of status in any of the categories of individual Registrants pursuant to sections 5.5 to 5.11 of the Bylaws,
 - (a) the Credentials Committee may
 - (i) grant the application,
 - (ii) grant the application subject to conditions or limitations on the registration, or
 - (iii) reject the application, with written reasons,
 - (b) the Registrar, after a credentials hearing on good character and good repute held pursuant to section 5.19 of the Bylaws, may
 - (i) grant the application,
 - (ii) grant the application subject to conditions or limitations on the registration, or
 - (iii) reject the application, with written reasons, or
 - (c) an officer appointed by the Credentials Committee, in the case of a Non-Contentious Decision, may grant the application.
- (2) On receiving an application for admission or reinstatement of status as a Registrant Firm pursuant to sections 5.12 or 5.24 of the Bylaws, the Audit and Practice Review Committee or an officer appointed by the Audit and Practice Review Committee may
 - (a) grant the application,
 - (b) grant the application subject to conditions or limitations on the registration, or
 - (c) reject the application, with written reasons.

5.19 Credentials Hearing on Good Character and Good Repute of an Individual Applicant



- (1) The Credentials Committee may order a credentials hearing be conducted by the Registrar before the Registrar makes a decision pursuant to section 5.18(1)(b) of the Bylaws if the Credentials Committee determines that there is a serious concern that an individual Applicant does not meet the requirement to be of good character and good repute.
- (2) A credentials hearing must be conducted in accordance with the procedure set out in Schedule B of the Bylaws, unless otherwise directed by the Registrar.
- (3) If a decision is posted publicly following a credentials hearing held pursuant to subsection
 (2), the Registrar may anonymize or redact any identifying, personal or sensitive information of
 - (a) a person other than the Applicant/Respondent, if the Registrar determines the disclosure of such information is not necessary to satisfy the public interest, or
 - (b) the Applicant/Respondent if the Applicant/Respondent suffers from a physical or mental ailment, an emotional disturbance or an addiction to alcohol or drugs that impairs the Applicant's/Respondent's ability to practise.

5.20 Rejection of Application on the Basis of an Indictable Offence

- (1) If the Credentials Committee is satisfied that an individual Applicant has been convicted of an indictable offence, the Credentials Committee may summarily reject the application pursuant to section 66(2)(a)(ii) of the PGA [*Investigations*].
- (2) If the Audit and Practice Review Committee or an officer appointed by the Audit and Practice Review Committee is satisfied that an Applicant for registration as a Registrant Firm has been convicted of an indictable offence, the Audit and Practice Review Committee or an officer appointed by the Audit and Practice Review Committee may summarily reject the application pursuant to section 66(2)(a)(ii) of the PGA [*Investigations*].
- (3) Before proceeding pursuant to subsections (1) or (2), the Credentials Committee, the Audit and Practice Review Committee, or an officer appointed by the Audit and Practice Review Committee, as applicable, must be satisfied that the nature of the indictable offence or the circumstances under which the offence was committed give rise to concerns that the Applicant has displayed
 - (a) Professional Misconduct,
 - (b) Conduct Unbecoming a Registrant, or
 - (c) Incompetent performance of duties undertaken while engaged in the Regulated Practice.



- (4) Before proceeding pursuant to subsections (1) or (2), the Credentials Committee, the Audit and Practice Review Committee, or an officer appointed by the Audit and Practice Review Committee, as applicable, must provide written notice to the Applicant that
 - (a) action may be undertaken pursuant to section 66(2)(a)(ii) of the PGA [*Investigations*], and
 - (b) the Applicant may, by a specified date, make written submissions to the Credentials Committee, the Audit and Practice Review Committee, or an officer appointed by the Audit and Practice Review Committee, as applicable.
- (5) The Credentials Committee may order a credentials hearing by the Registrar for an individual Applicant, in the place of or in addition to the written submissions referred to in subsection (4)(b).
- (6) If an Applicant is an Applicant for registration as a Registrant Firm, the Audit and Practice Review Committee or an officer appointed by the Audit and Practice Review Committee may order that oral submissions be made in place of or in addition to the written submissions referred to in subsection (4)(b), which are to be made in accordance with the procedures set out in Schedule B of the Bylaws unless otherwise directed by the Audit and Practice Review Committee or an officer appointed by the Audit and Practice Review Committee.
- (7) Despite subsections (4), (5), and (6), if the Credentials Committee, the Audit and Practice Review Committee, or an officer appointed by the Audit and Practice Review Committee, as applicable, considers it necessary to protect the public interest, the Credentials Committee, the Audit and Practice Review Committee, or an officer appointed by the Audit and Practice Review Committee, as applicable, may proceed pursuant to subsections (1) or (2) without
 - (a) providing notice to the Applicant,
 - (b) providing the Applicant with an opportunity to make written submissions to the Credentials Committee, the Audit and Practice Review Committee, or an officer appointed by the Audit and Practice Review Committee, as applicable, or
 - (c) in the case of an individual Applicant, providing the Applicant with the opportunity to have a credentials hearing by the Registrar.
- (8) The Credentials Committee or the Audit and Practice Review Committee, as applicable, may approve policies and procedures for summarily rejecting the application of an Applicant pursuant to this section of the Bylaws.
- (9) Any policies and procedures for summarily rejecting the application of an Applicant that are approved by the Credentials Committee or the Audit and Practice Review Committee pursuant to subsection (8) must be published on a public website maintained by EGBC.

5.21 Reconsideration of a Decision of the Credentials Committee



- (1) Within 30 days of receipt of a decision of the Credentials Committee made pursuant to section 5.18(1)(a) of the Bylaws, an individual Applicant may apply in writing to the Credentials Committee for a reconsideration.
- (2) An application for a reconsideration submitted by an individual Applicant pursuant to subsection (1) must include all of the following:
 - (a) a clear indication of the decision of the Credentials Committee;
 - (b) the position of the Applicant suggesting the decision of the Credentials Committee was flawed;
 - (c) any evidence that was not previously before the Credentials Committee that the Applicant wants to be considered; and
 - (d) the relief sought by the Applicant.
- (3) An application for a reconsideration submitted by an individual Applicant pursuant to subsection (1) must be accompanied by all applicable reconsideration fees as set out in section 6.3(1) and Schedule C of the Bylaws.
- (4) After considering an application for a reconsideration, the Credentials Committee must, with written reasons,
 - (a) confirm the original decision of the Credentials Committee, or
 - (b) substitute the original decision of the Credentials Committee.
- (5) The Credentials Committee may approve policies and procedures for the conduct of reconsiderations pursuant to this section of the Bylaws.
- (6) Any policies and procedures for the conduct of reconsiderations that are approved by the Credentials Committee pursuant to subsection (5) must be published on a public website maintained by EGBC.
- (7) No Applicant for registration as a Registrant Firm may apply for a reconsideration pursuant to this section of the Bylaws.

5.22 Review on the Record

(1) Within 30 days of receipt of a decision of the Credentials Committee made pursuant to sections 5.18(1)(a) or 5.21(4) of the Bylaws, or a decision of the Audit and Practice Review Committee or an officer appointed by the Audit and Practice Review Committee made pursuant to section 5.18(2) of the Bylaws, an Applicant may apply in writing to the Registrar for a review on the record.



- (2) An application for a review on the record submitted by an Applicant pursuant to subsection(1) must set out all of the following:
 - (a) a clear indication of the decision(s) of the Credentials Committee, Audit and Practice Review Committee or officer appointed by the Audit and Practice Review Committee;
 - (b) the position of the Applicant suggesting the decision of the Credentials Committee, Audit and Practice Review Committee, or officer appointed by the Audit and Practice Review Committee was flawed; and
 - (c) the relief sought by the Applicant.
- (3) An application for a review on the record submitted by an Applicant pursuant to subsection
 (1) must be accompanied by all applicable review on the record fees as set out in section
 6.3(2) and Schedule C of the Bylaws.
- (4) A review on the record must be conducted in writing unless otherwise directed by the Registrar.
- (5) The Registrar may only consider evidence that was not previously before the Credentials Committee, the Audit and Practice Review Committee, or officer appointed by the Audit and Practice Review Committee if the Registrar determines that all of the following special circumstances exist which make it necessary to consider evidence that was not previously before the Credentials Committee, the Audit and Practice Review Committee, or officer appointed by the Audit and Practice Review Committee:
 - (a) the evidence is such that the applicant, through the exercise of reasonable due diligence, could not have discovered and submitted it before the decision was made by the evidence was not discoverable by reasonable due diligence before the Credentials Committee, the Audit and Practice Review Committee, or <u>the</u> officer appointed by the Audit and Practice Review Committee made the decision;
 - (b) the evidence is relevant in the sense that it bears upon a decisive or potentially decisive issue in the matter;
 - (c) the evidence is credible in the sense that it is reasonably capable of belief;
 - (d) the evidence is such that, if believed, it could reasonably, when taken with the other evidence that was before the Credentials Committee, the Audit and Practice Review Committee, or officer appointed by the Audit and Practice Review Committee, be expected to have affected the decision of the Credentials Committee, the Audit and Practice Review Committee, or officer appointed by the Audit and Practice Review Committee.
- (6) To request that the Registrar consider evidence that was not before the Credentials Committee, the Audit and Practice Review Committee, or the officer appointed by the



Audit and Practice Review Committee the Applicant must, in the application for a review on the record,

- (a) specify what evidence the Applicant wants to be considered, and
- (b) set out how the criteria set out in subsections (5)(a) to (d) are met.
- (7) Following a review on the record, the Registrar must, with written reasons,
 - (a) confirm the decision of the Credentials Committee, the Audit and Practice Review Committee, or the officer appointed by the Audit and Practice Review Committee, or
 - (b) substitute the decision of the Credentials Committee, the Audit and Practice Review Committee, or the officer appointed by the Audit and Practice Review Committee, including any conditions or limitations on the registration of the Applicant.
- (8) The Council may approve policies and procedures for the conduct of reviews on the record pursuant to this section of the Bylaws.
- (9) Any policies and procedures for the conduct of reviews on the record approved by the Council pursuant to subsection (8) must be published on a public website maintained by EGBC.

5.23 Reinstatement of Status as a Professional Registrant

- (1) An Applicant for reinstatement of status as a Professional Registrant must provide the following to the Credentials Committee:
 - (a) an application for reinstatement of status as a Professional Registrant;
 - (b) any applicable application, examination, interview, course or other applicable fees specified in section 6.1(1) and Schedule C of the Bylaws;
 - (c) evidence satisfactory to the Credentials Committee
 - (i) of Applicant's identity and legal name, if not previously submitted, and
 - (ii) that the Applicant is of good character and good repute, including a declaration that the Applicant is of good character and repute.
- (2) In addition to the requirements set out in subsection (1), an Applicant for reinstatement of status as a Professional Registrant must provide proof that the Applicant has complied with all applicable continuing education program requirements for Professional Registrants as set out in section 7.6 of the Bylaws if
 - (a) the Applicant's registration as a Professional Registrant has lapsed or been cancelled for 6 months or less, or



- (b) the Applicant is
 - (i) in good standing and has the right to practise with a Regulatory Authority, and
 - (ii) not subject to any practice limitations, restrictions, or conditions in the jurisdiction of the Regulatory Authority that are relevant to practice in British Columbia.
- (3) In addition to the requirements set out in subsection (1), an Applicant for reinstatement of status as a Professional Registrant must provide the following to the Credentials Committee, if the Applicant's registration as a Professional Registrant has lapsed or been cancelled for between 6 months to 18 months:
 - (a) a letter of explanation as to why the Applicant wishes to reinstate status as a Professional Registrant;
 - (b) a declaration that the Applicant has read and is familiar with applicable standards, policies, plans, and practices established by the government or by EGBC, including applicable professional practice guidelines and advisories that are relevant to the intended practice of the Applicant;
 - (c) proof that the Applicant has complied with all applicable continuing education program requirements for Professional Registrants as set out in section 7.6 of the Bylaws.
- (4) In addition to the requirements pursuant to subsection (1), an Applicant for reinstatement of status as a Professional Registrant must provide the following to the Credentials Committee if the Applicant's registration as a Professional Registrant has lapsed or been cancelled for between 18 months to 3 years:
 - (a) a letter of explanation as to why the Applicant wishes to reinstate status as a Professional Registrant;
 - (b) a declaration that the Applicant has read and is familiar with applicable standards, policies, plans, and practices established by the government or by EGBC, including applicable professional practice guidelines and advisories that are relevant to the intended practice of the Applicant;
 - (c) a letter of explanation as to how the Applicant has maintained practice competency, including through the completion of continuing education;
 - (d) professional references, in number satisfactory to the Credentials Committee and who are able to attest to the Applicant's good character, good repute, and practice competency;
 - (e) a current professional record of the Applicant's work experience;



- (f) evidence of completion of the Professional Engineering and Geoscience Practice in BC Online Seminar, or a seminar that is deemed equivalent by the Credentials Committee;
- (g) at the discretion of the Credentials Committee, evidence of completion of continuing education on such terms as set by the Credentials Committee.
- (5) In addition to the requirements set out in subsection (1), an Applicant for reinstatement of status as a Professional Registrant must provide the following to the Credentials Committee, if the Applicant's registration as a Professional Registrant has lapsed or been cancelled for more than 3 years:
 - (a) a letter of explanation as to why the Applicant wishes to reinstate status as a Professional Registrant;
 - (b) a declaration that the Applicant has read and is familiar with applicable standards, policies, plans, and practices established by the government or by EGBC, including applicable professional practice guidelines and advisories that are relevant to the intended practice of the Applicant;
 - (c) a letter of explanation as to how the Applicant has maintained practice competency, including through the completion of continuing education;
 - (d) professional references, in number satisfactory to the Credentials Committee and whose professional relationship with the Applicant covers the total number of years since the Applicant last had status as a Professional Registrant and who are able to attest to the Applicant's good character, good repute, and practice competency;
 - (e) a current professional record of the Applicant's work experience;
 - (f) completion of the Professional Engineering and Geoscience Practice in BC Online Seminar, regardless of whether it or a seminar that is deemed equivalent by the Council has previously been completed by the Applicant;
 - (g) evidence of the successful completion of an examination in professional practice approved by the Council;
 - (h) at the discretion of the Credentials Committee, evidence of completion of
 - (i) assigned experience under the Direct Supervision of a Professional Registrant for a period of time and on such terms as set by the Credentials Committee, and provision of a reference from that Professional Registrant, and
 - (ii) continuing education on such terms as set by the Credentials Committee.

5.24 Reinstatement of Status as a **Practising** Registrant Firm



- (1) A non-practising Registrant Firm applying for reinstatement of status as a <u>practising</u> Registrant Firm must provide the following to the Audit and Practice Review Committee:
 - (a) an application for reinstatement of status as a <u>practising</u> Registrant Firm;
 - (b) any applicable fees specified in section 6.2(3) and Schedule C of the Bylaws;
 - (c) the names of all individual Registrants employed by or under contract with the Applicant;non-practising Registrant Firm;
 - (d) a completed declaration by each of the <u>non-practising Registrant Firm'Applicant's</u> Responsible Registrant(s), as set out in Schedule D;
 - (e) a completed declaration by the <u>non-practising Registrant Firm</u>Applicant's Responsible Officer, as set out in Schedule E;
 - (f) if the <u>non-practising Registrant FirmApplicant</u> is a corporation:
 - (i) the <u>non-practising Registrant FirmApplicant</u>'s incorporation number;
 - (ii) the date of the <u>non-practising Registrant FirmApplicant</u>'s incorporation;
 - (iii) a copy of the <u>non-practising Registrant Firm</u><u>Applicant</u>'s certificate of incorporation, amalgamation, certificate of continuation, or equivalent from the home jurisdiction of the <u>Applicantnon-practising Registrant Firm</u>;
 - (iv) any certificate of name change or certificate of restoration, if applicable;
 - a copy of the <u>non-practising Registrant FirmApplicant</u>'s shareholder register, unless the <u>non-practising Registrant FirmApplicant</u> is a publicly traded corporation, in which case it is exempt from this paragraph; and
 - (vi) a copy of the <u>non-practising Registrant FirmApplicant</u>'s register of directors and officers;
 - (g) if the <u>non-practising Registrant Firm Applicant</u> is a partnership:
 - (i) the <u>non-practising Registrant FirmApplicant</u>'s registered business name, if applicable; and
 - (ii) a copy of the register of partners; and,
 - (h) if the <u>non-practising Registrant FirmApplicant</u> is a sole proprietorship:
 - (i) the <u>non-practising Registrant FirmApplicant</u>'s registered business name, if applicable; and


- (ii) the name of the owner of the sole proprietorship;
- (i) written notice of any changes to the information set out in section 5.28(3) of the Bylaws, and updated information as applicable, to be published on the Register.
- (2) In granting a non-practising Registrant Firm's application for reinstatement of status as a practising Registrant Firm, the Audit and Practice Review Committee or an officer appointed by the Audit and Practice Review Committee may require
 - (a) the reinstated Registrant Firm to undergo a compliance audit pursuant to section 8.7 of the Bylaws, either
 - (i) immediately on being granted reinstatement of status as a <u>practising</u> Registrant Firm,
 - (ii) within 12 months of being granted reinstatement of status as a <u>practising</u> Registrant Firm,
 - (iii) at the time the reinstated Registrant Firm would have next undergone a compliance audit if it had not changed its category of registration to nonpractising Registrant <u>Firm</u>, or
 - (iv) within any other timeframe as determined by the Audit and Practice Review Committee or an officer appointed by the Audit and Practice Review Committee, and
 - (b) any Responsible Registrant(s) of the reinstated Registrant Firm to undertake the Regulation of Firms Training Program pursuant to section 7.7.1 of the Bylaws, either
 - (i) within 12 months of being granted reinstatement of status as a <u>practising</u> Registrant Firm,
 - (ii) at the time the reinstated Registrant Firm would have next undergone a compliance audit if it had not changed its category of registration to nonpractising Registrant <u>Firm</u>, or
 - (iii) within any other timeframe as determined by the Audit and Practice Review Committee or an officer appointed by the Audit and Practice Review Committee.
- (3) Upon being granted reinstatement of status as a <u>practising</u> Registrant Firm, a reinstated Registrant Firm must have an up-to-date Professional Practice Management Plan in place that meets the requirements set out in sections 7.7.3(1) and 7.7.3(2) of the Bylaws.

5.25 Reinstatement as a Trainee, a Non-Practising Registrant, or a Life Member or Life Limited Licensee



- (1) An individual whose enrolment as a Trainee has lapsed or been cancelled must provide the following to the Credentials Committee to apply for reinstatement as a Trainee:
 - (a) an application for reinstatement;
 - (b) any applicable application or other fees specified in section 6.1(1) and Schedule C of the Bylaws;
 - (c) evidence satisfactory to the Credentials Committee
 - (i) of the Applicant's identity and legal name, if not previously submitted, and
 - (ii) that the Applicant is of good character and good repute.
- (2) An Applicant whose registration as a non-practising Registrant or a life member or life limited licensee has lapsed or been cancelled must provide the following to the Credentials Committee to apply for reinstatement as a non-practising Registrant or a life member or life limited licensee, as applicable:
 - (a) an application for reinstatement;
 - (b) any applicable application or other fees specified in section 6.1(1) and Schedule C of the Bylaws;
 - (c) evidence satisfactory to the Credentials Committee
 - (i) of the Applicant's identity and legal name, if not previously submitted, and
 - (ii) that Applicant is of good character and good repute.

5.26 Ceasing Status as a Registrant

- (1) An individual Registrant seeking cancellation of the individual Registrant's enrolment or registration with EGBC must apply in writing to the Registrar for cancellation of enrolment or registration.
- (2) A Registrant Firm seeking cancellation of the Registrant Firm's registration and Permit to Practice with EGBC must apply in writing to the Audit and Practice Review Committee for cancellation of the Registrant Firm's registration and Permit to Practice, which must be signed by the Responsible Officer of the Registrant Firm.
- (3) A request made by a Registrant Firm pursuant to subsection (2) must state:
 - (a) the reason(s) that the Registrant Firm is seeking cancellation of the Registrant Firm's registration and Permit to Practice, and
 - (b) a list of all ongoing activities or work related to the Regulated Practice in which the Registrant Firm is involved.



5.27 Register of Individual Registrants

- (1) The Registrar must maintain a Register of all current and former individual Registrants and Recent Historical Members.
- (2) A former individual Registrant or Recent Historical Member must be listed on the Register for 10 calendar years after the calendar year in which the former individual Registrant or Recent Historical Member ceased to be registered with EGBC.
- (3) Despite subsection (1), the Register must not include former Trainees.
- (4) For a currently registered individual Registrant, in addition to the information set out in section 31(3) of the PGA [*Registrar and register for regulatory body*], the Registrar must include the following information on the Register:
 - (a) the individual Registrant's professional designation;
 - (b) if an individual Registrant is a professional licensee engineering or a professional licensee geoscience, the authorized area of practice identified on the individual Registrant's licence;
 - (c) the original discipline of the individual Registrant's registration;
 - (d) <u>for all Registrants with the ability to engage in the Reserved Practice</u>, the individual Registrant's self-declared industry <u>or industries</u> of practice and area(s) of practice;
 - (e) the municipality, province or state, and country in which the individual Registrant is based;
 - (f) if applicable, the name of the individual Registrant's employer;
 - (g) <u>for all Registrants with the ability to engage in the Reserved Practice</u>, business contact information for the individual Registrant, which may be provided by way of the individual Registrant's
 - (i) business email address,
 - (ii) business telephone number,
 - (iii) business mailing address, or
 - (iv) business website, if the business website contains any of the business contact information for the individual Registrant that is listed in paragraphs (g)(i) to (iii);
 - (h) the later of the date on which the individual Registrant was first granted
 - (i) enrolment as a Trainee, or



- (ii) registration as a Registrant other than a Trainee;
- (i) the start date of the individual Registrant's current registration as a Registrant or enrolment as a Trainee;
- (j) the expiry date of the individual Registrant's current registration as a Registrant or enrolment as a Trainee;
- (k) the date(s) of any:
 - (i) expiration(s) of the individual Registrant's registration;
 - (ii) cancellation(s) of the individual Registrant's registration; or,
 - (iii) suspension(s) of the individual Registrant's registration;
- (I) any Disciplinary Order(s) respecting the individual Registrant.
- (5) For a former individual Registrant, in addition to the information set out in section 31(3) of the PGA [*Registrar and register for regulatory body*], the Registrar must include the following information on the Register:
 - (a) the former individual Registrant's former professional designation(s);
 - (b) if the former individual Registrant was a professional licensee engineering or a professional licensee geoscience, the authorized area of practice that was previously identified on the former individual Registrant's licence;
 - (c) the original discipline of the former individual Registrant's registration;
 - (d) the municipality, province or state, and country in which the former individual Registrant was based;
 - (e) the date on which the former individual Registrant was first granted registration;
 - (f) the date(s) of any
 - (i) expiration(s) of the former individual Registrant's registration;
 - (ii) cancellation(s) of the former individual Registrant's registration; or,
 - (iii) suspension(s) of the former individual Registrant's registration;
 - (g) any Disciplinary Order(s) respecting the former individual Registrant.



- (6) For a Recent Historical Registrant, in addition to the information set out in section 31(3) of the PGA [*Registrar and register for regulatory body*], the Registrar must include the following information on the Register:
 - (a) the Recent Historical Member's former professional designation(s);
 - (b) if the Recent Historical Member held a limited licence to practise professional engineering or geoscience pursuant to the EGA, the authorized area of practice identified on the Recent Historical Member's former licence;
 - (c) the original discipline of the Recent Historical Member's registration;
 - (d) the date on which the Recent Historical Member was first granted registration with EGBC;
 - (e) the date(s) of any:
 - expiration(s) of the registration or membership of the Recent Historical Member;
 - (ii) cancellation(s) of the registration or membership of the Recent Historical Member; or,
 - (iii) suspension(s) of the registration or membership of the Recent Historical Member;
 - (f) any Disciplinary Order(s) respecting the Recent Historical Member.
- (7) An individual Registrant may apply in writing to the Registrar to have the information listed in subsections (4)(e) to (g) omitted from the Register if the publication if such information would reasonably threaten the safety of the individual Registrant or another person.
- (8) The information listed in subsections (4)(k), (4)(l), (5)(e), (5)(f), (6)(e), and (6)(f) must appear on the Register for as long as a Registrant is listed on the Register pursuant to subsections (1) and (2).

5.28 Register of Registrant Firms

- (1) The Registrar must maintain a Register of all current and former Registrant Firms.
- (2) A former Registrant Firm must be listed on the Register for 10 years after ceasing to be a Registrant Firm.
- (3) For a currently registered Registrant Firm, in addition to the information set out in section 31(3) of the PGA [*Registrar and register for regulatory body*], the Registrar must include the following information on the Register:
 - (a) the Registrant Firm's Permit to Practice Number;



- (b) the Registrant Firm's self-declared industry or industries of practice and area(s) of practice;
- (c) the municipality, province or state, and country in which the Registrant Firm's main office is located;
- (d) the business location(s) in British Columbia where Professional Registrants will be engaged in the Regulated Practice on behalf of the Registrant Firm;
- (e) the names of the Responsible Registrant(s) and the Responsible Officer of a Registrant Firm;
- (f) the area(s) of practice to which each Responsible Registrant of the Registrant Firm is designated;
- (g) the business contact information of the Responsible Registrant(s) and the Responsible Officer of the Registrant Firm, which may be provided by way of the Responsible Registrant(s) and the Responsible Officer's
 - (i) business email address,
 - (ii) business telephone number, or
 - (iii) business mailing address;
- (h) the date on which the Registrant Firm was first granted registration as a Registrant Firm;
- (i) the start date of the Registrant Firm's current registration as a Registrant Firm;
- (j) the expiry date of the Registrant Firm's current registration as a Registrant Firm;
- (k) the date(s) of any:
 - (i) expiration(s) of the Registrant Firm's registration and Permit to Practice;
 - (ii) cancellation(s) of the Registrant Firm's registration and Permit to Practice;
 - (iii) suspension(s) of the Registrant Firm's registration and Permit to Practice;
 - (iv) condition(s) on the Registrant Firm's registration and Permit to Practice prohibiting the Registrant Firm from engaging in the Regulated Practice;
- (I) any Disciplinary Order(s) respecting the Registrant Firm.



- (4) For a former Registrant Firm, in addition to the information set out in section 31(3) of the PGA [*Registrar and register for regulatory body*], the Registrar must include the following information on the Register:
 - (a) the former Registrant Firm's Permit to Practice Number;
 - (b) the municipality, province or state, and country in which the former Registrant Firm's main office was located;
 - (c) the names of the Responsible Registrant(s) and the Responsible Officer of the former Registrant Firm;
 - (d) the area(s) of practice to which each Responsible Registrant of the former Registrant Firm was designated;
 - (e) the date on which the former Registrant Firm was first granted registration as a Registrant Firm;
 - (f) the date(s) of any:
 - (i) expiration(s) of the Registrant Firm's registration and Permit to Practice;
 - (ii) cancellation(s) of the Registrant Firm's registration and Permit to Practice;
 - (iii) suspension(s) of the Registrant Firm's registration and Permit to Practice;
 - (iv) condition(s) on the Registrant Firm's registration and Permit to Practice prohibiting the former Registrant Firm from engaging in the Regulated Practice;
 - (g) any Disciplinary Order(s) respecting the former Registrant Firm.
- (5) The information listed in subsections (3)(k), (3)(l), (4)(f), and (4)(g) must appear on the Register for as long as a Registrant Firm is listed on the Register pursuant to subsections (1) and (2).

5.29 Information Collected Annually and Published on the Register

- (1) By 11:59 PM (Pacific Time) on June 30, the last day of each Reporting Year, an individual Registrant must provide EGBC with the information that is required to be published on the Register pursuant to sections 5.27(4)(d), (e), (f), and (g) of the Bylaws.
- (2) An individual Registrant must provide written notice to EGBC regarding any change to the information that is required pursuant to subsection (1) within 30 days of the change taking effect.



- (3) By 11:59 PM (Pacific Time) on March 31 of each year, a Registrant Firm must provide EGBC with the information that is required to be published on the Register pursuant to sections 5.28(3)(b), (c), (d), (e), (f), and (g) of the Bylaws.
- (4) A Registrant Firm must provide written notice to EGBC regarding any change to the information that is required pursuant to subsection (3) within 30 days of the change taking effect.

5.30 Information Collected Annually and not Published on the Register

- (1) By 11:59 PM (Pacific Time) on June 30, the last day of each Reporting Year, an individual Registrant must provide EGBC with
 - (a) the individual Registrant's personal and unique email address,
 - (b) A declaration confirming whether the Registrant has been:
 - (i) convicted of an offence under a federal or provincial statute, or an equivalent offence in another jurisdiction,
 - (ii) the subject of an investigation, inquiry, review, or other disciplinary proceeding by a Different Governing Body, that could result in
 - (A) the Registrant's entitlement to practise a profession being cancelled, suspended, restricted, or made subject to limits or conditions,
 - (B) if the Registrant is a Trainee, the Trainee's entrance to a profession being denied, or
 - (C) if the Registrant is a Registrant Firm, the Registrant Firm's permit, license, or authorization to practice a profession being cancelled, suspended, restricted, or made subject to limits or conditions, or
 - (iii) the subject of a disciplinary action taken by a Different Governing Body, including an agreement resulting in the resolution of an investigation or disciplinary process,

which is not to be published on the Register.

- (2) An individual Registrant must provide written notice to EGBC regarding any change to the individual Registrant's personal and unique email address within 30 days of the change taking effect.
- (3) By 11:59 PM (Pacific Time) on March 31 of each year, a Registrant Firm must provide EGBC with
 - (a) the personal and unique email addresses of each Responsible Registrant and the Responsible Officer of the Registrant Firm,



- (b) the names of all individual Registrants employed by or under contract with the Registrant Firm, and
- (c) the number of individuals employed by or under contract with the Registrant Firm who are registrants of each regulatory body under the PGA other than EGBC,
- (d) A declaration confirming whether the Registrant Firm has been:
 - (i) convicted of an offence under a federal or provincial statute, or an equivalent offence in another jurisdiction,
 - (ii) the subject of an investigation, inquiry, review, or other disciplinary proceeding by a Different Governing Body, that could result in the Registrant Firm's permit, license, or authorization to practice a profession being cancelled, suspended, restricted, or made subject to limits or conditions, or
 - (iii) the subject of a disciplinary action taken by a Different Governing Body, including an agreement resulting in the resolution of an investigation or disciplinary process,

which is not to be published on the Register except as required pursuant to section 5.28 of the Bylaws.

(4) A Registrant Firm must provide written notice to EGBC regarding any change to the information that is required pursuant to subsections (3)(a) or (b) within 30 days of the change taking effect.

5.31 Failure to Provide Required Information

- (1) An individual Registrant who fails to provide EGBC with any of the information required pursuant to sections 5.29(1) or 5.30(1) of the Bylaws must, by 11:59 PM (Pacific Time) on September 30 in the following Reporting Year,
 - (a) provide EGBC with the required information, and
 - (b) send to EGBC the late reporting fee specified in Schedule C of the Bylaws.
- (2) A Registrant Firm who fails to provide EGBC with any information required pursuant to sections 5.29(3) or 5.30(3) of the Bylaws must, by 11:59 PM (Pacific Time) on May 31 of the same year,
 - (a) provide EGBC with the required information, and
 - (b) send to EGBC the late reporting fee specified in Schedule C of the Bylaws.
- (3) If a Registrant fails comply with the requirements set out in subsections (1) or (2), as applicable, the Registrant's registration must be suspended, and, if the Registrant is a



Registrant Firm, a condition must be placed on the Registrant Firm's registration and Permit to Practice prohibiting it from engaging in the Regulated Practice until such requirements are complete.

- (4) If an individual Registrant fails to comply with the requirements set out in subsection (1) by 11:59 PM (Pacific Time) on December 31 of the same year,
 - (a) the Registrant's registration is cancelled, or
 - (b) if the Registrant is a Trainee, the Trainee's enrolment is cancelled.
- (5) If a Registrant Firm fails to comply with the requirements set out in subsection (2) by 11:59 PM (Pacific Time) on August 31 of the same year, the Registrant Firm's registration and Permit to Practice are cancelled.

5.32 Information Collected Immediately and not Published on the Register

- (1) A Registrant who is convicted of an offence under a federal or provincial statute, or an equivalent offence in another jurisdiction, must immediately on becoming aware of the conviction provide written notice to EGBC specifying the particulars of the conviction.
- (2) A Registrant who becomes the subject of an investigation, inquiry, review, or other disciplinary proceeding by a Different Governing Body, that could result in
 - (a) the Registrant's entitlement to practise a profession being cancelled, suspended, restricted, or made subject to limits or conditions,
 - (b) if the Registrant is a Trainee, the Trainee's entrance to a profession being denied, or
 - (c) if the Registrant is a Registrant Firm, the Registrant Firm's permit, license, or authorization to practice a profession being cancelled, suspended, restricted, or made subject to limits or conditions,

must immediately on becoming aware of the investigation, inquiry, review, or proceeding provide written notice to EGBC and provide particulars of the issue.

- (3) A Registrant who becomes the subject of a disciplinary action taken by a Different Governing Body, including an agreement resulting in the resolution of an investigation or disciplinary process, must immediately upon reaching the agreement or becoming aware of the disciplinary action, provide written notice to EGBC specifying the particulars of the agreement or disciplinary action.
- (4) A Registrant Firm must provide written notice to EGBC within 15 days of the occurrence of any of the following situations:
 - (a) there is a merger, acquisition, closure, or dissolution of the Registrant Firm;
 - (b) the Registrant Firm



- (i) becomes the subject of an application for a bankruptcy order,
- (ii) makes an assignment for the general benefit of creditors, or
- (iii) makes or becomes the subject of a Division I or Division II proposal,

as set out in the Bankruptcy and Insolvency Act, R.S.C. 1985, c. B-3.

5.33 Issuance of Certificate or Permit to Practice

- (1) The Registrar must issue to an individual Registrant a certificate of registration and, on payment of the annual fee, confirmation that the Registrant is In Good Standing.
- (2) The Registrar must issue to a Registrant Firm a Permit to Practice and, on payment of the annual fee, confirmation that the Registrant Firm is In Good Standing.



6 Fees

6.1 Application Fees

- (1) An Applicant for enrolment, admission, or reinstatement of status as a Registrant pursuant to sections 5.5 to 5.16, 5.23, 5.24, or 5.25 of the Bylaws must send to EGBC the full amount of all applicable application, examination, interview, or course fees specified in Schedule C of the Bylaws.
- (2) In addition to any fees applicable pursuant to subsection (1), a professional engineer who applies for designation as a designated structural engineer pursuant to section 5.6.1 must send to EGBC the full amount of all applicable application and examination fees specified in Schedule C of the Bylaws.

6.2 Registration Fees

- (1) Within 30 days of being granted registration as an individual Registrant other than a Trainee, an individual Registrant must send to EGBC the full amount of the applicable registration fee specified in Schedule C of the Bylaws.
- (2) Within 30 days of being designated as a designated structural engineer, a designated structural engineer must send to EGBC the full amount of the applicable designation fee specified in Schedule C of the Bylaws.

6.3 Reconsideration and Review on the Record Fees

- (1) An individual Applicant who applies for a reconsideration must send to EGBC the full amount of all applicable reconsideration fees specified in Schedule C of the Bylaws.
- (2) An Applicant who applies for a review on the record must send to EGBC the full amount of all applicable review on the record fees specified in Schedule C of the Bylaws.

6.4 Annual Fees

- (1) An individual Registrant must send to EGBC the full amount of the applicable annual fee specified in Schedule C of the Bylaws by 11:59 PM (Pacific Time) on December 31 of each year.
- (2) Subject to subsection (4), a Registrant Firm must send to EGBC the full amount of the applicable annual fee specified in Schedule C of the Bylaws by 11:59 PM (Pacific Time) on May 31 of each year.
- (3) A non-practising Registrant Firm that has held non-practising status for 2 years or less is exempt from paying the applicable annual fee.
- (4) In addition to the annual fee set out in subsection (2), a Registrant Firm that was engaged in the Regulated Practice on or after July 1, 2021 but is not immediately registered pursuant to these Bylaws must pay the annual fee specified in Schedule C of the Bylaws



for each year or portion of a year, up to a maximum of 3 years, that the Registrant Firm would have been required to pay the annual fee to EGBC if the Registrant Firm had been granted registration on July 1, 2021.

(5) A Registrant that is granted enrolment, admission, or reinstatement of status at some time other than the beginning of the annual fee cycle must pay a prorated annual fee specified in Schedule C of the Bylaws within 30 days of being granted enrolment, admission, or reinstatement.

6.5 Special Assessments

- (1) An individual Registrant must send to EGBC the full amount of an applicable special assessment specified in Schedule C of the Bylaws by 11:59 PM (Pacific Time) on December 31 of each year.
- (2) A Registrant Firm must send to EGBC the full amount of an applicable special assessment specified in Schedule C of the Bylaws by 11:59 PM (Pacific Time) on May 31 of each year.

6.6 Additional Manual Seal(s) or Certificate(s)

(1) A Registrant who requires additional Manual Seal(s) or certificate(s) of registration from EGBC must send to EGBC the full amount of all applicable fees specified in Schedule C of the Bylaws at the time that the Registrant requests the additional Manual Seal(s) or certificate(s) of registration.

6.7 Exemption, Reduction, Deferral, or Refund of Fees

- (1) On receiving a written application by an individual Registrant, the Registrar may exempt, reduce, defer, or refund all or part of a fee or special assessment specified in Schedule C of the Bylaws if the Registrar is satisfied that the imposition of the fee or special assessment would cause undue financial hardship for the individual Registrant, or if there are extenuating circumstances that warrant the exemption, reduction, deferral, or refund.
- (2) On receiving a written application by a Registrant Firm, the Registrar may waive payment of all or part of a fee for the Registrant Firm specified in sections 6.1(1), 6.4(2), 6.4(4), 6.5(2), or Schedule C of the Bylaws, pursuant to section 50(1)(h) of the PGA [*Fees and special assessments*], if the Registrar is satisfied that
 - (a) the Registrant Firm was a member of EGBC's Organizational Quality Management Program as of June 30, 2021, and
 - (b) the Registrant Firm had paid all outstanding fees and any amounts owing pursuant to its membership in the Organizational Quality Management program as of June 30, 2021.
- (3) A Registrant Firm is not eligible to apply for the reduction, deferral, or refund of fees or special assessments, except in accordance with subsection (2).



6.8 Failure to Pay Fees

- (1) An individual Registrant who fails to pay the full amount of an applicable annual fee or special assessment pursuant to sections 6.4(1) or 6.5(1) of the Bylaws must send to EGBC the full amount of the applicable annual fee or special assessment and the applicable late fee specified in Schedule C of the Bylaws, by 11:59 PM (Pacific Time) on January 31 of the following year.
- (2) Pursuant to section 31(4)(b) of the PGA [*Registrar and register for regulatory body*], if a Registrant fails to pay a required
 - (a) registration fee pursuant to section 6.2(1) of the Bylaws,
 - (b) designation fee pursuant to section 6.2(2) of the Bylaws,
 - (c) for an individual Registrant, a prorated annual fee pursuant to section 6.4(5) of the Bylaws, or
 - (d) annual fee, special assessment, or late fee pursuant to section 6.8(1) of the Bylaws,

the Registrar must cancel the Registrant's registration, or if the Registrant is a Trainee, the Trainee's enrolment, or if the Registrant is a Registrant Firm, the Registrant Firm's registration and Permit to Practice.

- (3) A Registrant Firm or a non-practising Registrant Firm that fails to pay the full amount of an applicable annual fee or special assessment pursuant to sections 6.4(2), 6.4(4), or 6.5(2) of the Bylaws must send to EGBC the full amount of the applicable annual fee or special assessment and late fee specified in Schedule C of the Bylaws by 11:59 PM (Pacific Time) on June 30 of the same year.
- (4) If a Registrant Firm or non-practising Registrant Firm fails to comply with the requirements set out in subsection (3), the Registrar must place a condition on the Registrant Firm's registration and Permit to Practice prohibiting it from engaging in the Regulated Practice until all fees outstanding pursuant to subsection (3) have been paid.
- (5) Pursuant to section 31(4)(b) of the PGA [*Registrar and register for regulatory body*], if a Registrant Firm or non-practising Registrant Firm that is subject to a condition prohibiting it from engaging in the Regulated Practice pursuant to subsection (4) fails to pay the full amount of all applicable outstanding fees by 11:59 PM (Pacific Time) on August 31 of the same year, the Registrar must cancel the Registrant Firm or non-practising Registrant Firm's registration and Permit to Practice.



7 Standards of Conduct and Competence

7.1 Definitions

(1) For the purpose of this Part, "Registrant" includes a former Registrant where applicable, pursuant to section 56(1) of the PGA [*Definition and Application*].

7.2 Code of Ethics

(1) A Registrant must adhere to the Code of Ethics as set out in Schedule A of the Bylaws.

7.3 Standards of Competence – Quality Management Requirements

- (1) The standards of competence quality management requirements set out in sections 7.3.1 to 7.3.8 of the Bylaws are established pursuant to section 57(1)(b) of the PGA [*Standards of Conduct and Competence*].
- (2) A Registrant must comply with the standards of competence set out in sections 7.3.1 to 7.3.7 of the Bylaws at all times while engaged in the Regulated Practice.
- (3) A non-practising Registrant Firm is exempt from the requirements set out in sections 7.3.1, 7.3.3, 7.3.4(4)(a), 7.3.4(4)(b), 7.3.4(4)(c), 7.3.5, 7.3.6, and 7.3.8 of the Bylaws while maintaining its non-practising status and not engaged in the Regulated Practice.

7.3.1 Standard for Use of Professional Practice Guidelines

- (1) EGBC shall publish professional practice guidelines approved by the Council on a public website maintained by EGBC and shall update professional practice guidelines as necessary.
- (2) A Professional Registrant must have regard for applicable standards, policies, plans, and practices established by the government or by EGBC, including professional practice guidelines published pursuant to subsection (1), by establishing, maintaining, and following documented procedures in order to do all of the following:
 - (a) stay informed of, knowledgeable about, and meet the intent of all applicable standards, policies, plans, and practices established by the government or by EGBC, including professional practice guidelines published pursuant to subsection (1), that are relevant to the Professional Registrant's Regulated Practice;
 - (b) document in writing the reason(s) for a departure from any relevant portion of a professional practice guideline published pursuant to subsection (1).
- (3) A Registrant Firm must do all of the following:
 - (a) establish, maintain, and follow documented policies and procedures in order to



- (i) obtain information and details in a timely manner regarding professional practice guidelines published pursuant to subsection (1) that are relevant to the Regulated Practice carried out by the Registrant Firm and Professional Registrants employed by or under contract with the Registrant Firm, and
- (ii) inform the Professional Registrants employed by or under contract with the Registrant Firm in a timely and effective manner of professional practice guidelines published pursuant to subsection (1) that are relevant to the Regulated Practice carried out by the Registrant Firm and Professional Registrants employed by or under contract with the Registrant Firm;
- (b) take reasonable steps to facilitate all Professional Registrants employed by or under contract with the Registrant Firm in adhering to the obligations of Professional Registrants pursuant to subsection (2).

7.3.2 Standard for Retention and Preservation of Complete Project Documentation

- (1) A Professional Registrant must establish, maintain, and follow documented procedures for the retention and preservation of complete project documentation related to the Regulated Practice engaged in by the Professional Registrant, which documentation is not limited to, including but must include if they existed, copies of physical and or electronic versions of
 - (a) correspondence,
 - (b) investigations,
 - (c) surveys,
 - (d) reports,
 - (e) data,
 - (f) background information,
 - (g) assessments,
 - (h) designs,
 - (i) specifications,
 - (j) field reviews,
 - (k) testing information,
 - (I) models,
 - (m) simulations,



- (n) quality assurance documentation,
- (o) drawings,
- (p) calculations, and
- (q) copies of all Authenticated Documents.
- (2) A Registrant Firm must establish, maintain, and follow documented policies and procedures for the retention and preservation of complete project documentation related to the Regulated Practice engaged in by the Registrant Firm, which documentation is not limited to, but must include if they existed, physical and electronic versions of
 - (a) correspondence,
 - (b) investigations,
 - (c) surveys,
 - (d) reports,
 - (e) data,
 - (f) background information,
 - (g) assessments,
 - (h) designs,
 - (i) specifications,
 - (j) field reviews,
 - (k) testing information,
 - (I) models,
 - (m) simulations,
 - (n) quality assurance documentation,
 - (o) drawings,
 - (p) calculations, and
 - (q) copies of all Authenticated Documents.



- (3) Complete project documentation must be retained and preserved for at least 10 years after the later of the completion of the project or when the documentation is no longer used.
- (4) A Registrant Firm must do all of the following:
 - (a) establish and maintain documented policies, plans, and procedures
 - (i) in order to ensure that, if any of the situations set out in section 5.32(4) occur with respect to a Registrant Firm, complete project documentation is preserved in accordance with subsection (3) and such documentation is accessible in the event of a request pursuant to the PGA or Bylaws, and
 - (ii) for all individuals employed by or under contract with the Registrant Firm to follow in relation to the retention and preservation of complete project documentation and the obligations of Professional Registrants and Registrant Firms pursuant to this section of the Bylaws;
 - (b) ensure that all individuals employed by or under contract with the Registrant Firm adhere to the documented policies and procedures of the Registrant Firm established pursuant to paragraph (a);
 - (c) take reasonable steps to facilitate the Professional Registrants employed by or under contract with the Registrant Firm in adhering to the obligations of Professional Registrants pursuant to subsections (1) and (3).
- (5) A Professional Registrant who is employed by or under contract with a Registrant Firm may satisfy their obligations pursuant to this section of the Bylaws with respect to any project documentation produced during the course of their employment or contract with the Registrant Firm by
 - (a) taking reasonable steps to confirm that
 - the Registrant Firm has in place documented policies and procedures for the retention and preservation of all project documentation produced by the Professional Registrant during the course of or related to their employment or contract with the Registrant Firm, and
 - (ii) that the documented policies and procedures referred to in paragraph (a)(i) are in accordance with the requirements set out in subsections (2), (3), and (4), and
 - (b) consistently adhering to the documented policies and procedures of the Registrant Firm with respect to retention and preservation of project documentation established pursuant to subsection (4)(a) during the course of the Professional Registrant's employment or contract with the Registrant Firm.



- (6) A Professional Registrant who ceases to be employed by or under contract with a Registrant Firm may continue to satisfy their obligation to retain and preserve complete project documentation pursuant to subsection (3) by ensuring that
 - (a) an agreement is in place with the Registrant Firm regarding the retention and preservation of all project documentation produced by the Professional Registrant during the course of their employment or contract with the Registrant Firm, and
 - (b) the agreement referenced in paragraph (a) requires either the Professional Registrant or the Registrant Firm, or both, to retain and preserve all project documentation in accordance with the requirements of this section of the Bylaws.

7.3.3 Standard for Field Reviews

- (1) Field reviews must be completed during the construction, manufacturing, fabrication, implementation, testing, or commissioning of work related to the Regulated Practice by a Professional Registrant, or a Subordinate under the Professional Registrant's Direct Supervision, in a manner that is appropriate to the level of risk that has been assessed through a documented risk assessment.
- (2) If applicable pursuant to subsection (1), a Professional Registrant must establish, maintain, and follow documented procedures for documented field reviews of work related to the Regulated Practice in British Columbia.
- (3) Through a field review, a Professional Registrant, or a Subordinate under the Professional Registrant's Direct Supervision, must determine whether the construction, manufacturing, fabrication, implementation, testing, or commissioning of work related to the Regulated Practice substantially complies with the concepts or intent reflected in the Documents prepared for the work related to the Regulated Practice.
- (4) If applicable pursuant to subsection (1), a Registrant Firm must do all of the following:
 - (a) establish and maintain documented policies and procedures for Professional Registrants employed by or under contract with the Registrant Firm to follow in relation to field reviews and the obligations of Professional Registrants pursuant to this section of the Bylaws, which may include:
 - (i) process flowcharts,
 - (ii) checklists, or
 - (iii) forms;
 - (b) ensure that the Professional Registrants employed by or under contract with the Registrant Firm adhere to the documented policies and procedures of the Registrant Firm established pursuant to paragraph (a);



(c) take reasonable steps to facilitate the Professional Registrants employed by or under contract with the Registrant Firm in adhering to the obligations of Professional Registrants pursuant to subsections (1), (2), and (3).

7.3.4 Standard for Checks

- (1) A Professional Registrant must establish, maintain, and follow documented procedures for regular, documented checks of the Professional Registrant's work related to the Regulated Practice using a written quality control process appropriate to the level of risk that has been assessed through a documented risk assessment.
- (2) The procedures established pursuant to subsection (1) must include:
 - (a) how risk will be assessed;
 - (b) the minimum frequency for checks to be conducted, dependent on the degree of risk assessed pursuant to (a);
 - (c) the required qualifications of the checker;
 - (d) how the check will be documented, including:
 - (i) who conducted the check;
 - (ii) the date that the check was completed;
 - (iii) what was checked; and
 - (iv) issues identified by the checker, if any;

(iv)(v)correction(s) and corrective action(s), if any, in response to issues identified by the checker

- (e) what must be checked, including but not limited to:
 - (i) input requirements;
 - (ii) input data;
 - (iii) calculations;
 - (iv) drawings;
 - (v) assessments;
 - (vi) designs;



- (vii) software outputs;
- (viii) communications that include directives, recommendations, or opinions related to the Regulated Practice;
- (ix) reports;
- (x) recommendations; and,
- (xi) other activities or work related to the Regulated Practice, including activities or work related to manufacturing, high technology, computer software development, operations, and maintenance activities.
- (3) A Professional Registrant must ensure that a documented check has been conducted in accordance with the procedures established pursuant to subsection (1) on all activities or work related to the Regulated Practice that will be issued or delivered to any other party.
- (4) A Registrant Firm must do all of the following:
 - (a) establish and maintain documented policies and procedures for Professional Registrants employed by or under contract with the Registrant Firm to follow in relation to documented checks and the obligations of Professional Registrants pursuant to this section of the Bylaws, which may include
 - (i) process flowcharts,
 - (ii) checklists, or
 - (iii) forms;
 - (b) ensure that the Professional Registrants employed by or under contract with the Registrant Firm adhere to the documented policies and procedures established pursuant to paragraph (a);
 - (c) take reasonable steps to facilitate the Professional Registrants employed by or under contract with the Registrant Firm in adhering to the obligations of Professional Registrants pursuant to subsections (1), (2), and (3);
 - (d) retain complete documentation related to checks conducted by any Professional Registrant employed by or under contract with the Registrant Firm, in accordance with section 7.3.2 of the Bylaws.

7.3.5 Standard for Independent Review(s) of Structural Designs

(1) All Structural Designs require documented independent review(s) prior to Documents being issued for construction or implementation.



- (2) Despite subsection (1), EGBC may identify classes of Structures that do not require documented independent review(s) of Structural Designs.
- (3) A Professional of Record must
 - (a) complete a documented risk_-assessment after conceptual design and before detailed design of a Structural Design to determine the following:
 - (i) the appropriate frequency for the required documented independent review(s) of the Structural Design;
 - (ii) whether the required documented independent review(s) of the Structural Design must be conducted by
 - (A) an appropriately qualified and experienced Professional Registrant who has not been previously involved in the Structural Design and is employed by the same Firm employing the Professional of Record, or
 - (B) an appropriately qualified and experienced Professional Registrant who has not been previously involved in the Structural Design and is employed by a Firm other than the Firm employing the Professional of Record.
 - (b) record their rationale for the determinations made pursuant to paragraphs (a)(i) and (ii),
 - (c) document actions taken or not taken, along with the rationale for that decision, as a result of the independent review(s), including any actions taken or not taken as a result of information received pursuant to subsection (7)(d),
 - (d) communicate the actions and rationale documented pursuant to paragraph (c) to the Professional Registrant tasked with completing the documented independent review in an appropriately timely manner.
- (4) Despite subsection (3)(b), EGBC may identify classes of Structures for which required documented independent reviews must be conducted by an appropriately experienced Professional Registrant who has not been previously involved in the Structural Design and is employed by a Firm other than the Firm employing the Professional of Record.
- (5) Documented independent review(s) of Structural Designs must not replace the regular, documented checks required pursuant to section 7.3.4 of the Bylaws.
- (6) If applicable pursuant to subsection (1) and not exempted pursuant to subsection (2), a Professional Registrant must establish, maintain, and follow documented procedures for documented independent review(s) of Structural Designs.
- (7) A Professional Registrant tasked with completing a documented independent review of a Structural Design must



- (a) have appropriate experience in the type and scale of the Structural Design subject to the documented independent review,
- (b) determine the extent of the documented independent review based on the progressive findings of the documented independent review and record the rationale for this determination,
- (c) evaluate any related Documents to determine if they are complete, consistent, and in general compliance with applicable codes, standards, and other requirements,
- (d) communicate any issues found during the independent review(s) to the Professional of Record in an appropriately timely manner,
- (e) complete a documented record of the documented independent review that meets the intent of the documented independent review sign off form issued by EGBC, and
 - (i) provide this documented record to
 - (A) the Professional of Record, and
 - (B) the authority having jurisdiction, if requested, and
 - (ii) retain and preserve this documented record for a period of 10 years in accordance with section 7.3.2(3),
- (f) examine representative samples of the structural assumptions, continuity of gravity and lateral load paths, stability, and detailing, and
- (g) perform numerical calculations on a sample of gravity and lateral force resisting elements necessary to satisfy any concerns of the Professional Registrant tasked with completing the documented independent review, as appropriate.
- (8) While a documented risk assessment and a documented independent review of each instance of repetitive designs of individual structural components is not required,
 - (a) the maintenance of design quality must be confirmed through
 - (i) an initial documented initial risk assessment and documented independent review, and
 - (ii) documented risk assessments and documented independent reviews at intervals,
 - (b) a documented process must be in place that identifies the criteria used to determine what types of designs are considered repetitive and the interval frequency for maintaining the design quality, and



- (c) the documented record produced through
 - (i) the initial documented risk assessment and documented independent review, and
 - (ii) documented risk assessments and documented independent reviews at intervals

must be retained and preserved for a minimum of 10 years after the last use of the repetitive design and made available to any person using the Structural Design, in accordance with section 7.3.2(3).

- (9) If applicable pursuant to subsection (1), and not exempted pursuant to subsection (2), a Registrant Firm must do all of the following:
 - (a) establish and maintain documented policies and procedures for Professional Registrants employed by or under contract with the Registrant Firm to follow in relation to independent review of structural designs and the obligations of Professional Registrants pursuant to this section of the Bylaws, which may include
 - (i) checklists, or
 - (ii) signoff forms;
 - (b) take reasonable steps to ensure that a Professional Registrant conducting a documented independent review pursuant to this section of the Bylaws has sufficient and acceptable knowledge, training, and experience to conduct the documented independent review;
 - (c) ensure that the Professional Registrants employed by or under contract with the Registrant Firm adhere to the documented policies and procedures of the Registrant Firm established pursuant to paragraph (a);
 - (d) take reasonable steps to facilitate the Professional Registrants employed by or under contract with the Registrant Firm in adhering to the obligations of Professional Registrants pursuant to subsections (1) to (8).

7.3.6 Standard for Independent Review(s) of High-Risk Professional Activities or Work

- (1) A professional activity or work that has been identified by a Professional of Record as high-risk through a documented risk_-assessment requires documented independent review(s) before the professional activity or work is submitted to those who will be relying on it.
- (2) Despite subsection (1), EGBC may establish criteria for professional activities or work, or identify specific professional activities or work, that
 - (a) do not require documented independent review(s), or



- (b) require documented independent review(s), even if the professional activities or work are not identified by a Professional of Record as high-risk through a documented risk_-assessment.
- (3) A Professional of Record must
 - (a) complete a documented risk_-assessment prior to the initiation of a professional activity or work to determine the following:
 - (i) whether a professional activity or work is high-risk;
 - (ii) if documented independent review(s) of the professional activity or work is required, the appropriate frequency for the required documented independent review(s);
 - (iii) if documented independent review(s) of the professional activity or work is required, whether the required documented independent review(s) must be conducted by
 - (A) an appropriately qualified and experienced Professional Registrant who has not been previously involved in the professional activity or work and is employed by the same Firm employing the Professional of Record, or
 - (B) an appropriately qualified and experienced Professional Registrant who has not been previously involved in the professional activity or work and is employed by a Firm other than the Firm employing the Professional of Record,
 - (b) record their rationale for the determinations made pursuant to paragraphs (a)(i), and (ii), (iii), and (iv),
 - (c) document actions taken or not taken, along with the rationale for that decision, as a result of the independent review(s), including any actions taken or not taken as a result of information received pursuant to subsection (7)(d),
 - (d) communicate the actions and rationale documented pursuant to paragraph (c) to the Professional Registrant tasked with completing the documented independent review in an appropriately timely manner.
- (4) Despite subsection (3)(c), EGBC may identify specific professional activities or work for which required documented independent reviews must be conducted by an appropriately experienced Professional Registrant who has not been previously involved in the professional activity or work and is employed by a Firm other than the Firm employing the Professional of Record.
- (5) Documented independent review(s) of a professional activity or work must not replace the regular, documented checks required pursuant to section 7.3.4 of the Bylaws.



- (6) If applicable pursuant to subsection (1) and not exempted pursuant to subsection (2), a Professional Registrant must establish, maintain, and follow documented procedures for documented independent review(s) of a professional activity or work.
- (7) A Professional Registrant tasked with completing a documented independent review of a professional activity or work must
 - (a) have appropriate experience in the type and scale of the professional activity or work subject to the documented independent review,
 - (b) determine the extent of the documented independent review based on the progressive findings of the documented independent review and record the rationale for this determination,
 - (c) evaluate any Documents related to the professional activity or work to determine if they are complete, consistent, and in general compliance with applicable codes, standards, and other requirements, and
 - (d) communicate any issues found during the independent review(s) to the Professional of Record in an appropriately timely manner
 - (e) complete a documented record of the documented independent review that meets the intent of the documented independent review sign off form issued by EGBC and
 - (i) provide this documented record to
 - (A) the Professional of Record, and
 - (B) the authority having jurisdiction, if requested, and
 - (ii) retain and preserve this documented record for a period of 10 years, in accordance with section 7.3.2(3).
- (8) While a documented risk assessment and a documented independent review of each instance of repetitive professional activities or work is not required,
 - (a) the maintenance of activity or work quality must be confirmed through
 - (i) an initial documented initial risk assessment and documented independent review, and
 - (ii) documented risk assessments and documented independent reviews at intervals,
 - (b) a documented process must be in place that identifies the criteria used to determine what types of professional activities or work are considered repetitive and the interval frequency for maintaining the activity or work quality, and



- (c) the documented record produced through
 - (i) the initial documented risk assessment and documented independent review, and
 - (ii) documented risk assessments and documented independent reviews at intervals

must be retained and preserved for a minimum of 10 years after the last use of the repetitive professional activity or work and made available to any person undertaking the professional activity or work, in accordance with section 7.3.2(3).

- (9) A Registrant Firm must do all of the following:
 - (a) establish and maintain documented policies and procedures for Professional Registrants employed by or under contract with the Registrant Firm to follow in relation to independent review of high-risk professional activities or work and the obligations of Professional Registrants pursuant to this section of the Bylaws, which may include
 - (i) checklists, or
 - (ii) signoff forms;
 - (b) take reasonable steps to ensure that a Professional Registrant conducting a documented independent review pursuant to this section of the Bylaws has sufficient and acceptable knowledge, training, and experience to conduct the review;
 - (c) ensure that Professional Registrants employed by or under contract with the Registrant Firm adhere to the documented policies and procedures of the Registrant Firm established pursuant to paragraph (a);
 - (d) take reasonable steps to facilitate Professional Registrants employed by or under contract with the Registrant Firm in adhering to the obligations of Professional Registrants pursuant to subsections (1) to (8).

7.3.7 Standard for Issuance of Manual Seal and Authenticating Documents

- (1) EGBC may provide a Professional Registrant In Good Standing with a Manual Seal bearing the following information:
 - (a) the Professional Registrant's first initial(s), middle initial(s), and last name(s);
 - (b) the words "professional engineer", "professional geoscientist", "professional licensee engineering", or "professional licensee geoscience", as applicable.
- (2) EGBC retains ownership of a Manual Seal issued by EGBC.



- (3) A Professional Registrant must establish, maintain, and follow documented procedures related to a Professional Registrant's Manual Seal, a Professional Registrant's Digital Seal, and Authenticating Documents, in accordance with the requirements set out in this section of the Bylaws.
- (4) Only a Professional Registrant may Authenticate a Document.
- (5) A Professional Registrant must Authenticate
 - (a) a Document that
 - (i) the Professional Registrant has prepared in their professional capacity or has been prepared under their Direct Supervision,
 - (ii) contains content related to the Regulated Practice, and
 - (iii) will be relied on by others, or
 - (b) a Document that is otherwise required to be Authenticated by applicable legislation, associated regulations, the Bylaws, or standards approved by the Council.
- (6) Despite subsection (5), a Professional Registrant who is a professional licensee engineering or a professional licensee geoscience must not Authenticate Documents outside the authorized area of practice identified on their licence.
- (7) If a deliverable is provided in a format that cannot be reasonably read by an individual, a Professional Registrant must adhere to an authentication process that has been prescribed by standards or guidelines approved by the Council.
- (8) A Professional Registrant must not charge a fee for only Authenticating a Document.
- (9) With respect to Manually Authenticating, a Professional Registrant must not allow another person to apply any of the following:
 - (a) the Professional Registrant's Manual Seal, or a likeness or digital image of the Professional Registrant's Manual Seal, except under the Professional Registrant's express and written authorization, which authorization must be specific to each application and not an ongoing authorization;
 - (b) the Professional Registrant's handwritten signature, or a likeness of the Professional Registrant's handwritten signature, under any circumstances;
 - (c) the date of Authentication, except under the Professional Registrant's express and written authorization, which authorization must be specific to each application and not an ongoing authorization.



- (10) With respect to Digitally Authenticating, a Professional Registrant must not allow another person to do any of the following:
 - (a) apply the Professional Registrant's Digital Certificate under any circumstances;
 - (b) gain access to the Professional Registrant's Digital Certificate or to any password, PIN, or other factor used to secure access to or control over the Professional Registrant's Digital Certificate, under any circumstances.
- (11) In the event of suspension or cancellation of a Professional Registrant's registration,
 - (a) the Professional Registrant must return their Manual Seal to EGBC upon request,
 - (b) EGBC will disable any Digital Certificate issued to the Professional Registrant for the period of the suspension or cancellation, and
 - (c) the Professional Registrant must not Authenticate any Document for the period of the suspension or cancellation.
- (12) A Registrant must ensure that any Manual Seal and any Digital Certificate issued to them remains secure and under their sole control at all times.
- (13) A Registrant Firm must do all of the following:
 - (a) establish and maintain documented policies and procedures for all individuals employed by or under contract with the Registrant Firm to follow in relation to the use of a Manual Seal, the use of a Digital Seal, the Authentication of Documents, and the obligations of Professional Registrants pursuant to subsections (1) to (12);
 - (b) ensure that all individuals employed by or under contract with the Registrant Firm adhere to the documented policies and procedures of the Registrant Firm established pursuant to paragraph (a);
 - (c) take reasonable steps to facilitate the individual Registrants employed by or under contract with the Registrant Firm in adhering to the obligations of individual Registrants pursuant to subsections (1) to (12).
- (14) If a Professional Registrant employed by or under contract with a Registrant Firm Authenticates a Document on behalf of the Registrant Firm, the Registrant Firm's Permit to Practice Number must be applied visibly to the Document.
- (15) Only the following individuals may apply a Registrant Firm's Permit to Practice Number to a Document:
 - (a) a Responsible Registrant of the Registrant Firm;



- (b) a Professional Registrant employed by or under contract with the Registrant Firm who has been authorized by a Responsible Registrant to apply the Registrant Firm's Permit to Practice Number.
- (16) A Registrant Firm must not allow any person to apply the Registrant Firm's Permit to Practice Number to a Document other than the individuals set out in subsection (15).
- (17) If a Registrant Firm has reasonable and probable grounds to believe that any person has applied the Registrant Firm's Permit to Practice Number to a Document other than the individuals set out in subsection (15), the Registrant Firm must report the person to EGBC and provide EGBC with any information requested by EGBC regarding the circumstances of the application of the Permit to Practice Number.
- (18) In the event that a Registrant Firm's registration and Permit to Practice are cancelled, suspended, or subject to a condition prohibiting the Registrant Firm from engaging in the Regulated Practice,
 - (a) the Registrant Firm must not allow any person to apply the Registrant Firm's Permit to Practice Number to a Document,
 - (b) the Registrant Firm must not allow or cause the Registrant Firm's Permit to Practice Number to appear on any communication, website, document, or in any other manner that could suggest that the Registrant Firm's registration and Permit to Practice Number are not cancelled, suspended, or subject to a condition prohibiting the Registrant Firm from engaging in the Regulated Practice and
 - (c) a Professional Registrant must not
 - (i) apply the Registrant Firm's Permit to Practice Number to a Document, or
 - (ii) authorize another Professional Registrant to apply the Registrant Firm's Permit to Practice Number to a Document.

7.3.8 Standard for Delegation and Direct Supervision

- (1) A Professional Registrant who will Delegate work or decisions related to the Regulated Practice to a Subordinate must establish, maintain, and follow documented procedures for Delegation in accordance with the requirements set out in this section of the Bylaws.
- (2) A Professional Registrant must ensure that work or decisions related to the Regulated Practice that are Delegated to a Subordinate are carried out under the Direct Supervision of the Professional Registrant.
- (3) A professional licensee engineering or professional licensee geoscience may only provide Direct Supervision of work or decisions related to the Regulated Practice that are within the authorized area of practice on their licence.



- (4) If any Professional Registrants employed by or under contract with a Registrant Firm will Delegate work or decisions related to the Regulated Practice to a Subordinate, or if the Registrant Firm employs any individuals who will act as a Subordinate, the Registrant Firm must do all of the following:
 - (a) establish and maintain documented policies and procedures for Professional Registrants and Subordinates employed by or under contract with the Registrant Firm to follow in relation to Delegation, Direct Supervision, and the obligations of Professional Registrants pursuant to subsections (1), (2), and (3);
 - (b) ensure that the Professional Registrants and Subordinates employed by or under contract with the Registrant Firm adhere to the documented policies and procedures of the Registrant Firm established pursuant to paragraph (a);
 - (c) take reasonable steps to facilitate Professional Registrants and Subordinates employed by or under contract with the Registrant Firm in adhering to the obligations of Professional Registrants and Subordinates pursuant to subsections (1), (2), and (3).

7.4 Practice Advice Program

- (1) The Practice Advice Program consists of the following components:
 - (a) Practice Advisors will receive and respond to professional or ethical inquiries of Registrants through email, telephone, or in person, with responses being
 - (i) provided either immediately or after consultation with appropriate parties, and
 - to the best of their knowledge, in compliance with current legislative requirements, regulatory requirements, and standards and guidelines issued by EGBC;
 - (b) documentation dealing with professional or ethical issues must be made available to Registrants on a public website maintained by EGBC, including professional practice guidelines, ethical guidelines, practice advisories, frequently asked questions, or magazine publications, on a basis determined by EGBC;
 - (c) training sessions dealing with professional or ethical issues must be made available to Registrants through webinars or in person workshops, on a basis determined by EGBC.
- (2) The Practice Advice Program excludes the following subjects:
 - (a) legal advice, including legal advice on commercial law, employment law, or criminal law issues;
 - (b) endorsement or checking of activities or work related to the Regulated Practice;



- (c) employment terms or conditions;
- (d) mediation or resolution of disputes between Registrants and others, including clients, owners, and employers.
- (3) Any information exchanged in a professional or ethical inquiry received pursuant to subsection (1)(a) may be retained by EGBC.

7.5 Professional Liability Insurance and Secondary Professional Liability Insurance

- (1) Before entering into an agreement to provide services related to the Regulated Practice to the public, a Professional Registrant or a Registrant Firm must provide written notice to a client regarding whether
 - (a) the Professional Registrant or the Registrant Firm holds professional liability insurance, and
 - (b) if the Professional Registrant or the Registrant Firm does hold professional liability insurance, whether the professional liability insurance is applicable to the services related to the Regulated Practice that are in question.
- (2) The written notice provided by a Professional Registrant or a Registrant Firm pursuant to subsection (1) must include a provision for an acknowledgement of the written notice to be signed by the client.
- (3) There is established a category of professional liability insurance, separate from the professional liability insurance mentioned in subsection (1), referred to as secondary professional liability insurance, that all Registrants, except Registrant Firms, must carry and maintain.
- (4) The Council may
 - (a) establish the terms, conditions, policies and procedures applicable to the secondary professional liability insurance program,
 - (b) require that the secondary professional liability insurance program, subject to the terms and conditions of the policy, provide coverage to Registrants who would otherwise have no professional liability insurance coverage for claims against them, and
 - (c) establish the fees to be paid by Registrants, for the secondary professional liability insurance program.

7.6 Continuing Education Program

7.6.1 Commencement of the Continuing Education Program



(1) The first Reporting Year and Three-Year Rolling Period commence on July 1, 2021.

7.6.2 Trainees and the Continuing Education Program

(1) A Trainee is not required to complete any of the continuing education program requirements set out in this section of the Bylaws.

7.6.3 Mandatory Continuing Education Hours and Activities for Professional Registrants

- (1) In each Three-Year Rolling Period, a Professional Registrant must complete at least 60 Continuing Education Hours.
- (2) In each Reporting Year, a Professional Registrant must complete at least one Continuing Education Hour of Ethical Learning.
- (3) In each Reporting Year, a Professional Registrant must complete at least one Regulatory Learning module referred to in section 7.6.14(1) of the Bylaws.
- (4) The mandatory Continuing Education Hours required pursuant to subsection (1) may include Continuing Education Hours related to Technical Learning or Communications and Leadership Learning.
- (5) In order for the Continuing Education Hours required pursuant to subsection (1) to be considered complete, an individual Registrant must record in EGBC's electronic system the following information about the Continuing Education Activities associated with the Continuing Education Hours:
 - (a) the date(s) of each Continuing Education Activity;
 - (b) the provider or source of each Continuing Education Activity;
 - (c) the number of Continuing Education Hours earned from each Continuing Education Activity; and
 - (d) whether each Continuing Education Activity involved Ethical Learning, Regulatory Learning, Communications and Leadership Learning, or Technical Learning.

7.6.4 Mandatory Continuing Education Plan for Professional Registrants

- (1) In each Reporting Year, a Professional Registrant must complete a continuing education plan which sets out all of the following information:
 - (a) the Professional Registrant's area(s) of practice, including any anticipated changes;



- (b) a declaration that the Registrant has assessed the risks of the Registrant's Regulated Practice to the public and the environment;
- (c) a description as to how the Professional Registrant has assessed the risks identified in subsection (b);
- (d) the Professional Registrant's learning goals and priorities; and
- (e) the Continuing Education Activities that the Professional Registrant plans to undertake in order to advance the learning goals and priorities identified in subsection (d).
- (2) A Professional Registrant must electronically submit the continuing education plan required pursuant to subsection (1) to EGBC by 11:59 PM (Pacific Time) on the last day of each Reporting Year.

7.6.5 Mandatory Continuing Education Hours and Activities for Designated Structural Engineers

(1) In addition to the continuing education program requirements for Professional Registrants set out in section 7.6.3 and 7.6.4 of the Bylaws, a Professional Registrant who is a designated structural engineer must complete 60 Continuing Education Hours of Technical Learning related to their structural engineering area(s) of practice in each Three-Year Rolling Period.

7.6.6 Mandatory Continuing Education Hours and Activities for Non-Practising Registrants and Life Member or Life Limited Licensee Registrants

- (1) In each Three-Year Rolling Period, a non-practising Registrant or a life member or life limited licensee must complete, at a minimum,
 - (a) one Continuing Education Hour of Ethical Learning, and
 - (b) one Regulatory Learning module referred to in section 7.6.14(1) of the Bylaws.

7.6.7 Continuing Education Program Declaration

- (1) All individual Registrants must electronically submit a continuing education program declaration to EGBC by 11:59 PM (Pacific Time) on June 30, the last day of each Reporting Year, which must confirm
 - (a) the number of completed Continuing Education Hours the individual Registrant is reporting for that Reporting Year,
 - (b) that the individual Registrant has recorded the details of the Continuing Education Activities associated with the declared Continuing Education Hours pursuant to section 7.6.3(5) of the Bylaws,



- (c) that the individual Registrant has uploaded a valid and up-to-date CE Plan pursuant to section 7.6.4(2) of the Bylaws, and
- (d) that the information provided by the individual Registrant pursuant to this section is true and correct to the best of the individual Registrant's knowledge.
- (2) All individual Registrants must retain all documentation that supports their continuing education program declaration for a minimum of 5 years after the continuing education program declaration was made.

7.6.8 Exemptions from the Continuing Education Program

- An individual Registrant may be granted an exemption, on an annual basis, from any or all of the continuing education program requirements set out in sections 7.6.3, 7.6.4, 7.6.5, 7.6.6, or 7.6.7 of the Bylaws for a specified Reporting Year by
 - (a) an officer appointed by the Audit and Practice Review Committee, if the individual Registrant was on parental leave, medical leave, or compassionate care leave for at least 6 months during the Reporting Year, or
 - (b) the Audit and Practice Review Committee, if the individual Registrant
 - (i) was on parental leave, medical leave, or compassionate care leave for less than 6 months during the Reporting Year, or
 - (ii) has other extenuating circumstances.
- An application by an individual Registrant to be granted an exemption pursuant to subsection (1) must be submitted in writing to EGBC by 11:59 PM (Pacific Time) on April 30 of the applicable Reporting Year.
- (3) If an exemption granted pursuant to subsection (1) reduces the number of Continuing Education Hours that an individual Registrant is required to complete for a Reporting Year, there must be a corresponding reduction in the number of Continuing Education Hours that the individual Registrant is required to complete for the applicable Three-Year Rolling Period.

7.6.9 Failure to Submit a Continuing Education Program Declaration

- (1) An individual Registrant who fails to submit a continuing education program declaration pursuant to section 7.6.7(1) of the Bylaws by 11:59 PM (Pacific Time) on the last day of the Reporting Year, but has otherwise completed all applicable requirements of the continuing education program, must
 - (a) submit the continuing education program declaration, and
 - (b) send to EGBC the late reporting fee specified in Schedule C of the Bylaws,



by 11:59 PM (Pacific Time) on September 30 in the following Reporting Year.

- (2) If an individual Registrant fails to comply with the requirements set out in subsection (1), the individual Registrant's registration must be suspended until such requirements are complete.
- (3) If an individual Registrant fails to comply with the requirements set out in subsection (1) by 11:59 PM (Pacific Time) on December 31, the individual Registrant's registration must be cancelled.

7.6.10 Late Exemption from Continuing Education Plan, Hours, or Activities

- (1) An individual Registrant who fails to comply with the obligations pursuant to sections 7.6.3, 7.6.4, 7.6.5, or 7.6.6 Bylaws, as applicable, by 11:59 PM (Pacific Time) on the last day of the Reporting Year may be granted a late exemption from any or all of these requirement(s) on an annual basis by the Audit and Practice Review Committee, if the individual Registrant
 - (a) was on parental leave, medical leave, or compassionate care leave during the Reporting Year, or
 - (b) has other extenuating circumstances.
- An application by an individual Registrant to be granted an exemption pursuant to subsection (1) must be submitted in writing to EGBC by 11:59 PM (Pacific Time) on July 31 in the following Reporting Year.
- (3) If a late exemption granted pursuant to subsection (1) reduces the number of Continuing Education Hours that an individual Registrant is required to complete for a Reporting Year, there must be a corresponding reduction in the number of Continuing Education Hours that the individual Registrant is required to complete for the applicable Three-Year Rolling Period.
- (4) An individual Registrant who is granted an exemption pursuant to subsection (1) must send to EGBC the late exemption fee specified in Schedule C of the Bylaws, but is not required to pay to EGBC the late reporting fee specified in Schedule C or the late completion fee specified in Schedule C.
- (5) The Audit and Practice Review Committee may, in its discretion, refund the late exemption fee required pursuant to subsection (4) if an individual Registrant
 - (a) failed to apply for an exemption by the deadline specified in section 7.6.8(2) of the Bylaws due to extenuating circumstances,
 - (b) submitted an application to be granted an exemption in writing to EGBC by 11:59 PM (Pacific Time) on the last day of the Reporting Year, and


(c) was granted an exemption by the Audit and Practice Review Committee pursuant to subsection (1).

7.6.11 Failure to Complete Continuing Education Plan, Hours, or Activities

- (1) An individual Registrant who fails to comply with the obligations pursuant to section 7.6.3, 7.6.4 or 7.6.6, of the Bylaws, as applicable, by 11:59 PM (Pacific Time) on the last day of the Reporting Year and is not granted a late exemption pursuant to section 7.6.10 of the Bylaws must
 - (a) complete and submit a continuing education plan,
 - (b) complete the required Continuing Education Hours, Ethical Learning activities, or Regulatory Learning activities,
 - (c) submit a continuing education program declaration,
 - (d) send to EGBC the late completion fee specified in Schedule C of the Bylaws, and
 - (e) send to EGBC the late reporting fee specified in Schedule C of the Bylaws,

by 11:59 PM (Pacific Time) on September 30 in the following Reporting Year.

- (2) If an individual Registrant fails to comply with the requirements set out in subsection (1), the individual Registrant's registration must be suspended until such requirements are complete and such completion is certified by the Audit and Practice Review Committee.
- (3) If an individual Registrant fails to comply with the requirements set out in subsection (1) by 11:59 PM (Pacific Time) on December 31, the individual Registrant's registration must be cancelled.
- (4) A designated structural engineer who fails to complete required Technical Learning activities pursuant to section 7.6.5(1) of the Bylaws by 11:59 PM (Pacific Time) on the last day of the Reporting Year and is not granted a late exemption pursuant to section 7.6.10(1) of the Bylaws must
 - (a) complete the required Technical Learning activities,
 - (b) submit a continuing education program declaration,
 - (c) send to EGBC the late completion fee specified in Schedule C of the Bylaws, and
 - (d) send to EGBC the late reporting fee specified in Schedule C of the Bylaws,
 - by 11:59 PM (Pacific Time) on September 30 in the following Reporting Year.
- (5) If a designated structural engineer fails to comply with the requirements set out in subsection (4), the designated structural engineer's designation as a designated structural



engineer must be suspended until such requirements are complete and such completion is certified by the Audit and Practice Review Committee.

- (6) If a designated structural engineer fails to comply with the requirements set out in subsection (4) by 11:59 PM (Pacific Time) on December 31, the designated structural engineer's designation as a designated structural engineer is cancelled.
- (7) If an individual Registrant is required to complete a continuing education plan, Continuing Education Hours, Ethical Learning activities, Regulatory Learning activities, or Technical Learning activities to fulfill a requirement for the previous Reporting Year, these cannot be applied to fulfill a requirement for the Reporting Year in which they are completed.

7.6.12 Avoiding or Delaying a Suspension

- If an individual Registrant fails to comply with the requirements in section 7.6.9(1), 7.6.11(1), or 7.6.11(4) of the Bylaws due to extenuating circumstances, including being on parental leave, medical leave, or compassionate care leave, the Audit and Practice Review Committee may order that
 - (a) the individual Registrant's registration not be suspended pursuant to section 7.6.9(2), 7.6.11(2), or 7.6.11(5) of the Bylaws, or
 - (b) the individual Registrant's suspension pursuant to section 7.6.9(2), 7.6.11(2), or 7.6.11(5) of the Bylaws be delayed for a specified period of time.
- (2) At least 60 days before a suspension pursuant to section 7.6.9(2), 7.6.11(2), or 7.6.11(5) of the Bylaws can take effect, the Audit and Practice Review Committee must deliver to the individual Registrant written notice of
 - (a) the date on which the suspension will take effect,
 - (b) the reasons for the suspension, and
 - (c) the deadline by which the individual Registrant may submit a written application to the Audit and Practice Review Committee for an order pursuant to subsection (1).

7.6.13 Newly Registered Individual Registrants

- (1) For an individual Registrant who is first granted registration with EGBC between July 1 and December 31 in a Reporting Year, the first Reporting Year and the first Three-Year Rolling Period are deemed to begin on July 1 of the same Reporting Year in which the individual Registrant is first granted registration with EGBC.
- (2) For an individual Registrant who is first granted registration with EGBC between January 1 and March 31 in a Reporting Year,
 - (a) the first Reporting Year is deemed to begin on July 1 of the same Reporting Year in which the individual Registrant is first granted registration with EGBC, and



- (b) the first Three-Year Rolling Period is deemed to begin on July 1 of the next Reporting Year, but any Continuing Education Hours or Continuing Education Activities completed by the individual Registrant in the same Reporting Year in which the individual Registrant is first granted registration with EGBC may be applied to fulfill the individual Registrant's continuing education requirements for the first Three-Year Rolling Period.
- (3) For an individual Registrant who is first granted registration with EGBC between April 1 and June 30 in a Reporting Year,
 - (a) the first Reporting Year is deemed to begin on July 1 of the next Reporting Year, and
 - (b) the first Three-Year Rolling Period is deemed to begin on July 1 of the next Reporting Year, but any Continuing Education Hours or Continuing Education Activities completed by the individual Registrant in the same Reporting Year in which the individual Registrant is first granted registration with EGBC may be applied to fulfill the individual Registrant's continuing education requirements for the first Three-Year Rolling Period.
- (4) Despite subsection (3)(a), a Professional Registrant who is first granted registration with EGBC between April 1 and June 30 in a Reporting Year must complete and submit a continuing education plan pursuant to section 7.6.4 of the Bylaws for the same Reporting Year in which the Professional Registrant is first granted registration with EGBC.

7.6.14 Mandatory Regulatory Learning Modules

- (1) EGBC will facilitate the development, maintenance, and updating of a series of mandatory Regulatory Learning modules to enable
 - (a) a Professional Registrant to meet the requirement set out in section 7.6.3(3) of the Bylaws, and
 - (b) a non-practising Registrant or a life member or life limited licensee to meet the requirement set out in section 7.6.6(1)(b) of the Bylaws.
- (2) The series of mandatory Regulatory Learning modules referred to in subsection (1) must be designed to ensure that there is at least one Regulatory Learning module in each Three-Year Rolling Period that focuses on Indigenous history, Indigenous engagement, and reconciliation as it relates to the Regulated Practice in British Columbia.

7.6.15 Optional Continuing Education Opportunities

(1) EGBC will facilitate the offering of other continuing education opportunities related to Ethical Learning, Regulatory Learning, Communications and Leadership Learning, and Technical Learning.



(2) The continuing education opportunities offered pursuant to subsection (1) will include education opportunities related to knowledge and guidance on Indigenous history, Indigenous engagement, and reconciliation as it relates to the Regulated Practice in British Columbia.

7.6.16 Continuing Education Program by Registrant Firms

- (1) A Registrant Firm must develop, maintain, and follow documented procedures to support individual Registrants employed by or under contract with the Registrant Firm in
 - (a) meeting the individual Registrants' continuing education program requirements pursuant to sections 7.6.3, 7.6.4, 7.6.5, 7.6.6, and 7.6.7, as applicable, and
 - (b) maintaining the individual Registrants' competency with respect to the role(s) of the individual Registrants and the activities or work engaged in by the individual Registrants on behalf of the Registrant Firm.
- (2) Each year, a Registrant Firm that has more than one Professional Registrant employed or under contract with the Registrant Firm must conduct a documented review with each Professional Registrant employed by or under contract with the Registrant Firm, in order to confirm that the Professional Registrant is maintaining the Professional Registrant's competency with respect to the Regulated Practice.
- (3) A Registrant Firm must retain all documentation that supports a documented review of a Professional Registrant conducted pursuant to subsection (2) for a minimum of 5 years after the documented review was completed.
- (4) A non-practising Registrant Firm is exempt from the requirements in this section of the Bylaws while maintaining its non-practising status.

7.7 Permit to Practice Requirements

7.7.1 Regulation of Firms Training Program

- (1) Each Responsible Registrant designated by a Registrant Firm upon the initial registration of the Registrant Firm who has not completed the Regulation of Firms Training Program within the last 5 years must complete the Regulation of Firms Training Program within
 - (a) 12 months of the date that the Permit to Practice is issued to the Registrant Firm, and
 - (b) every 5 years thereafter.



- (2) Each Responsible Registrant designated by a Registrant Firm after the initial registration of the Registrant Firm who has not completed the Regulation of Firms Training Program within the last 5 years must complete the Regulation of Firms Training Program within
 - (a) 3 months of the date that the written notice of the Responsible Registrant's designation is submitted to EGBC, and
 - (b) every 5 years thereafter.
- (3) An individual who is a Responsible Registrant for more than one Registrant Firm may complete the Regulation of Firms Training Program for more than one Registrant Firm at the same time.
- (4) A non-practising Registrant Firm and any individuals designated as a Responsible Registrant of the non-practising Registrant Firm are exempt from the requirements set out in this section of the Bylaws while the non-practising Registrant Firm maintains its nonpractising status.

7.7.2 Failure to Complete Regulation of Firms Training Program

- (1) If any Responsible Registrant of a Registrant Firm fails to complete the Regulation of Firms Training Program pursuant to sections 7.7.1(1) or 7.7.1(2) of the Bylaws,
 - (a) the Responsible Registrant identified in subsection (1) must complete the Regulation of Firms Training Program, and
 - (b) the Registrant Firm must send to EGBC the late completion fee specified in Schedule C of the Bylaws

by 11:59 PM (Pacific Time) on the date that is 2 months after the deadline specified in section 7.7.1(1) or 7.7.1(2) of the Bylaws, as applicable.

- (2) If a Registrant Firm fails to comply with the requirements set out in subsection (1), a condition must be placed on the Registrant Firm's registration and Permit to Practice prohibiting it from engaging in the Regulated Practice until such requirements are complete.
- (3) If a Registrant Firm fails to comply with the requirements set out in subsection (1) within 2 months of having the condition placed on the Registrant Firm's registration and Permit to Practice pursuant to subsection (2), the Registrant Firm's registration and Permit to Practice must be cancelled.

7.7.3 Professional Practice Management Plan

(1) A Registrant Firm must develop and maintain a Professional Practice Management Plan that contains, at a minimum, the following elements:



- (a) a Code of Conduct that explains how the Registrant Firm will ensure compliance with ethical standards by the Registrant Firm and by all individuals employed by or under contract with the Registrant Firm, including compliance with
 - (i) the Code of Ethics of EGBC set out in Schedule A of the Bylaws,
 - (ii) any guidelines on human rights, equity, diversity, or inclusion that have been approved by the Council, and
 - (iii) ethical business practices addressing corruption, conflict of interest, and contractual matters;
- (b) a plan for how the Registrant Firm will ensure compliance with the standards of competence and quality management requirements pursuant to section 7.3 of the Bylaws;
- (c) a plan for how the Registrant Firm will ensure compliance with the continuing education requirements pursuant to section 7.6 of the Bylaws; and
- (d) a section setting out
 - (i) the organizational structure of the Registrant Firm,
 - (ii) the names of the Registrant Firm's Responsible Officer and Responsible Registrant(s),
 - (iii) the Registrant Firm's area(s) of practice, and
 - (iv) the Responsible Registrant(s) designated to each area of practice at the Registrant Firm.
- (2) A Registrant Firm's Professional Practice Management Plan must have documented approval by the Responsible Officer and each Responsible Registrant of the Registrant Firm.
- (3) A Registrant Firm's Professional Practice Management Plan must be in place no later than 12 months after the date that a Permit to Practice is issued to the Registrant Firm.
- (4) A Registrant Firm must adhere to the Registrant Firm's Professional Practice Management Plan.
- (5) A Registrant Firm must ensure that individuals employed by or under contract with the Registrant Firm are provided access to, understand the content of, and adhere to the Registrant Firm's Professional Practice Management Plan.
- (6) Despite subsections (4) and (5), a Registrant Firm or an individual Registrant may depart from the quality management requirements included in the Registrant Firm's Professional



Practice Management Plan pursuant to subsection (1)(b) if it is appropriate to do so for an identified reason, which must be

- (a) documented by the Registrant Firm or the individual Registrant, and
- (b) supported by a written rationale that is consistent with the Registrant Firm's or the individual Registrant's obligations pursuant to the PGA, applicable regulations, and the Bylaws.
- (7) A Registrant Firm must
 - (a) annually review and, if necessary, revise the Registrant Firm's Professional Practice Management Plan to ensure its suitability and effectiveness,
 - (b) document the annual review conducted pursuant to paragraph (a), and the approval of the review by the Responsible Officer and each Responsible Registrant at the Registrant Firm, and
 - (c) when requested by EGBC, submit the Registrant Firm's Professional Practice Management Plan to EGBC within 5 business days.
- (8) A Registrant Firm must retain all approved versions of the Registrant Firm's Professional Practice Management Plan for a minimum of 10 years after the Professional Practice Management Plan is no longer in use by the Registrant Firm.
- (9) A non-practising Registrant Firm is exempt from the requirements set out in subsections 7(a) and (b) of the Bylaws while maintaining its non-practising status.

7.7.4 Suspension or Cancellation of a Registrant Firm's Registration and Permit to Practice

- (1) If a Registrant Firm's registration is suspended or under any limitation, condition, or restriction for any period pursuant to the PGA or the Bylaws, the Registrant Firm's Permit to Practice is also suspended or under the same limitation, condition, or restriction for that same period.
- (2) If a Registrant Firm's registration is cancelled pursuant to the PGA or the Bylaws, the Registrant Firm's Permit to Practice is also cancelled.

7.8 Prohibited Contracts

(1) A Registrant must not enter into or agree to enter into any contract that would result in or require the breach of any duty under the PGA, associated regulations, or the Bylaws, including any of the duties pursuant to this Part, except as required or authorized by law.



8 Audit and Practice Review

8.1 Definitions

(1) For the purpose of this Part, "Registrant" includes a former Registrant where applicable pursuant to section 56(1) of the PGA [*Definition and application*].

8.2 Powers of the Audit and Practice Review Committee

- (1) In addition to functions and powers assigned to it under the PGA and set out elsewhere in the Bylaws, the Audit and Practice Review Committee has the functions and duties delegated to it by the Council in subsections (2) and (3).
- (2) The Council authorizes the Audit and Practice Review Committee to exercise the Council's powers pursuant to the following sections of the PGA:
 - (a) section 32(1) of the PGA [*Officers and committees*], in order to appoint officers for the purpose of
 - (i) carrying out the powers delegated in subsection (3)(a)(ii), and
 - (ii) granting exemptions and deferrals pursuant to sections 7.6.8(1)(a), 8.6(5)(a), and 8.7(6) of the Bylaws;
 - (b) section 63(3) of the PGA [*Audits and practice reviews*] to authorize compliance audits as set out in sections 8.6 and 8.7 of the Bylaws;
 - (c) sections 63(4) and (5) of the PGA [Audits and practice reviews].
- (3) The Council authorizes the Audit and Practice Review Committee to act pursuant to the following sections of the PGA:
 - (a) section 32(5)(b) of the PGA [Officers and committees], to delegate the powers granted by the Council to the Audit and Practice Review Committee pursuant to section 63(2)(b) of the PGA [Audits and practice reviews] to
 - (i) the Registrar, so that the Registrar may appoint assessors for the purpose of conducting an area of practice audit, and
 - (ii) one or more other officers, so that the officer(s) may appoint assessors for the purposes of conducting a compliance audit or a practice review;
 - (b) section 63(2) of the PGA [Audits and practice reviews].
- (4) The Audit and Practice Review Committee, an assessor appointed by the Audit and Practice Review Committee, or a person acting on behalf of the Audit and Practice Review Committee may only disclose or provide the following to any other person, including



another Committee of EGBC, if the conditions set out in section 110(3)(a) or (b) of the PGA [*Confidentiality – committee matters*] are satisfied:

- (a) records or information provided to the Audit and Practice Review Committee, an assessor appointed by the Audit and Practice Review Committee, or a person acting on behalf of the Audit and Practice Review Committee;
- (b) a self assessment prepared by a Registrant for a practice review.
- (5) The Audit and Practice Review Committee, an assessor appointed by the Audit and Practice Review Committee, or a person acting on behalf of the Audit and Practice Review Committee must notify the Investigation Committee if the conditions set out in section 110(4) of the PGA [Confidentiality – committee matters] are satisfied.

8.3 Powers of the Registrar

(1) The Council authorizes the Registrar to exercise the Council's powers pursuant to section 63(3) of the PGA [*Audits and practice reviews*], to authorize an area of practice audit as set out in section 8.8 of the Bylaws.

8.4 Appointment of Assessors

- (1) An officer may appoint one or more employees of EGBC, contractors retained by EGBC, or subject matter experts as assessors to conduct a compliance audit or a practice review.
- (2) A subject matter expert cannot be appointed as an assessor to conduct a compliance audit or a practice review pursuant to subsection (1) if the subject matter expert has or had a relationship with a Registrant subject to a compliance audit or a Registrant subject to practice review that would reasonably compromise that subject matter expert's objectivity as an assessor.
- (3) The Registrar may appoint one or more employees of EGBC, contractors retained by EGBC, or subject matter experts as assessors to conduct an area of practice audit.

8.5 Commencement of Audit and Practice Review Programs

- (1) The compliance audit program for individual Registrants, as set out in section 8.6 of the Bylaws, commences on July 1, 2022.
- (2) The compliance audit program for Registrant Firms, as set out in section 8.7 of the Bylaws, commences on October 1, 2022.
- (3) The area of practice audit program, as set out in section 8.8 of the Bylaws, commences on July 1, 2021.
- (4) The practice review program for individual Registrants, as set out in section 8.9 of the Bylaws, commences on January 1, 2021.



(5) The practice review program for Registrant Firms, as set out in section 8.10 of the Bylaws, commences on October 1, 2021.

8.6 Compliance Audit Program for Individual Registrants

- (1) The Council must annually determine the percentage of individual Registrants who will be selected for a compliance audit through a random selection process.
- (2) The Audit and Practice Review Committee must annually determine risk-based criteria to inform the random selection of individual Registrants for a compliance audit.
- (3) The following individual Registrants are exempt from a compliance audit:
 - (a) Trainees;
 - (b) individual Registrants who are Sole Practitioners;
 - (c) individual Registrants who have undergone a compliance audit in the previous 5 years;
 - (d) individual Registrants who are employed by a Registrant Firm that has undergone an audit in the previous 12 months and the Registrant Firm has been found to be in compliance.
- (4) An individual Registrant selected for a compliance audit must be provided with written notice of the compliance audit.
- (5) An individual Registrant selected for a compliance audit may be granted an exemption from a compliance audit by
 - (a) an officer appointed by the Audit and Practice Review Committee, if the individual Registrant is unemployed, on parental leave, medical leave, or compassionate care leave, or
 - (b) the Audit and Practice Review Committee, if the individual Registrant has other extenuating circumstances.
- (6) An individual Registrant subject to a compliance audit must co-operate with the compliance audit process, including
 - (a) answering questions posed to the individual Registrant,
 - (b) providing all requested information, files, or records in the individual Registrant's possession or control, including information, files, or records related to the individual Registrant's continuing education, and
 - (c) undergoing an interview with an assessor, either in person or by Electronic Means, if the assessor determines that such an interview is desirable or necessary.



- (7) Through a review of the evidence provided by the individual Registrant subject to a compliance audit in subsection (6), including answers, information, files, or records, the assessor must assess whether the individual Registrant is in compliance with all applicable regulatory requirements, which may include
 - (a) applicable requirements of the continuing education program,
 - (b) applicable quality management standards and professional practice guidelines, and
 - (c) appropriately declaring the individual Registrant's industry of practice and area(s) of practice, if applicable.
- (8) Based on the assessor's assessment pursuant to subsection (7), the assessor must do one of the following:
 - (a) in the case of full compliance, close the compliance audit file, in which case the Audit and Practice Review Committee and the individual Registrant must be provided the assessor's report of the compliance audit;
 - (b) in the case of a Minor Non-Conformance, prescribe corrective action that the individual Registrant must satisfactorily complete within a specified time period;
 - (c) in the case of a Major Non-Conformance, refer the compliance audit file to the Audit and Practice Review Committee, in which case the Audit and Practice Review Committee and the individual Registrant must be provided the assessor's report of the compliance audit.
- (9) If the individual Registrant subject to a compliance audit satisfactorily completes the corrective action prescribed pursuant to subsection (8)(b) within the specified time period,
 - (a) the assessor must close the compliance audit file, and
 - (b) the Audit and Practice Review Committee and the individual Registrant must be provided the assessor's report of the compliance audit.
- (10) If the individual Registrant subject to a compliance audit fails to satisfactorily complete the corrective action prescribed pursuant to subsection (8)(b) within the specified time period, the assessor must do one of the following:
 - (a) extend the time period in which the individual Registrant must satisfactorily complete the corrective action prescribed pursuant to subsection (8)(b);
 - (b) refer the compliance audit file to the Audit and Practice Review Committee, in which case the Audit and Practice Review Committee and the individual Registrant must be provided the assessor's report of the compliance audit, including particulars of the failure to satisfactorily complete the corrective action within the specified time period.



- (11) Before an assessor refers a compliance audit file to the Audit and Practice Review Committee pursuant to subsection (8)(c) or (10)(b), the individual Registrant subject to a compliance audit must be provided with
 - (a) the assessor's report of the compliance audit, and
 - (b) an opportunity to provide a written response to the assessor with respect to the issues considered in the assessor's report of the compliance audit within a specified time period.
- (12) After reviewing the assessor's report of the compliance audit, any written response from the individual Registrant subject to a compliance audit, and any subsequent recommendations from the assessor, the Audit and Practice Review Committee must
 - (a) prescribe corrective action that the individual Registrant must satisfactorily complete within a specified time period, which is not limited to the corrective action originally prescribed by the assessor and which may be followed by a subsequent compliance audit or compliance audits of the individual Registrant,
 - (b) authorize a practice review of the individual Registrant pursuant to section 63(4) of the PGA [*Audits and practice reviews*],
 - (c) disclose or provide records or information from the compliance audit to the Investigation Committee pursuant to section 110(3) of the PGA [*Confidentiality – committee matters*] or notify the Investigation Committee pursuant to section 110(4) of the PGA [*Confidentiality – committee matters*], as applicable, or
 - (d) close the compliance audit file,

and provide written notice to the individual Registrant.

- (13) If the individual Registrant subject to a compliance audit satisfactorily completes the corrective action prescribed pursuant to subsection (12)(a) within the specified time period, the Audit and Practice Review Committee must close the compliance audit file and provide written notice to the individual Registrant.
- (14) If the individual Registrant subject to a compliance audit fails to satisfactorily complete the corrective action prescribed pursuant to subsection (12)(a) within the specified time period, the Audit and Practice Review Committee must
 - (a) extend the time period in which the individual Registrant must satisfactorily complete the corrective action prescribed pursuant to subsection (12)(a),
 - (b) authorize a practice review pursuant to section 63(4) of the PGA [Audits and practice reviews], or



 (c) disclose or provide records or information from the compliance audit to the Investigation Committee pursuant to section 110(3) of the PGA [*Confidentiality – committee matters*] or notify the Investigation Committee pursuant to section 110(4) of the PGA [*Confidentiality – committee matters*], as applicable,

and provide written notice to the individual Registrant.

(15) In addition to any action taken by the assessor under this section of the Bylaws, the assessor may make a recommendation to the Audit and Practice Review Committee that a practice review of a Registrant be commenced on the basis of any information obtained or any assessments made in the course of the compliance audit.

8.7 Compliance Audit Program for Registrant Firms

- (1) All Registrant Firms will become eligible for an initial mandatory compliance audit to commence on or after October 1, 2022.
- (2) Following the completion of the initial mandatory compliance audit pursuant to subsection (1), a Registrant Firm will become eligible for routine compliance audits.
- (3) The Audit and Practice Review Committee must set criteria to inform the selection of routine compliance audits for Registrant Firms and may take risk-based criteria into account in this determination.
- (4) A non-practising Registrant Firm is exempt from undergoing a compliance audit pursuant to this section of the Bylaws while maintaining its non-practising status.
- (5) A Registrant Firm selected for a compliance audit must be provided with written notice of the compliance audit.
- (6) A Registrant Firm selected for a compliance audit may be granted deferral of the compliance audit by the Audit and Practice Review Committee, upon submission of
 - (a) a written request for the deferral setting out the reasons for which the deferral is being requested and the anticipated length of the deferral, and
 - (b) any documents, information, records, declarations, or other information that supports the Registrant Firm's request or that may be requested by the Audit and Practice Review Committee in assessing the Registrant Firm's request for a deferral.
- (7) A deferral of a compliance audit granted to a Registrant Firm pursuant to subsection (6) has a maximum duration of one year from the date that the deferral is granted, upon which the deferral will expire and the compliance audit may proceed, unless a further deferral is granted pursuant to subsection (6).
- (8) A Registrant Firm that has been granted a deferral of a compliance audit pursuant to subsection (6) may apply for a further deferral by the Audit and Practice Review



Committee, upon submission of a further request for a deferral in accordance with the requirements set out in subsection (6).

- (9) A Registrant Firm, the Responsible Officer, and the Responsible Registrant(s) of the Registrant Firm must co-operate with the compliance audit process, including
 - (a) if the Registrant Firm has more than one Responsible Registrant, designating one Responsible Registrant to co-ordinate
 - (i) the Registrant Firm's co-operation with the compliance audit and
 - (ii) communications on behalf of the Registrant Firm,
 - (b) answering all questions posed to the Registrant Firm,
 - (c) providing all requested information, files, or records in the Registrant Firm's possession or control, including information, files, or records related to the Registrant Firm's quality management program, continuing education program, Professional Practice Management Plan, and Code of Conduct,
 - (d) facilitating site visits by the assessor, or any person designated by the assessor, to any requested work locations, including taking reasonable steps to arrange for and provide site access, any necessary personnel, and any information required to comply with applicable health and safety legislation during the site visit, and
 - (e) ensuring compliance with any requests by an assessor to conduct interviews of individuals employed by or under contract with the Registrant Firm, including.
- (10) A Responsible Registrant designated pursuant to subsection (9)(a) must have sufficient knowledge of the subject matter of the audit, the ability and sufficient authority to facilitate the audit as required, and the authority to make binding decisions on behalf of the Registrant Firm.
- (11) If an assessor determines that the Responsible Registrant designated by a Registrant Firm pursuant to subsection (9)(a) does not meet the requirements set out in subsection (10), then the assessor may direct the Responsible Officer, an Individual With Authority, or any other individual employed by or under contract with the Registrant Firm to be designated for the purpose of coordinating the audit pursuant to subsection (9).
- (12) Through a review of the evidence provided by the Registrant Firm pursuant to subsection (9), including answers, information, files, or records, the assessor must assess whether the Registrant Firm is in compliance with all applicable regulatory requirements, including the Bylaws, guidelines, practice advisories, and policies of EGBC, as well as the quality management, continuing education, and ethics standards.
- (13) Based on the assessor's assessment pursuant to subsection (12), the assessor must do one of the following:



- (a) in the case of full compliance, close the compliance audit file, in which case the Audit and Practice Review Committee and the Registrant Firm must be provided the assessor's report of the compliance audit;
- (b) in the case of a Minor Non-Conformance, prescribe corrective action that the Registrant Firm must satisfactorily complete within a specified time period; or,
- (c) in the case of a Major Non-Conformance, refer the compliance audit file to the Audit and Practice Review Committee, in which case the Audit and Practice Review Committee and the Registrant Firm must be provided the assessor's report of the compliance audit.
- (14) If the Registrant Firm subject to a compliance audit satisfactorily completes the corrective action prescribed pursuant to subsection (13)(b) within the specified time period,
 - (a) the assessor must close the compliance audit file, and
 - (b) the Audit and Practice Review Committee and the Registrant Firm must be provided the assessor's report of the compliance audit.
- (15) If the Registrant Firm subject to a compliance audit fails to satisfactorily complete the corrective action prescribed pursuant to subsection (13)(b) within the specified time period, the assessor must do one of the following:
 - (a) extend the time period in which the Registrant Firm must satisfactorily complete the corrective action prescribed pursuant to subsection (13)(b); or,
 - (b) refer the compliance audit file to the Audit and Practice Review Committee, in which case the Audit and Practice Review Committee and the Registrant Firm must be provided the assessor's report of the compliance audit, including particulars of the failure to satisfactorily complete the corrective action within the specified time period.
- (16) Before an assessor refers a compliance audit file to the Audit and Practice Review Committee pursuant to subsections (13)(c) or (15)(b), the Registrant Firm subject to a compliance audit must be provided with
 - (a) the assessor's report of the compliance audit, and
 - (b) an opportunity to provide a written response to the assessor with respect to the issues considered in the assessor's report of the compliance audit within a specified time period.
- (17) After reviewing the assessor's report of the compliance audit, any written response from the Registrant Firm subject to a compliance audit, and any subsequent recommendations from the assessor, the Audit and Practice Review Committee must do one of the following:
 - (a) prescribe corrective action that the Registrant Firm must satisfactorily complete



within a specified time period, which is not limited to the corrective action originally prescribed by the assessor and which may be followed by a subsequent compliance audit or audits of the Registrant Firm,

- (b) authorize a practice review of the Registrant Firm pursuant to section 63(4) of the PGA [*Audits and practice reviews*],
- (c) disclose or provide records or information from the compliance audit to the Investigation Committee pursuant to section 110(3) of the PGA [*Confidentiality – committee matters*] or notify the Investigation Committee pursuant to section 110(4) of the PGA [*Confidentiality – committee matters*], as applicable, or
- (d) close the compliance audit file,

and provide written notice to the Registrant Firm.

- (18) If the Registrant Firm subject to a compliance audit satisfactorily completes the corrective action prescribed pursuant to subsection (17)(a) within the specified time period, the Audit and Practice Review Committee must close the compliance audit file and provide written notice to the Registrant Firm.
- (19) If the Registrant Firm subject to a compliance audit fails to satisfactorily complete the corrective action prescribed pursuant to subsection (17)(a) within the specified time period, the Audit and Practice Review Committee must do one of the following:
 - (a) extend the time period in which the Registrant Firm must satisfactorily complete the corrective action prescribed pursuant to subsection (17)(a);
 - (b) authorize a practice review pursuant to section 63(4) of the PGA [Audits and practice reviews]; or
 - (c) disclose or provide records or information from the compliance audit to the Investigation Committee pursuant to section 110(3) of the PGA [*Confidentiality – committee matters*] or notify the Investigation Committee pursuant to section 110(4) of the PGA [*Confidentiality – committee matters*], as applicable;

and provide written notice to the Registrant Firm.

(20) In addition to any action taken by the assessor pursuant to this section of the Bylaws, the assessor may make a recommendation to the Audit and Practice Review Committee that a practice review of a Registrant be commenced on the basis of any information obtained or any assessments made in the course of the compliance audit.

8.8 Audit Program for an Area of Practice

(1) The Registrar may authorize an area of practice audit of an identified area of practice to be completed by an assessor appointed by the Registrar for that purpose pursuant to section 8.4(3) of the Bylaws.



- (2) If the Registrar authorizes an area of practice audit pursuant to subsection (1), the Registrar must
 - (a) set out the purpose of the area of practice audit, and
 - (b) determine the percentage of Registrants practising in that area of practice who will be selected for the area of practice audit through a random selection process.
- (3) A Registrant selected for an area of practice audit must be provided with written notice of the area of practice audit.
- (4) A Registrant selected for an area of practice audit may be granted an exemption from the area of practice audit by the Registrar.
- (5) A non-practising Registrant Firm is exempt from undergoing an area of practice audit pursuant to this section of the Bylaws while maintaining its non-practising status.
- (6) A Registrant subject to an area of practice audit must co-operate with the area of practice audit process, including
 - (a) if the Registrant is a Registrant Firm with more than one Responsible Registrant, designating one Responsible Registrant to co-ordinate
 - (i) the Registrant Firm's co-operation with the area of practice audit, and
 - (ii) communications on behalf of the Registrant Firm,
 - (b) answering questions posed to the Registrant,
 - (c) providing all requested information, files, or records in the Registrant's possession or control, and
 - (d) undergoing an interview with the assessor, either in person or by Electronic Means, if the assessor determines that such an interview is desirable or necessary.
- (7) The evidence provided by all Registrants subject to an area of practice audit pursuant to subsection (6), including answers, information, files, or records, must be compiled to produce a report on the findings of the area of practice audit and subsequent recommendations.
- (8) The report on the findings of the area of practice audit and subsequent recommendations produced pursuant to subsection (7) must be provided to the Registrar, and the Registrar may determine what action to take based on the findings of the area of practice audit and subsequent recommendations.



8.9 **Practice Review of Individual Registrants**

- (1) A Trainee will not be subject to practice review.
- (2) A practice review of an individual Registrant, other than a Trainee, may be authorized by the Audit and Practice Review Committee pursuant to section 63(4) of the PGA [*Audits and practice reviews*], or by the Registrar or the Investigation Committee pursuant to section 65(4) of the PGA [*Complaints*], if
 - (a) the individual Registrant consents, or
 - (b) information obtained through an audit, a complaint, a practice review, or an investigation indicates that the individual Registrant might have
 - (i) contravened the PGA, the regulations or the Bylaws,
 - (ii) failed to comply with a standard, limit or condition imposed under the PGA,
 - (iii) acted in a manner that constitutes Professional Misconduct or Conduct Unbecoming a Registrant, or
 - (iv) acted in a manner that constitutes Incompetent performance of duties undertaken while engaged in the Regulated Practice.
- (3) An individual Registrant subject to practice review must be provided with written notice of the practice review.
- (4) Pursuant to section 63(5)(a) of the PGA [*Audits and practice reviews*], an individual Registrant subject to practice review must co-operate with the practice review process, including
 - (a) answering questions posed to the individual Registrant,
 - (b) providing access to all requested information, files, or records in the individual Registrant's possession or control, and
 - (c) undergoing an interview with an assessor, either in person or by Electronic Means.
- (5) Before an assessor provides the assessor's report of the practice review to the Audit and Practice Review Committee, the individual Registrant subject to practice review must be provided with
 - (a) the assessor's report of the practice review, and
 - (b) an opportunity to provide a written response to the assessor with respect to the issues considered in the assessor's report of the practice review within a specified time period.



- (6) After reviewing the assessor's report of the practice review, any written response from the individual Registrant subject to practice review, and any subsequent recommendations from the assessor, the Audit and Practice Review Committee must
 - (a) close the practice review file,
 - (b) pursuant to section 63(5)(c) of the PGA [Audits and practice reviews], impose limits or conditions on the practice of the Regulated Practice by the individual Registrant, including
 - (i) restricting the practice that may be engaged in by the individual Registrant,
 - (ii) requiring that the individual Registrant be overseen by another Registrant when engaged in the Regulated Practice, and
 - (iii) requiring that the individual Registrant undertake additional training, or
 - (c) disclose or provide records or information from the practice review to the Investigation Committee pursuant to section 110(3) of the PGA [*Confidentiality – committee matters*] or notify the Investigation Committee pursuant to section 110(4) of the PGA [*Confidentiality – committee matters*], as applicable,

and provide written notice to the individual Registrant.

- (7) The Audit and Practice Review Committee may remove any limits or conditions imposed on an individual Registrant subject to practice review pursuant to subsection (6)(b) if the individual Registrant
 - (a) applies in writing to the Audit and Practice Review Committee to have the limits or conditions removed, and
 - (b) provides evidence acceptable to the Audit and Practice Review Committee that the limits or conditions are no longer necessary or have been fulfilled, as applicable.
- (8) After the removal of any limits or conditions imposed on an individual Registrant subject to practice review pursuant to subsection (6)(b), the Audit and Practice Review Committee must close the practice review file and provide written notice to the individual Registrant.
- (9) If the individual Registrant subject to practice review fails to abide by any limits or conditions imposed on the individual Registrant pursuant to subsection (6)(b), the Audit and Practice Review Committee must disclose or provide records or information from the practice review to the Investigation Committee pursuant to section 110(3) of the PGA [Confidentiality committee matters] or notify the Investigation Committee pursuant to section 110(4) of the PGA [Confidentiality committee matters], as applicable.



8.10 Practice Review of Registrant Firms

- (1) A practice review of a Registrant Firm may be authorized by the Audit and Practice Review Committee pursuant to section 63(4) of the PGA [Audits and practice reviews], or by the Registrar or the Investigation Committee pursuant to section 65(4) of the PGA [Complaints], if
 - (a) the Registrant Firm consents, or
 - (b) information obtained through an audit, a complaint, a practice review, or an investigation indicates that the Registrant Firm might have
 - (i) contravened the PGA, the regulations or the Bylaws,
 - (ii) failed to comply with a standard, limit, or condition imposed under the PGA,
 - (iii) acted in a manner that constitutes Professional Misconduct or Conduct Unbecoming a Registrant, or
 - (iv) acted in a manner that constitutes Incompetent performance of duties undertaken while engaged in the Regulated Practice.
- (2) A Registrant Firm subject to practice review must be provided with written notice of the practice review.
- (3) Pursuant to section 63(5)(a) of the PGA [Audits and practice reviews], a Registrant Firm, the Responsible Officer, and the Responsible Registrant(s) of the Registrant Firm must co-operate with the practice review process, including
 - (a) if the Registrant Firm has more than one Responsible Registrant, designating one Responsible Registrant to co-ordinate
 - (i) the Registrant Firm's co-operation with the <u>compliance auditpractice review</u>, and
 - (ii) communications on behalf of the Registrant Firm,
 - (b) answering questions posed to the Registrant Firm,
 - (c) providing all requested information, files, or records in the Registrant Firm's possession or control, including information, files, or records related to the Registrant Firm's quality management program, continuing education program, Professional Practice Management Plan, and Code of Conduct,
 - (d) facilitating site visits by the assessor, or anyone designated by the assessor, to any requested work locations, including arranging for and providing site access, all necessary personnel, and any information required to comply with applicable health and safety legislation during the site visit, and



- (e) ensuring compliance with any requests by an assessor to conduct interviews of individuals employed by or under contract with the Registrant Firm, including facilitating interviews with both Registrants and non-Registrants, either in person or by Electronic Means, if the assessor determines that such interviews are desirable or necessary.
- (4) A Responsible Registrant designated pursuant to subsection (3)(a) must have sufficient knowledge of the subject matter of the practice review, the ability and sufficient authority to facilitate the practice review as required, and the authority to make binding decisions on behalf of the Registrant Firm.
- (5) If an assessor determines that the Responsible Registrant designated by a Registrant Firm pursuant to subsection (3)(a) does not meet the requirements set out in subsection (4), then the assessor may direct the Responsible Officer, an Individual With Authority, or any other individual employed by or under contract with the Registrant Firm, to be designated for the purpose of coordinating the practice review pursuant to subsection (3).
- (6) Before an assessor provides the assessor's report of the practice review to the Audit and Practice Review Committee, the Registrant Firm subject to practice review must be provided with:
 - (a) the assessor's report of the practice review, and
 - (b) an opportunity to provide a written response to the assessor with respect to the issues considered in the assessor's report of the practice review within a specified time period.
- (7) After reviewing the assessor's report of the practice review, any written response from the Registrant Firm subject to practice review, and any subsequent recommendations from the assessor, the Audit and Practice Review Committee must do one of the following:
 - (a) close the practice review file,
 - (b) pursuant to section 63(5)(c) of the PGA [Audits and practice reviews], impose limits or conditions on the practice of the Regulated Practice by the Registrant Firm, including:
 - restricting the practice that may be engaged in by the Registrant Firm and on behalf of the Registrant Firm by any individuals employed by or under contract with the Registrant Firm,
 - (ii) requiring that the work of the Registrant Firm and any individuals employed by or under contract with the Registrant Firm be overseen by another Registrant when engaged in the Regulated Practice, and



- (iii) requiring that any individuals employed by or under contract with the Registrant Firm undertake additional training, or
- (c) disclose or provide records or information from the practice review to the Investigation Committee pursuant to section 110(3) of the PGA [*Confidentiality – committee matters*] or notify the Investigation Committee pursuant to section 110(4) of the PGA [*Confidentiality – committee matters*], as applicable,

and provide written notice to the Registrant Firm.

- (8) The Audit and Practice Review Committee may remove any limits or conditions imposed on a Registrant Firm subject to practice review pursuant to subsection (7)(b) if the Registrant Firm
 - (a) applies in writing to the Audit and Practice Review Committee to have the limits or conditions removed, and
 - (b) provides evidence acceptable to the Audit and Practice Review Committee that the limits or conditions are no longer necessary or have been fulfilled, as applicable.
- (9) After the removal of any limits or conditions imposed on a Registrant Firm subject to practice review pursuant to subsection (7)(b), the Audit and Practice Review Committee must close the practice review file and provide written notice to the Registrant Firm.
- (10) If the Registrant Firm subject to practice review fails to abide by any limits or conditions imposed on the Registrant Firm pursuant to subsection (7)(b), the Audit and Practice Review Committee must disclose or provide records or information from the practice review to the Investigation Committee pursuant to section 110(3) of the PGA [Confidentiality committee matters] or notify the Investigation Committee pursuant to section 110(4) of the PGA [Confidentiality committee matters], as applicable.



9 Complaints and Investigation

9.1 Definitions

(1) For the purpose of this Part, "Registrant" includes a former Registrant where applicable pursuant to section 56(1) of the PGA [*Definition and application*].

9.2 Powers of the Investigation Committee

- (1) The Investigation Committee has the functions and duties assigned to it in the PGA and delegated to it by the Council in subsections (2) and (3).
- (2) The Council authorizes the Investigation Committee to exercise the Council's powers pursuant to the following sections of the PGA and Regulations, other than the Council's bylaw-making authority:
 - (a) section 32(1) of the PGA [*Officers and committees*], in order to appoint officers for the purpose of carrying out the powers delegated in subsection (3)(a);
 - (b) section 66(1) of the PGA [*Investigations*];
 - (c) section 66(2)(a)(i) of the PGA [*Investigations*];
 - (d) section 67(1) and (4) of the PGA [*Extraordinary action*];
 - (e) section 72(3) of the PGA [Reprimand or remedial action by consent];
 - (f) section 1.8 of the Professional Governance General Regulation, B.C. Reg. 107/2019 [Protection of personal privacy – information on website], in order to determine whether information should not be made publicly available despite section 82(2) of the PGA [Information to be publicly available].
- (3) The Council authorizes the Investigation Committee to act pursuant to the following sections of the PGA:
 - (a) section 32(5)(b) of the PGA [Officers and committees], to delegate the powers granted by the Council to the Investigation Committee pursuant to sections 66(1)(b) and (c) of the PGA [Investigations] to one or more officers;
 - (b) section 65(4) of the PGA [Complaints] to
 - (i) authorize a practice review pursuant to section 63 of the PGA [*Audits and practice reviews*], or
 - (ii) take action pursuant to section 66 of the PGA [*Investigations*].



9.3 Officers

(1) All members of the Investigation Committee are appointed as officers pursuant to section 32(1) of the PGA [*Officers and committees*].

9.4 Powers of the Registrar

(1) The Council authorizes the Registrar to act pursuant to section 65(4) of the PGA [Complaints] to authorize a practice review pursuant to section 63 of the PGA [Audits and practice reviews].

9.5 Avoiding the Appearance of Bias

- (1) A member of the Investigation Committee must not participate in the consideration or investigation of a matter in which the member of the Investigation Committee
 - (a) had involvement prior to the decision of the Investigation Committee to authorize an investigation pursuant to section 66(1)(a) of the PGA [*Investigations*], or
 - (b) had or has a relationship with either the Complainant, a witness, or the Registrant subject to investigation

that would reasonably compromise the member's objectivity.

9.6 Disposition of Complaints by the Registrar

- (1) After receipt of a complaint, the Registrar may do any of the following:
 - (a) close all or part of the complaint without an investigation if the Registrar reasonably believes that any of the following apply:
 - (i) the complaint concerns a matter over which EGBC does not have jurisdiction;
 - the complaint does not, on its face, relate to an allegation that a Registrant is guilty of Professional Misconduct, Conduct Unbecoming a Registrant, or Incompetent performance of duties undertaken while engaged in the Regulated Practice;
 - (iii) the complaint is Trivial, Frivolous, Vexatious, or made in Bad Faith;
 - (b) close the complaint without an investigation and authorize a practice review of the Registrant subject to the complaint pursuant to section 65(4) of the PGA [*Complaints*], to be conducted by the Audit and Practice Review Committee, except where the Registrant subject to the complaint is a Trainee, who may not be referred to the Audit and Practice Review Committee for a practice review;



- (c) bring the complaint and any available evidence to the Investigation Committee in form of a written report for the Investigation Committee to consider authorizing an investigation pursuant to section 66(1)(a) of the PGA [*Investigations*].
- (2) If the Registrar closes a complaint pursuant to subsection (1)(a), the Registrar must provide the Complainant, the Registrant subject to the complaint, and the Investigation Committee with a written report stating the nature of the complaint and the reasons for closure.
- (3) If the Registrar closes a complaint file and refers the Registrant subject to the complaint to the Audit and Practice Review Committee pursuant to subsection (1)(b), the Registrar must provide the Complainant, the Registrant subject to the complaint, and the Investigation Committee with a written report stating the nature of the complaint and the reasons for the referral.

9.7 Investigation

9.7.1 Authorizing an Investigation

- (1) If EGBC receives information from any source that indicates a Registrant may have been guilty of
 - (a) Professional Misconduct,
 - (b) Conduct Unbecoming a Registrant, or
 - (c) Incompetent performance of duties undertaken while engaged in the Regulated Practice,

the Registrar may bring such information and any available evidence to the Investigation Committee in the form of a written report for the Investigation Committee to consider authorizing an investigation pursuant to section 66(1)(a) of the PGA [*Investigations*].

- (2) Upon receipt of a written report pursuant to subsection (1) or section 9.6(1)(c) of the Bylaws, the Investigation Committee may do one of the following:
 - (a) decline to authorize an investigation, if the Investigation Committee reasonably believes that any of the following apply with respect to the allegations in the written report:
 - (i) the allegations concern a matter over which EGBC does not have jurisdiction;
 - the report does not, on its face, relate to an allegation that a Registrant is guilty of Professional Misconduct, Conduct Unbecoming a Registrant, or Incompetent performance of duties undertaken while engaged in the Regulated Practice;



- (iii) the substance of the allegations has been or could be appropriately dealt with in another process or proceeding;
- (iv) there is no reasonable prospect that the allegations will be substantiated;
- (v) the allegations are Trivial, Frivolous, Vexatious, or made in Bad Faith;
- (vi) the allegations give rise to an Abuse of Process;
- (vii) the allegations were raised for an improper purpose or motive;
- (viii) the allegations relate to a contractual dispute between the Registrant and a third party and there is no public interest in authorizing an investigation;
- (b) authorize an investigation pursuant to section 66(1)(a) of the PGA [*Investigations*] and
 - (i) order further investigation to be conducted pursuant to sections 9.7.4 to 9.7.6 of the Bylaws, or
 - (ii) deem the investigation to be complete based on the written report provided pursuant to subsection (1) or section 9.6(1)(c) of the Bylaws and make a decision pursuant to section 9.7.7 of the Bylaws.
- (3) If the Investigation Committee declines to authorize an investigation pursuant to subsection (2)(a), the Investigation Committee must provide the Complainant and the Registrant subject to the complaint with a written report stating the nature of the complaint and the reasons for closure of the file.
- (4) If the written report brought to the Investigation Committee pursuant to subsection (1) or section 9.6(1)(c) of the Bylaws contains evidence that a Registrant has been convicted of an indictable offence, the Investigation Committee may authorize an investigation pursuant to section 66(1)(a) of the PGA [*Investigations*], deem the investigation to be complete based on the written report, and take action pursuant to section 9.7.2 of the Bylaws.
- (5) If the Investigation Committee authorizes an investigation pursuant to section 66(1)(a) of the PGA in relation to a public sector Firm, EGBC must notify the Office of the Superintendent of Professional Governance within 30 days of the decision to authorize the investigation.

9.7.2 Suspension or Cancellation on the Basis of an Indictable Offence

(1) If the Investigation Committee is satisfied that a Registrant has been convicted of an indictable offence, the Investigation Committee may summarily suspend or cancel the registration of the Registrant, and if the Registrant is a Registrant Firm, suspend or cancel the Registrant Firm's Permit to Practice, pursuant to section 66(2)(a)(i) of the PGA [*Investigations*].



- (2) Before proceeding pursuant to subsection (1), the Investigation Committee must be satisfied that the nature of the indictable offence or the circumstances under which the offence was committed give rise to concerns that the Registrant has engaged in
 - (a) Professional Misconduct,
 - (b) Conduct Unbecoming a Registrant, or
 - (c) Incompetent performance of duties undertaken while engaged in the Regulated Practice.
- (3) The Investigation Committee may determine the process and procedure for making a determination pursuant to this section of the Bylaws, including determining whether Proceedings are to be conducted
 - (a) in writing,
 - (b) in person,
 - (c) by Electronic Means, or
 - (d) in any combination of (a), (b), or (c).
- (4) The Investigation Committee must, before initiating Proceedings held pursuant to this section of the Bylaws, provide written notice to the Registrant subject to investigation that
 - (a) action may be undertaken pursuant to section 66(2)(a)(i) of the PGA [*Investigations*], and
 - (b) the Registrant may, by a specified date, make written submissions to the Investigation Committee.
- (5) The Investigation Committee may hear oral submissions from the Registrant, in the place of or in addition to the written submissions referred to in subsection (4)(b).
- (6) Despite subsections (4) and (5) if the Investigation Committee considers it necessary to protect the public interest, the Investigation Committee may initiate Proceedings pursuant to this section of the Bylaws or make an order pursuant to 66(2)(a)(i) of the PGA [*Investigations*] without
 - (a) providing notice to the Registrant, or
 - (b) providing the Registrant with an opportunity to make written or oral submissions to the Investigation Committee.
- (7) If the Investigation Committee makes an order to suspend or cancel the registration of the Registrant and, if the Registrant is a Registrant Firm, the Permit to Practice of the



Registrant Firm, pursuant to section 66(2)(a)(i) of the PGA [*Investigations*], the Investigation Committee must deliver the order to the Registrant.

- (8) If the Investigation Committee suspends the registration of the Registrant and, if the Registrant is a Registrant Firm, the Permit to Practice of the Registrant Firm, pursuant to section 66(2)(a)(i) of the PGA [*Investigations*], the Investigation Committee
 - (a) must determine the length and any conditions of the suspension in its order, and
 - (b) may amend or rescind an order made pursuant to section 66(2)(a)(i) of the PGA [*Investigations*].

9.7.3 Extraordinary Action to Protect the Public

- (1) At any time after authorizing an investigation pursuant to section 66(1)(a) of the PGA [*Investigations*], the Investigation Committee may, if it considers that it is necessary to protect the public interest,
 - (a) take action pursuant to section 67 of the PGA [Extraordinary action], or
 - (b) refer the file to the Discipline Committee, without the issuance of a citation, for the Discipline Committee to consider taking action pursuant to section 67 of the PGA [*Extraordinary action*].
- (2) The members of any Investigation Subcommittee carrying out an investigation or overseeing and taking responsibility for an investigation carried out by an Investigator and the members of any Resolution Subcommittee must not, for the same matter, participate in any Proceedings related to section 67 of the PGA [*Extraordinary action*].
- (3) If the Investigation Committee decides to proceed pursuant to subsection (1)(a), the Investigation Committee may determine the process and procedure for making a determination pursuant to this section of the Bylaws, including determining whether Proceedings are to be conducted
 - (a) in writing,
 - (b) in person,
 - (c) by Electronic Means, or
 - (d) in any combination of (a), (b), or (c).
- (4) The Investigation Committee may, before initiating Proceedings held pursuant to this section of the Bylaws, provide written notice to the Registrant subject to investigation that
 - (a) action may be undertaken pursuant to section 67(1)(a) or (b) of the PGA [*Extraordinary action*], and



- (b) the Registrant subject to investigation may, by a specified date, make written submissions to the Investigation Committee.
- (5) The Investigation Committee may hear oral submissions from the Registrant subject to investigation in the place of or in addition to the written submissions referred to in subsection (4)(b).
- (6) Despite subsections (4) and (5), if the Investigation Committee considers that it is necessary to protect the public interest, the Investigation Committee may initiate Proceedings held pursuant to this section of the Bylaws or make an order pursuant to section 67(1)(a) or (b) of the PGA [*Extraordinary action*] without
 - (a) providing notice to the Registrant subject to investigation, or
 - (b) providing the Registrant subject to investigation with an opportunity to make written or oral submissions to the Investigation Committee.
- (7) An order made by the Investigation Committee pursuant to section 67(1)(a) or (b) of the PGA [*Extraordinary action*] must comply with sections 67(2) and (3) of the PGA [*Extraordinary action*].
- (8) Pursuant to section 67(4) of the PGA [*Extraordinary action*], if the Investigation Committee determines that its order pursuant to section 67(1)(a) or (b) of the PGA [*Extraordinary action*] is no longer necessary to protect the public interest, it must, in writing, cancel any limits, conditions, or suspension ordered pursuant to section 67(1)(a) or (b) of the PGA [*Extraordinary action*] and notify the Registrant subject to investigation.
- (9) An order made by the Investigation Committee pursuant to section 67(1)(a) or (b) of the PGA [*Extraordinary action*] is effective until the final disposition of the matter by the Investigation Committee or the Discipline Committee, as applicable.

9.7.4 Carrying out of an Investigation

(1) The Investigation Committee may appoint Investigators as officers and delegate to those Investigators the Investigation Committee's powers pursuant to sections 66(1)(b) and (c) of the PGA [*Investigations*].

9.7.5 Necessary Co-operation During an Investigation

- (1) An Investigator may, pursuant to section 66(1)(b) and (c) of the PGA [*Investigations*], issue a written notice to the Registrant subject to investigation requiring the Registrant subject to investigation to
 - (a) co-operate with the investigation,
 - (b) provide evidence of education, training or experience in the area(s) of practice relevant to the investigation,



- (c) answer questions in the manner specified by the Investigator(s),
- (d) produce files, records or other evidence in the Registrant's possession or control,
- (e) provide explanations on request,
- (f) appear, either in person or by Electronic Means, before the Investigator(s) to discuss the conduct and competence of the Registrant subject to investigation,
- (g) if the Registrant is a Registrant Firm,
 - (i) produce any documentation or records requested by the Investigator, including but not limited to the Registrant Firm's corporate records, constating documents, project files, and quality management documents and records,
 - (ii) require any director, officer, individual employed by or under contract with, or any other individual authorized to act on behalf of a Registrant Firm, including the Responsible Officer, any Individual With Authority, or any Responsible Registrant of a Registrant Firm subject to investigation, to appear, either in person or by Electronic Means, before the Investigator(s) to discuss the conduct and competence of the Registrant Firm subject to investigation, and
 - (iii) if the Registrant Firm has more than one Responsible Registrant, designate one Responsible Registrant to co-ordinate
 - (A) the Registrant Firm's co-operation with the investigation, and
 - (B) communications on behalf of the Registrant Firm.
- (2) The Registrant subject to investigation may have legal counsel present at an appearance described in subsection (1)(f), or if the Registrant is a Registrant Firm, legal counsel may be present at any appearance pursuant to subsection (1)(g)(ii).
- (3) An appearance described in subsections (1)(f) and (1)(g)(ii)
 - (a) is an examination under oath or affirmation,
 - (b) may be recorded by EGBC by
 - (i) audio, or
 - (ii) audio and video, and
 - (c) may be transcribed by a court reporter for the purpose of preparing a certified transcript.
- (4) A Responsible Registrant designated to co-ordinate an investigation and communicate on behalf of a Registrant Firm pursuant to subsection (1)(g)(iii) must, at a minimum:



- (a) have sufficient knowledge of the subject matter at issue in the investigation,
- (b) have the authority and ability to facilitate the investigation as required by the Investigator, and
- (c) be an Individual With Authority at the Registrant Firm.
- (5) If the Investigation Committee determines that the Responsible Registrant designated by a Registrant Firm pursuant to subsection (1)(g)(iii) fails to meet any of the requirements set out in subsection (4) then the Investigation Committee may direct the Responsible Officer, an Individual With Authority, or any other individual employed by or under contract with the Registrant Firm to be designated for the purpose of coordinating the investigation and communicating on behalf of the Registrant Firm.
- (6) In addition to complying with any written notice issued pursuant to subsection (1), a Registrant subject to investigation must facilitate all requests and actions by an Inspector pursuant to section 69 of the PGA [*Powers and duties of inspectors*], including taking reasonable steps to arrange for and provide access to
 - (a) premises or project sites where the Registrant engages or has engaged in the Regulated Practice, including providing any information or assistance required to comply with applicable health and safety legislation during the Inspector's examination of the premises,
 - (b) any employees, contractors, or personnel who engage in the Regulated Practice under the supervision of or on behalf of the Registrant,
 - (c) all files, documents, and records, electronic or otherwise, relating to the Registrant's Regulated Practice, and
 - (d) any equipment, or materials used by a Registrant to engage in the Regulated Practice.

9.7.6 Conclusion of an Investigation

(1) At the conclusion of an investigation, the Investigator(s) must provide a written report to the Investigation Committee detailing the evidence gathered during the investigation, an assessment of the evidence gathered during the investigation, and the recommendations of the Investigator(s).

9.7.7 Decision by the Investigation Committee

(1) After deeming an investigation to be complete pursuant to section 9.7.1(2)(b)(ii) of the Bylaws, or after receipt of a written report prepared pursuant to section 9.7.6(1) of the Bylaws, the Investigation Committee may do any of the following:



- (a) close the investigation file, with the option to write a letter of recommendation to the Registrant subject to investigation suggesting how the Registrant can improve their practice or conduct;
- (b) close the investigation file and, pursuant to section 65(4) of the PGA [*Complaints*], authorize a practice review of the Registrant subject to investigation to be conducted by the Audit and Practice Review Committee, except where the Registrant subject to investigation is a Trainee who may not be referred to the Audit and Practice Review Committee for a practice review;
- (c) attempt to resolve one or more of the matters subject to investigation by means other than a discipline hearing, pursuant to section 9.9 of the Bylaws;
- (d) pursuant to section 66(1)(d) of the PGA [*Investigations*] issue a citation ordering a discipline hearing pursuant to section 75 of the PGA [*Discipline hearings*] to inquire into the conduct or competence of the Registrant subject to investigation.
- (2) When deciding to issue a citation pursuant to subsection (1)(d), the Investigation Committee may also make a recommendation to the Discipline Committee that the Discipline Committee consider taking action pursuant to section 67 of the PGA [*Extraordinary action*].
- (3) The Investigation Committee must inform and provide written reasons for its decision made pursuant to subsection (1) to
 - (a) the Registrant subject to investigation, and
 - (b) the Complainant, if the investigation is based on a complaint.
- (4) The members of any Investigation Subcommittee or Resolution Subcommittee must not vote on the disposition of the investigation pursuant to subsection (1).

9.8 Issuance and Rescission of a Citation

- (1) Pursuant to section 66(1)(d) of the PGA [*Investigations*], if the Investigation Committee determines that it is in the public interest, and if the Investigation Committee has reasonable and probable grounds to believe that the Registrant subject to investigation may be guilty of
 - (a) Professional Misconduct,
 - (b) Conduct Unbecoming a Registrant, or
 - (c) Incompetent performance of duties undertaken while engaged in the Regulated Practice,



the Investigation Committee may issue a citation ordering a discipline hearing pursuant to section 75 of the PGA [*Discipline hearings*] to inquire into the conduct or competence of the Registrant subject to investigation.

(2) The Investigation Committee may amend or rescind, in whole or in part, a citation issued pursuant to subsection (1).

9.9 Resolution by the Investigation Committee

- (1) If the Investigation Committee makes a determination pursuant to section 9.7.7(1)(c) of the Bylaws, the Investigation Committee may appoint a Resolution Subcommittee to oversee and take responsibility for attempting to resolve one or more of the matters subject to investigation by one or more of the following methods:
 - (a) make a request in writing for an undertaking or reprimand by consent to the Registrant subject to investigation pursuant to section 72 of the PGA [*Reprimand or remedial action by consent*];
 - (b) propose a consent order in writing to the Registrant subject to investigation pursuant to section 73 of the PGA [*Consent orders*];
 - (c) enter into the Alternative Complaint Resolution process with the Registrant subject to investigation pursuant to section 74 of the PGA [*Alternative complaint resolution*].
- (2) If the Registrant subject to investigation is a Registrant Firm, any undertaking or reprimand by consent, consent order, or agreement entered into following an Alternative Complaint Resolution Process pursuant to subsection (1) must be agreed to and endorsed by an Individual With Authority at the Registrant Firm.

9.9.1 Reprimand or Remedial Action by Consent

- (1) In relation to one or more of the matters investigated pursuant to section 66(1) of the PGA [*Investigations*], the Investigation Committee or the Resolution Subcommittee may make a request pursuant to section 72(1) of the PGA [*Reprimand or remedial action by consent*].
- (2) In case of an undertaking pursuant to section 72(1)(b) or (d) of the PGA [*Reprimand or remedial action by consent*], the record of the undertaking must specify
 - (a) the period of time during which the educational courses or any other action specified by the Audit and Practice Review Committee is to be completed or is binding on the Registrant subject to investigation, and
 - (b) the procedure, if any, that the Registrant subject to investigation may follow to be released from the undertaking.
- (3) If the Registrant subject to investigation agrees to an undertaking or reprimand by consent requested pursuant to section 72(1) of the PGA [*Reprimand or remedial action by consent*], the agreement must be approved by the Investigation Committee.



- (4) If the Registrant subject to investigation rejects an undertaking or reprimand by consent requested pursuant to section 72(1) of the PGA [*Reprimand or remedial action by consent*], the Investigation Committee may
 - (a) direct the Registrar to issue a citation for a hearing by the Discipline Committee pursuant to section 72(3) of the PGA [*Reprimand or remedial action by consent*], or
 - (b) continue with the investigation process as though the offer to resolve one or more matters by means of an undertaking or reprimand by consent pursuant to section 72(1) of the PGA [*Reprimand or remedial action by consent*] had not been made.
- (5) The members of a Resolution Subcommittee must not, for the same matter, vote on a decision by the Investigation Committee pursuant to subsection (3) or (4).

9.9.2 Consent Orders

- (1) In relation to one or more of the matters investigated pursuant to section 66(1) of the PGA [*Investigations*], the Investigation Committee or the Resolution Subcommittee may, pursuant to section 73 of the PGA [*Consent orders*], propose a consent order in writing to the Registrant subject to investigation.
- (2) If the Registrant subject to investigation agrees to a consent order proposed pursuant to section 73(1) of the PGA [*Consent orders*], the agreement must be approved by the Investigation Committee.
- (3) A consent order made between the Investigation Committee and the Registrant subject to investigation must meet the requirements set out in section 73 of the PGA [*Consent orders*].
- (4) The members of a Resolution Subcommittee must not, for the same matter, vote on a decision by the Investigation Committee pursuant to subsection (2).

9.9.3 Alternative Complaint Resolution by the Investigation Committee

- (1) In relation to one or more of the matters investigated pursuant to section 66(1) of the PGA [*Investigations*], the following parties may agree to engage in Alternative Complaint Resolution pursuant to section 74 of the PGA [*Alternative complaint resolution*]:
 - (a) the Investigation Committee;
 - (b) the Registrant subject to investigation;
 - (c) the Registrar.
- (2) Any party may withdraw from the Alternative Complaint Resolution process at any time by providing written notice to the other parties.



(3) The apportionment of costs incurred through Alternative Complaint Resolution, other than any respective legal costs of the parties, must be agreed upon by the parties prior to the commencement of the Alternative Complaint Resolution process, unless the parties agree otherwise.



10 Discipline

10.1 Definitions

(1) For the purpose of this Part, "Registrant" includes a former Registrant where applicable pursuant to section 56(1) of the PGA [*Definition and application*].

10.2 Powers of the Discipline Committee

- (1) The Discipline Committee has the functions and duties assigned to it in the PGA and delegated to it by the Council pursuant to subsections (2) and (3).
- (2) The Council authorizes the Discipline Committee to exercise the Council's powers pursuant to the following sections of the PGA and Regulations:
 - section 32(1) of the PGA [Officers and committees], in order to appoint officers for the purpose of carrying out powers of the Discipline Committee as delegated in this Part of the Bylaws;
 - (b) section 67(1) and (4) of the PGA [*Extraordinary action*];
 - (c) section 1.8 of the Professional Governance General Regulation, B.C. Reg. 107/2019 [Protection of personal privacy – information on website] in order to determine whether information should not be made publicly available despite section 82(2) of the PGA [Information to be publicly available].
- (3) The Council authorizes the Discipline Committee to act pursuant to section 32(5)(b) of the PGA [*Officers and committees*], to delegate to one or more officers the powers granted to the Discipline Committee by the Council pursuant to sections 67(1) and (4) of the PGA [*Extraordinary action*].

10.3 Officers and Discipline Committee Panels

- (1) All members of the Discipline Committee are appointed as officers pursuant to section 32(1) of the PGA [Officers and committees].
- (2) The chair or vice chair of the Discipline Committee may do one or more of the following:
 - (a) appoint members of the Discipline Committee to serve on a Panel;
 - (b) terminate an appointment to a Panel;
 - (c) refer a matter that is before the Discipline Committee to the following Panels:
 - (i) an Extraordinary Action Panel, to take action pursuant to section 67 of the PGA [*Extraordinary action*];


- (ii) a Discipline Resolution Panel, to take action pursuant to sections 72 to 74 of the PGA;
- (iii) a Discipline Hearing Panel, to take action pursuant to section 75 or 76 of the PGA.
- (3) On the appointment of members of the Discipline Committee to an Extraordinary Action Panel pursuant to subsection (2)(a), the Discipline Committee is deemed to have delegated to the members of the Extraordinary Action Panel the powers granted to the Discipline Committee by the Council pursuant to sections 67(1) and (4) of the PGA [*Extraordinary action*].
- (4) On the appointment of members of the Discipline Committee to a Discipline Resolution Panel pursuant to subsection (2)(a), the Discipline Committee is deemed to have delegated to the members of the Discipline Resolution Panel the powers of the Discipline Committee pursuant to sections 72 to 74 of the PGA.
- (5) A member of the Discipline Committee must not sit on more than one Panel concerning the same matter.

10.4 Avoiding the Appearance of Bias

- (1) A member of the Discipline Committee must not sit on a Panel concerning a matter in which the member of the Discipline Committee
 - (a) had involvement prior to the matter being referred to the Panel pursuant to section 10.3(2)(c) of the Bylaws, or
 - (b) had or has a relationship with either the Complainant, a witness, or the Registrant subject to discipline

that would reasonably compromise the member's objectivity.

10.5 Extraordinary Action to Protect the Public

- (1) An Extraordinary Action Panel may, if it considers that it is necessary to protect the public interest, take action pursuant to section 67 of the PGA [*Extraordinary action*]
 - (a) during the course of an investigation pursuant to section 66 of the PGA [*Investigations*], upon recommendation by the Investigation Committee pursuant to section 9.7.3(1)(b) of the Bylaws, or
 - (b) pending a hearing pursuant to section 75 of the PGA [*Discipline Hearings*], on recommendation by the Investigation Committee pursuant to section 9.7.7(2) of the Bylaws, or on application by EGBC.



- (2) An Extraordinary Action Panel may determine the process and procedure for making a determination pursuant to this section of the Bylaws, including determining whether Proceedings are to be conducted
 - (a) in writing,
 - (b) in person,
 - (c) by Electronic Means, or
 - (d) in any combination of (a), (b), or (c).
- (3) An Extraordinary Action Panel may, before initiating Proceedings held pursuant to this section of the Bylaws, provide written notice to the subject Registrant that
 - (a) action may be undertaken pursuant to section 67(1)(a) or (b) of the PGA [*Extraordinary action*], and
 - (b) the subject Registrant may, by a specified date, make written submissions to the Extraordinary Action Panel.
- (4) An Extraordinary Action Panel may hear oral submissions from the subject Registrant in the place of or in addition to the written submissions referred to in subsection (3)(b).
- (5) Despite subsection (3) and (4) if an Extraordinary Action Panel considers that it is necessary to protect the public interest, the Extraordinary Action Panel may initiate Proceedings held pursuant to this section of the Bylaws or make an order pursuant to section 67(1)(a) or (b) of the PGA [*Extraordinary Action*] without
 - (a) providing notice to the subject Registrant, or
 - (b) providing the subject Registrant with an opportunity to make written or oral submissions to the Investigation Committee.
- (6) An order made by an Extraordinary Action Panel pursuant to section 67(1)(a) or (b) of the PGA [*Extraordinary action*] must comply with sections 67(2) and (3) of the PGA [*Extraordinary action*].
- (7) Pursuant to section 67(4) of the PGA [*Extraordinary action*], if the Discipline Committee or an Extraordinary Action Panel determines that the order made pursuant to section 67(1)(a) or (b) of the PGA [*Extraordinary action*] is no longer necessary to protect the public interest, it must, in writing, cancel any limits, conditions, or suspension ordered pursuant to section 67(1)(a) or (b) of the PGA [*Extraordinary action*] and notify the subject Registrant as soon as possible.
- (8) An order made by an Extraordinary Action Panel pursuant to section 67(1)(a) or (b) of the PGA [*Extraordinary action*] is effective until the final disposition of the matter by the Discipline Committee.



10.6 Resolution by the Discipline Committee

- (1) Following the issuance of a citation by the Investigation Committee pursuant to section 66(1)(d) of the PGA [*Investigations*] or the Registrar pursuant to section 72(3) of the PGA [*Reprimand or remedial action by consent*], the chair or vice chair of the Discipline Committee may appoint a Discipline Resolution Panel to attempt to resolve one or more of the matters set out in the citation by one or more of the following methods:
 - (a) make a request in writing for an undertaking or reprimand by consent to the Registrant subject to discipline pursuant to section 72 of the PGA [*Reprimand or remedial action by consent*];
 - (b) propose a consent order in writing to the Registrant subject to discipline pursuant to section 73 of the PGA [*Consent orders*];
 - (c) enter into the Alternative Complaint Resolution process with the Registrant subject to discipline pursuant to section 74 of the PGA [*Alternative complaint resolution*].
- (2) If the Registrant subject to discipline is a Registrant Firm, any undertaking or reprimand by consent, consent order, or agreement entered into following an Alternative Complaint Resolution Process pursuant to subsection (1) must be agreed to and endorsed by an Individual With Authority at the Registrant Firm.

10.6.1 Reprimand or Remedial Action by Consent

- (1) In relation to one or more of the matters set out in the citation, the Discipline Resolution Panel may make a request pursuant to section 72(1) of the PGA [*Reprimand or remedial action by consent*].
- (2) In case of an undertaking pursuant to section 72(1)(b) or (d) of the PGA [*Reprimand or remedial action by consent*], the record of the undertaking must specify
 - (a) the period of time during which the educational courses or any other action specified by the Audit and Practice Review Committee is to be completed or is binding on the Registrant subject to discipline, and
 - (b) the procedure, if any, that the Registrant subject to discipline may follow to be released from the undertaking.
- (3) If the Registrant subject to discipline rejects an undertaking or reprimand by consent requested pursuant to section 72(1) of the PGA [*Reprimand or remedial action by consent*],
 - (a) the disciplinary processes may continue as though the offer to resolve one or more matters to be dealt with at the discipline hearing had not been made, and



(b) the offer to resolve one or more matters to be dealt with at the discipline hearing must not be considered in determining the matters or in taking an action or imposing a penalty in respect of the matters during a discipline hearing.

10.6.2 Consent Orders

- (1) In relation to one or more of the matters to be dealt with at the discipline hearing, the Discipline Resolution Panel may, pursuant to section 73 of the PGA [*Consent orders*], propose a consent order in writing to the Registrant subject to discipline.
- (2) A consent order made between the Discipline Resolution Panel and the Registrant subject to discipline must meet the requirements set out in section 73 of the PGA [*Consent orders*].

10.6.3 Alternative Complaint Resolution by the Discipline Committee

- (1) In relation to one or more of the matters to be dealt with at the discipline hearing, the following parties may agree to engage in Alternative Complaint Resolution pursuant to section 74 of the PGA [*Alternative complaint resolution*]:
 - (a) the Discipline Resolution Panel;
 - (b) the Registrant subject to discipline;
 - (c) the Registrar.
- (2) Any party may withdraw from the Alternative Complaint Resolution process at any time by providing written notice to the other parties.
- (3) The apportionment of costs incurred through Alternative Complaint Resolution, other than any respective legal costs of the parties, must be agreed upon by the parties prior to the commencement of the Alternative Complaint Resolution process, unless the parties agree otherwise.

10.7 Discipline Hearings

- (1) Following the issuance of a citation by the Investigation Committee pursuant to section 66(1)(d) of the PGA [*Investigations*] or the Registrar pursuant to 72(3) of the PGA [*Reprimand or remedial action by consent*], the chair or vice chair of the Discipline Committee must appoint a Discipline Hearing Panel to conduct the hearing pursuant to section 75 of the PGA [*Discipline hearings*].
- (2) A discipline hearing must be conducted in accordance with the procedure set out in Schedule B of the Bylaws, unless otherwise directed by the Discipline Hearing Panel.



10.8 Conduct in Another Jurisdiction

- (1) If the Discipline Committee learns that a Different Governing Body has found, or a Registrant has admitted to a Different Governing Body, that the Registrant committed an act that, in the opinion of the Discipline Committee, would constitute Conduct of Concern, the chair or vice chair of the Discipline Committee must appoint a Discipline Hearing Panel to take action pursuant to section 76 of the PGA [*Conduct in another jurisdiction*].
- (2) The Discipline Hearing Panel must provide the Registrant with the following before taking any action pursuant to section 76(2) of the PGA [*Conduct in another jurisdiction*]:
 - (a) at least 14 days' written notice of the proposed action;
 - (b) an opportunity to be heard, which must be limited to a hearing in writing unless otherwise ordered by the Discipline Hearing Panel.

10.9 Assessment of Costs After a Discipline Hearing

- (1) If an adverse determination is made against a Respondent after a discipline hearing held pursuant to section 75 of the PGA [*Discipline hearings*] the Discipline Hearing Panel must require, through an order in writing, that the Respondent pay EGBC's costs, which may be up to the actual costs incurred by EGBC as a result of an investigation and a discipline hearing, provided that those actual costs are within the limits set out in section 81(2)(a) of the PGA [*Costs*].
- (2) For the purpose of calculating costs with respect to an investigation, recoverable costs are all costs incurred from the time the investigation is authorized pursuant to section 66(1)(a) of the PGA [*Investigations*] until the time that a citation is issued pursuant to section 66(1)(d) of the PGA [*Investigations*] or 72(3) of the PGA [*Reprimand or remedial action by consent*].
- (3) For the purpose of calculating costs with respect to a discipline hearing, recoverable costs are all costs incurred from the time that the citation is issued pursuant to section 66(1)(d) of the PGA [*Investigations*] or 72(3) of the PGA [*Reprimand or remedial action by consent*] until the conclusion of a hearing regarding the amount of costs to be assessed pursuant to section 81 of the PGA [*Costs*].
- (4) For the purposes of subsections (2) and (3), recoverable costs must include
 - (a) salary costs for employees or officers engaged in the investigation and the discipline hearing, and
 - (b) the actual costs incurred by EGBC during the course of the investigation and the discipline hearing, including any motions, applications or pre-hearing conferences, or any other applications associated with a discipline matter, which may include some or all of the following:



- (i) costs incurred to retain contractors who are engaged in the investigation and the discipline hearing, including contractors who are appointed as officers;
- (ii) expenses incurred by persons appointed as Inspectors for EGBC pursuant to section 68 of the PGA [*Inspectors*];
- (iii) fees charged and expenses incurred by legal counsel retained by EGBC;
- (iv) fees charged and expenses incurred by expert witnesses retained by EGBC or EGBC's legal counsel;
- (v) expenses incurred by witnesses called to testify by EGBC;
- (vi) the cost of recording interviews, pre-hearing conferences, and hearings;
- (vii) the cost of a court reporter for interviews, pre-hearing conferences, and hearings;
- (viii) the cost of preparing a transcript of interviews, pre-hearing conferences, and hearings;
- (ix) the cost of a translator for interviews, pre-hearing conferences, and hearings;
- (x) costs incurred to rent facilities at which interviews, pre-hearing conferences, and hearings are held;
- (xi) costs incurred to conduct interviews, pre-hearing conferences, and hearings, whether conducted in person, by Electronic Means, in writing or by any combination thereof;
- (xii) any other reasonable costs, fees, or expenses paid or payable by EGBC as a result of the investigation or the hearing pursuant to section 75 of the PGA [*Discipline hearings*].
- (5) In determining the costs to require the Respondent to pay, the Discipline Hearing Panel
 - (a) must consider whether EGBC did not prove all the allegations made against the Respondent set out in the citation to the requisite standard, and if so, the seriousness of the allegations which were not proven relative to those which were proven, and
 - (b) may consider evidence that the Respondent previously rejected
 - (i) an undertaking or a consent requested by the Investigation Committee or the Discipline Committee, as applicable, pursuant to section 72(1) of the PGA [*Reprimand or remedial action by consent*], or



(ii) a consent order proposed by the Investigation Committee or the Discipline Committee, as applicable, pursuant to section 73(1) of the PGA [*Consent orders*].

10.10 Payment of Costs

(1) A Respondent must pay the full amount of any costs imposed on the Respondent pursuant to section 10.9 of the Bylaws within 30 days of the date of the order for costs, unless an extension for payment of costs is obtained pursuant to section 10.10.1(1).

10.10.1 Extension of Time for Payment of Costs

(1) Upon receipt of a written request from a Respondent stating that the Respondent will suffer financial hardship if the Respondent is required to pay costs within 30 days of the date of the order for costs, the Registrant must be granted a one-time, 30-day extension for payment of costs imposed on the Respondent pursuant to section 10.9 of Bylaws.



11 Public Disclosure of Disciplinary Orders

11.1 Definitions

(1) For the purpose of this Part, "Registrant" includes a former Registrant where applicable pursuant to section 56(1) of the PGA [*Definition and application*].

11.2 Publication of Citations

- (1) If a citation is issued pursuant to section 66(1)(d) of the PGA [*Investigations*] or 72(3) of the PGA [*Reprimand or remedial action by consent*], EGBC must publish the full text of the citation on a public website maintained by EGBC at least 30 days in advance of the date of the discipline hearing.
- (2) Despite subsection (1), prior to publishing the citation, the Investigation Committee may anonymize, redact, or otherwise not make publicly available any identifying, personal, or sensitive information if the Investigation Committee determines that the public interest in the information being made publicly available is outweighed by the privacy interest of
 - (a) a person other than the Registrant subject to discipline, or
 - (b) the subject Registrant if the Registrant suffers from a physical or mental ailment, an emotional disturbance or an addiction to alcohol or drugs.
- (3) If the Investigation Committee makes a determination pursuant to subsection (2), the publication of the citation must include a note that information has been withheld.

11.3 Public Attendance at a Discipline Hearing

- (1) A discipline hearing must be public.
- (2) At least 30 days in advance of the date of the discipline hearing, EGBC must publish the anticipated date and time of the discipline hearing, including, if determined by the Discipline Hearing Panel, whether the hearing is anticipated to proceed in person, by Electronic Means, in writing, or by any combination thereof.
- (3) Despite subsection (1), in extraordinary circumstances, the Discipline Hearing Panel may make an order excluding the public from all or part of a discipline hearing if the Discipline Hearing Panel determines that
 - (a) there are reasons for confidentiality that may be disclosed at the hearing that outweigh the public interest in having an open hearing, or
 - (b) the safety of a person may be jeopardized.
- (4) The Discipline Hearing Panel may limit the number of people who may attend a discipline hearing given the capacity of the facility in which the discipline hearing is being held or the capabilities of the Electronic Means.



(5) No person may make a visual or audio recording of a discipline hearing unless granted permission by the Discipline Hearing Panel prior to the discipline hearing commencing.

11.4 Publication of Disciplinary Orders

- (1) EGBC must publish the full text of a Disciplinary Order on a public website maintained by EGBC within 30 days of the date of the Disciplinary Order.
- (2) In addition to subsection (1), EGBC may publish a summary or the full text of a Disciplinary Order by other methods, including by one or more of the following means:
 - (a) in any of EGBC's electronic or paper communications;
 - (b) in a press release;
 - (c) in a local newspaper;
 - (d) in a legal research or decision database.
- (3) Despite subsection (1) and (2), prior to publishing the full text or a summary of a Disciplinary Order, the Investigation Committee or a Panel of the Discipline Committee, as applicable, may anonymize, redact, or otherwise not make publicly available any identifying, personal, or sensitive information if the Investigation Committee or a Panel of the Discipline Committee, as applicable, determines that the public interest in the information being made publicly available is outweighed by the privacy interest of
 - (a) a person other than the Registrant subject to investigation or discipline, or
 - (b) the subject Registrant if the Registrant suffers from a physical or mental ailment, an emotional disturbance or an addiction to alcohol or drugs.
- (4) If the Investigation Committee or a Panel of the Discipline Committee, as applicable, makes a determination pursuant to subsection (3), the publication of the Disciplinary Order must include a note that information has been withheld.
- (5) Despite subsection (1) and (2), prior to publishing the full text or a summary of a Disciplinary Order that is a consent or undertaking given pursuant to section 72(1) of the PGA [*Reprimand or remedial action by consent*], the Investigation Committee or Discipline Resolution Panel, as applicable, may anonymize, redact, or otherwise not make publicly available any identifying, personal, or sensitive information of the Registrant subject to investigation or discipline, if the following conditions are met:
 - (a) the consent or undertaking given pursuant to section 72(1) of the PGA does not impose limitations or conditions on the Regulated Practice by the Registrant subject to investigation or discipline; and



(b) the Investigation Committee or Discipline Resolution Panel, as applicable, determines that non-publication is in the public interest.

11.5 Retention and Archiving of Disciplinary Order

- (1) A Disciplinary Order setting out a restriction or suspension of a Registrant's registration or, if the Registrant is a Registrant Firm, a restriction or suspension of a Registrant Firm's registration and Permit to Practice, must remain posted on a public website maintained by EGBC for the course of the restriction or suspension, and then must be moved to an archive section of a public website maintained by EGBC.
- (2) A Disciplinary Order setting out the cancellation of an individual Registrant's registration will remain permanently posted on a public website maintained by EGBC.
- (3) Despite subsection (2), upon receiving notice of the death of a former individual Registrant subject to a Disciplinary Order setting out the cancellation of the individual Registrant's registration, EGBC must move the Disciplinary Order to a permanent archive section of a public website maintained by EGBC.
- (4) A Disciplinary Order setting out a cancellation of a Registrant Firm's registration and Permit to Practice must remain permanently posted on a public website maintained by EGBC.

11.6 Publication of Dismissed Citations

- (1) If the Discipline Hearing Panel dismisses all elements of a citation pursuant to section 75(5)(a) of the PGA, EGBC must publish the reasons for the decision on a public website maintained by EGBC within 30 days of the date of the decision.
- (2) Despite subsection (1), prior to publishing the reasons for a decision dismissing all elements of a citation pursuant to section 75(5)(a) of the PGA, the Discipline Hearing Panel may anonymize, redact, or otherwise not make publicly available any identifying, personal, or sensitive information of
 - (a) a person other than the Registrant subject to discipline, or
 - (b) the subject Registrant, unless the Registrant makes a request that the information be published.



12 Transitional Provisions

12.1 Repeal of Bylaws Previously in Force

(1) All of the bylaws of EGBC previously in force are repealed when these Bylaws come into force.



Schedule A – Code of Ethics

(1) A registrant must adhere to the following Code of Ethics:

Registrants must act at all times with fairness, courtesy and good faith toward all persons with whom the registrant has professional dealings, and in accordance with the public interest. Registrants must uphold the values of truth, honesty and trustworthiness and safeguard human life and welfare and the environment. In keeping with these basic tenets, registrants must:

- 1. hold paramount the safety, health, and welfare of the public, including the protection of the environment and the promotion of health and safety in the workplace;
- 2. practice only in those fields where training and ability make the registrant professionally competent;
- 3. have regard for the common law and any applicable enactments, federal enactments or enactments of another province;
- 4. have regard for applicable standards, policies, plans and practices established by the government or EGBC;
- 5. maintain competence in relevant specializations, including advances in the regulated practice and relevant science;
- 6. provide accurate information in respect of qualifications and experience;
- 7. provide professional opinions that distinguish between facts, assumptions and opinions;
- 8. avoid situations and circumstances in which there is a real or perceived conflict of interest and ensure conflicts of interest, including perceived conflicts of interest, are properly disclosed and necessary measures are taken so a conflict of interest does not bias decisions or recommendations;
- 9. report to EGBC and, if applicable, any other appropriate authority, if the registrant, on reasonable and probable grounds, believes that:
 - a. the continued practice of a regulated practice by another registrant or other person, including firms and employers, might pose a risk of significant harm to the environment or to the health or safety of the public or a group of people; or
 - b. a registrant or another individual has made decisions or engaged in practices which may be illegal or unethical;



- 10. present clearly to employers and clients the possible consequences if professional decisions or judgments are overruled or disregarded;
- 11. clearly identify each registrant who has contributed professional work, including recommendations, reports, statements or opinions;
- 12. undertake work and documentation with due diligence and in accordance with any guidance developed to standardize professional documentation for the applicable profession; and
- 13. 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.



Schedule B – Credentials and Discipline Hearing Procedure

1.1 Definitions

(1) In this Schedule,

"**Applicant**" means the same as set out in section 1(1) of the PGA [*Definitions and interpretation*].

"Decision Maker" means

- (a) the Registrar in the case of a credentials hearing pursuant to section 5.19 of the Bylaws, and
- (b) the Discipline Hearing Panel in the case of a discipline hearing pursuant to section 10.7 of the Bylaws.

"**Discipline Committee**" means the discipline committee established pursuant to section 75(1) of the PGA [*Discipline hearings*].

"**Discipline Hearing Panel**" means a panel of at least 3 members of the Discipline Committee, one of whom must be a Lay Committee Member, that is established by the chair or vice chair of the Discipline Committee pursuant to section 77(1) of the PGA [*Discipline committee to conduct hearings*] for the purpose of conducting a discipline hearing pursuant to section 75 of the PGA [*Discipline hearings*], or for the purpose of taking action pursuant to section 76 of the PGA [*Conduct in another jurisdiction*].

"EGBC" means the Association of Professional Engineers and Geoscientists of the Province of British Columbia, also operating as Engineers and Geoscientists BC.

"Electronic Means" includes videoconference, telephone conference, and webcasting.

"Lay Committee Member" means the same as defined in section 21 of the PGA [*Definition*].

"PGA" means the Professional Governance Act, S.B.C. 2018, c. 47.

"Proceeding" means a motion, application, pre-hearing conference, or hearing.

"**Registrar**" means the individual appointed by the Council as registrar pursuant to section 31(1) of the PGA [*Registrar and register for regulatory body*], who may also be the Executive Director.

"**Respondent**" means the same as defined in section 1(1) of the PGA [Definitions and interpretation].



1.2 Application of this Schedule

- (1) The procedural rules in this Schedule apply only to
 - (a) a credentials hearing held by the Registrar pursuant to section 5.19 of the Bylaws, and
 - (b) a discipline hearing held by a Discipline Hearing Panel pursuant to section 10.7 of the Bylaws,

unless otherwise ordered by the respective Decision Maker.

1.3 Parties and Representation

- (1) The parties to a hearing are
 - (a) the Applicant/Respondent, and
 - (b) EGBC.
- (2) A Registrant Firm must be represented in a Proceeding by an Individual With Authority or other individual who is duly authorized to make submissions and legally binding decisions on behalf of the Registrant Firm, and must provide notice to EGBC with the name and contact information for the representative, except where represented by legal counsel pursuant to subsections (4) and (5).
- (3) After receiving written notice including the contact information of a representative designated pursuant to subsection (2), any information or documents that EGBC is required to deliver to the Applicant/Respondent must be delivered to the individual designated to represent the Registrant Firm pursuant to subsection (2), except where the Registrant Firm is represented by legal counsel pursuant to subsections (4) and (5).
- (4) The Applicant/Respondent and EGBC may be represented by legal counsel in a Proceeding.
- (5) If the Applicant/Respondent is represented by legal counsel in a Proceeding,
 - (a) the Applicant/Respondent must provide EGBC with written notice of the name and contact information of the Applicant's/Respondent's legal counsel, and
 - (b) after receiving written notice of the name and contact information of the Applicant's/Respondent's legal counsel, any information or documents that EGBC is required to deliver to the Applicant/Respondent must be delivered to the Applicant's/Respondent's legal counsel which will constitute delivery to the Applicant/Respondent.
- (6) If the legal counsel for the Applicant/Respondent withdraws as legal counsel, EGBC is entitled to use the personal and unique email address of the Applicant/Respondent, or if



the Applicant/Respondent is a Registrant Firm, the contact information for the individual designated to represent the Registrant Firm pursuant to subsection (2), as the address for delivery for any information or documents to the Applicant/Respondent, unless the withdrawing legal counsel or the Applicant/Respondent specify a different email address for delivery.

(7) The Decision Maker may retain legal counsel or other assistance in conducting a Proceeding.

1.4 Combining Proceedings

- (1) If two or more Proceedings before the Discipline Committee involve
 - (a) the same Registrant, or
 - (b) the same or similar questions of fact, law, or policy,

the Discipline Committee may, without the consent of the parties, combine the Proceedings or any part of them or hear the Proceedings at the same time.

1.5 Disclosure and Evidence

- (1) Unless otherwise agreed by the parties or ordered by the Decision Maker, EGBC must make disclosure to the Applicant/Respondent in the following manner:
 - (a) expert reports, or a summary of the anticipated evidence of an expert if no report is produced, at least 60 days prior to the commencement of a hearing;
 - (b) all relevant written or documentary evidence at least 30 days prior to the commencement of a hearing;
 - (c) a list of the witnesses that EGBC expects to call at least 30 days prior to the commencement of the hearing;
 - (d) will-say statements of the witnesses that EGBC expects to call at least 15 days prior to the commencement of a hearing.
- (2) Unless otherwise agreed by the parties or ordered by the Decision Maker, the Applicant/Respondent must provide the following to EGBC:
 - (a) expert reports, or a summary of the anticipated evidence of an expert if no report is produced, at least 30 days prior to the commencement of a hearing;
 - (b) all written or documentary evidence on which the Applicant/Respondent intends to introduce at the hearing that has not already been disclosed by EGBC, at least 15 days prior to the commencement of a hearing;



- (c) a list of the witnesses that the Applicant/Respondent expects to call at least 15 days prior to the commencement of a hearing;
- (d) will-say statements of the witnesses that the Applicant/Respondent expects to call at least 7 days prior to the commencement of a hearing.
- (3) A failure to comply with a timeline in subsection (1) or (2) does not make the document or evidence inadmissible, subject to the Decision Maker's obligation to ensure procedural fairness.

1.6 **Pre-Hearing Conference**

- (1) The Decision Maker may convene a pre-hearing conference, either on its own motion or on the motion of a party made with written notice to the other party.
- (2) The Decision Maker must, in consultation with the parties, identify and provide written notice of the date, time, and location of the pre-hearing conference, including whether the pre-hearing conference will be conducted
 - (a) in writing,
 - (b) in person,
 - (c) by Electronic Means, or
 - (d) in any combination of (a), (b) and (c).
- (3) The Decision Maker may determine any procedural matter at a pre-hearing conference that will foster the fair, just, and timely disposition of the hearing.
- (4) The purposes of a pre-hearing conference include the following:
 - (a) identifying, simplifying, or narrowing the issues in dispute;
 - (b) resolving matters of procedure or evidence that can fairly be addressed prior to a hearing, either on the motion of a party or on the Decision Maker's own motion;
 - (c) scheduling the time and place of the hearing, including determining whether the hearing will be conducted in person, by Electronic Means, in writing, or by any combination thereof;
 - (d) identifying admissions or facts agreed upon by the parties;
 - (e) deciding upon applications made to vary any of the timelines set out in section 1.5(1) and (2) of this Schedule;
 - (f) determining the matters set out in section 1.10(6) and (7) of this Schedule;



- (g) otherwise setting timelines for the orderly conduct of the Proceeding, including prehearing steps;
- (h) setting time limits, if appropriate, on
 - (i) the presentation of evidence,
 - (ii) the examination and cross-examination of witnesses, and
 - (iii) the presentation of opening and closing submissions;
- (i) taking any steps necessary to ensure the best interests of witnesses are protected;
- (j) determining the estimated duration of the hearing;
- (k) resolving any other matter that may assist in the fair, just, and timely disposition of the hearing.
- A Decision Maker may direct that a hearing be conducted in writing pursuant to subsection (4)(c) if the Decision Maker is satisfied that:
 - (a) the Decision Maker can find the necessary facts to come to its decision based on the written record, despite any potential conflicts in the evidence; and,
 - (b) the Decision Maker making a decision on the basis of written submissions would not result in unfairness to any party.
- (6) Submissions made by the parties at a pre-hearing conference are not admissible as evidence in a hearing.

1.7 Motions

- (1) A motion is an application to the Decision Maker for an interlocutory order.
- (2) All motions must be heard at a scheduled pre-hearing conference, unless otherwise ordered by the Decision Maker.
- (3) A motion must
 - (a) be made in writing,
 - (b) set out the grounds for the motion,
 - (c) set out the relief requested, and
 - (d) be accompanied by any evidence to be relied upon.



- (4) The party bringing the motion must deliver the motion and any accompanying evidence to the Decision Maker and the other party at least 7 business days prior to the date set for the hearing of the motion.
- (5) The party responding to the motion may prepare a reply to the motion, which must be
 - (a) made in writing,
 - (b) set out the position of the party responding to the motion and the grounds for that position, and
 - (c) be accompanied by any evidence to be relied upon.
- (6) The party responding to the motion must deliver the reply to the motion and any accompanying evidence to the Decision Maker and the other party at least 2 business days prior to the date set for the hearing of the motion.
- (7) The Decision Maker may allow or require oral submissions from the parties in respect of the motion.

1.8 Adjournments

- (1) A party may apply in writing to the Decision Maker for an adjournment of a hearing.
- (2) An application for an adjournment must comply with the rules in section 1.7 of this Schedule, unless the Decision Maker is satisfied that special circumstances exist.
- (3) In considering an application for an adjournment, the Decision Maker may consider one or more of the following:
 - (a) the reason for the adjournment;
 - (b) whether the adjournment would cause unreasonable delay;
 - (c) the impact on the parties that would result from granting or refusing the adjournment;
 - (d) the public interest.
- (4) The Decision Maker may
 - (a) grant an adjournment,
 - (b) grant an adjournment on terms or with conditions, or
 - (c) refuse to grant an adjournment.



1.9 Hearing

- (1) As directed by the Decision Maker, a hearing will be conducted
 - (a) in writing,
 - (b) in person,
 - (c) by Electronic Means, or
 - (d) in any combination of (a), (b) and (c).
- (2) If a hearing has not yet been scheduled, the Decision Maker must schedule a hearing and provide written notice to the parties of the date(s), time(s), and location(s) or method(s) of the hearing.
- (3) A hearing must be open to the public, unless the Decision Maker determines it would be appropriate to hold some or all of the hearing in private.
- (4) A court reporter must keep a record of the hearing.
- (5) A person attending a hearing must not record any part of the hearing without the consent of the Decision Maker.
- (6) The Decision Maker may determine the procedures to be followed at a hearing, consistent with the principles of procedural fairness.
- (7) In a discipline hearing, both EGBC and the Respondent may
 - (a) present evidence,
 - (b) reply to evidence,
 - (c) call witnesses,
 - (d) cross-examine the opposing party's witnesses,
 - (e) re-examine witnesses,
 - (f) make submissions, and
 - (g) reply to the opposing party's submissions.
- (8) A party to a Proceeding must not put a document to a witness in cross-examination without having provided reasonable disclosure of the document to the opposing party in advance.



- (9) The rules of evidence must not be strictly applied, subject to the Decision Maker's obligation to ensure procedural fairness.
- (10) Nothing is admissible as evidence in a Proceeding that would be inadmissible in a court of law by reason of any privilege.
- (11) The Decision Maker may place reasonable limits on the length of a party's submissions in a hearing.
- (12) A party must not present new evidence in the party's closing submissions.
- (13) In a discipline hearing, the Discipline Hearing Panel must not consider the questions of penalty or costs until the Discipline Hearing Panel has rendered a decision on the allegations in the citation.
- (14) In a credentials hearing, the Registrar must not impose conditions on the ability of the Applicant to re-apply for registration without giving the Applicant the opportunity to respond to any proposed conditions.

1.10 Witnesses

- (1) Parties are responsible for arranging the attendance of their own witnesses.
- (2) Any witnesses testifying at a hearing must give an oath or affirmation before testifying, if competent to do so.
- (3) The Decision Maker may ask questions of any witnesses.
- (4) A Witness must not see or hear the testimony of other witnesses prior to giving testimony at a hearing, unless the witness is also a party to the hearing or is an expert whom the Decision Maker has ruled may be present for the testimony of an opposing party's expert.
- (5) In a Proceeding involving a Registrant Firm, for the purpose of subsection (4), a witness who is an Individual With Authority or individual employed by or under contract with the Registrant Firm, other than the individual designated to represent the Registrant Firm in the Proceeding pursuant to section 1.3(2) of this Schedule, is not considered to <u>be</u> a party to the hearing and is subject to the restrictions on attending during witness testimony as set out in subsection (4).
- (6) If the Decision Maker makes an order pursuant to section 34(3)(a) of the Administrative Tribunals Act, S.B.C. 2003, c. 45, at the request of EGBC or otherwise, to require the Respondent, or in the case of a Registrant Firm Respondent, any Individual With Authority or individual employed by or under contract with the Registrant Firm, to attend a discipline hearing for the purpose of giving evidence, EGBC must be permitted to cross-examine the Respondent, or in the case of a Registrant Firm Respondent, the Individual With Authority or individual employed by or under contract with the Registrant Firm, unless the Decision Maker rules otherwise.



(7) If the Supreme Court makes an order pursuant to section 80(2) of the PGA [*Witnesses*], on the motion of EGBC or otherwise, that a subpoena be issued to compel the attendance of the Respondent, or in the case of a Registrant Firm Respondent, an Individual With Authority or individual employed by or under contract with the Registrant Firm, at a discipline hearing, EGBC must be permitted to cross-examine the Respondent, or in the case of a Registrant Firm Respondent, the Individual With Authority or individual employed by or under contract with the Registrant Firm, at a discipline hearing, EGBC must be permitted to cross-examine the Respondent, or in the case of a Registrant Firm Respondent, the Individual With Authority or individual employed by or under contract with the Registrant Firm, unless the Decision Maker rules otherwise.

1.11 Decisions

- (1) A Decision Maker is not bound by previous decisions of EGBC.
- (2) A Decision Maker must give written reasons for their decision.



Schedule C – Fees

[amended 2021-06-25]

1.1 Fees for Individual Registrants

Fee Description	Amount	
APPLICATION FEES		
Application fee for Trainee (EIT/ GIT) Applicant		
 who is an academically qualified EIT, GIT, MIT, ing jr, géo jr, or CPI in other Canadian province/territory and is applying for the same designation as they hold in the other province or territory 	\$0.00	
 who applies within 12 months of graduation from an engineering or geoscience post-secondary program 	\$0.00	
 who applies more than 12 months after graduation from an engineering or geoscience post-secondary program 	\$475.00	
Application fee for professional licensee engineering/ professional licensee geoscience Applicant		
 a. First time Applicant not licensed or registered in another Canadian province/territory 	\$475.00	
 Who holds an equivalent licence or registration in another Canadian province/territory 	\$250.00	
c. Application for Minor Change to authorized area of Reserved Practice	\$200.00	
d. Application for Major Change to authorized area of Reserved Practice	\$400.00	
Application fee for professional engineer/ professional geoscience Applicant		
 a. First time Applicant not registered or licensed as a P.Eng., P.Geo., ing. or géo in other Canadian province/territory 	\$475.00	
 Applicant who is registered with another registered or licensed as a P.Eng., P.Geo., ing. or géo in other Canadian province/territory 	\$250.00	
 Applicant who is currently an EIT or GIT with Engineers and Geoscientists BC and whose EIT/GIT application fee was waived 	\$325.00	
 Applicant who is currently an EIT or GIT with Engineers and Geoscientists BC and who paid an application fee for EIT/GIT application 	\$0.00	
Application fee for designated structural engineer Applicant	\$500.00	
Application fee for reinstatement as a Professional Registrant		
 a. within 6 months of resignation, removal or conversion to non-practising registration 	\$50.00	



Fee Description	Amount	
 after 6 months and within 18 months of resignation, removal or conversion to non-practising registration 	\$100.00	
 over 18 months after resignation, removal or conversion to non- practising registration 	\$300.00	
Application fee for reinstatement as a Trainee, non-practising Registrant, life member or life limited licensee Registrant	\$50.00	
EXAMINATION FEES		
Examination fee for Trainee (EIT/ GIT) Applicant		
a. Per Examination	\$360.00	
b. Defer Examination to a subsequent session	\$220.00	
c. Request Examination Re-read per Examination	\$200.00	
Examination fees for designated structural engineer Applicant		
a. BC Codes and Practices Examination	\$500.00	
b. Institution of Structural Engineers Chartered Membership Examination	\$1,000.00	
Examination fee for professional licensee engineering/ professional licensee geoscience Applicant		
a. Per Examination	\$360.00	
b. Defer Examination to a subsequent session	\$220.00	
c. Request Examination Re-read per Examination	\$200.00	
Professional Practice Examination fee for all applicable Applicants or Registrants		
a. Multiple Choice and Essay sections	\$260.00	
b. [Repealed 2021-04-23]		
INTERVEW FEES		
Interview fee for all applicable Applicants		
a. In-person interview at EGBC office	\$0.00	
 Rescheduling (For applicant-initiated postponement or cancellation of a confirmed interview) 	a \$ 200.00	
c. Remote Interview by Videoconference	\$200.00	
Interview fee for reinstatement as a Professional Registrant		
a. In-person interview at EGBC office	\$0.00	
 Rescheduling (For applicant-initiated postponement or cancellation of a confirmed interview) 	\$200.00	



Fee Description	Amount
c. Remote Interview by Videoconference	\$200.00
COURSE FEES	
Course fee for Professional Engineering and Geoscience in BC Seminar for all applicable Applicants or Registrants	\$275.00
 Course fee for Working in Canada Seminar Per unit Four-unit Seminar 	\$50.00 \$200.00
REGISTRATION & DESIGNATION FEES	
Registration fee for registration as an individual Registrant (other than a Trainee)	\$270.00
Designation fee for designation as a designated structural engineer	\$200.00
ANNUAL FEES	
Annual fee 2021	
Trainee (EIT/GIT)	
a. Full Fee	\$276.00
b. Reduced Fee for Hardship	\$138.00
c. Medically unable to work	\$0.00
Professional Registrant	
a. Professional Engineer/Professional Geoscientist Full Fee	\$450.00
 b. Professional Engineer/Professional Geoscientist Reduced Fee for Hardship 	\$225.00
c. Professional Licensee Engineering/Professional Licensee Geoscience Full Fee	\$418.62
d. Professional Licensee Engineering/Professional Licensee Geoscience Reduced Fee for Hardship	\$209.31
Non-practising Registrant	
a. Professional Engineer/Professional Geoscientist	\$225.00
b. Professional Licensee Engineering/Professional Licensee Geoscience	\$209.31
c. Registrant medically unable to work (non-practising)	\$0.00
Annual fee for a Registrant granted enrolment/ registration at some time other than beginning of annual renewal cycle	Prorated annual fee
Annual Fee 2022	
Trainee (EIT/GIT)	
a. Full Fee	\$276.00



Fee D	escription	Amount
b.	Reduced Fee for Hardship	\$138.00
C.	Medically unable to work	\$0.00
Profes	sional Registrant	
a.	Professional Engineer/Professional Geoscientist Full Fee	\$460.00
b.	Professional Engineer/Professional Geoscientist Reduced Fee for Hardship	\$230.00
C.	Professional Licensee Engineering/Professional Licensee Geoscience Full Fee	\$418.00
d.	Professional Licensee Engineering/Professional Licensee Geoscience Reduced Fee for Hardship	\$209.00
Non-p	ractising Registrant	
a.	Professional Engineer/Professional Geoscientist	\$115.00
b.	Professional Licensee Engineering/Professional Licensee Geoscience	\$104.50
С.	Registrant medically unable to work (non-practising)	\$0.00
Annua other	al fee for a Registrant granted enrolment/ registration at some time than beginning of annual renewal cycle	Prorated annual fee
REPL	ACEMENT / ADDITIONAL FEES	
Additi	onal Manual Seal	
a.	30 mm Rubber Stamp	\$30.00
b.	30 mm Self Inking Stamp (black ink unless specified)	\$50.00
С.	50 mm Rubber Stamp	\$35.00
d.	50 mm Self Inking Stamp (black ink unless specified)	\$55.00
e.	Long Reach Seal	\$85.00
f.	Professional Licensee Rubber Stamp	\$40.00
g.	Professional Licensee Self Inking Stamp	\$50.00
Rush (Order Fee for Stamp Order	\$20.00
Additi	onal certificate of registration	\$25.00
Rush	Order Fee for Certificate Order	\$20.00
LATE	FEES	
Late fo	ee for failure to pay annual fee	15% of Annual fee for Registration category



Fee Description	Amount
Late fee for failure to pay a special assessment	15% of Special assessment fee
 Late reporting fee for: a. Failure to provide certain information published on the register or personal and unique email address b. Failure to submit a completed CEP Declaration 	<u>2021 only: \$0</u> 2022 onwards: \$100.00
Late exemption fee for failure to request an exemption to any CEP requirements prior to April 30	\$50.00
Late completion fee for failure to complete CE plan, CE hours, require ethical learning, required regulatory learning, required technical learn (in the case of a designated structural engineer)	ed \$200.00 ning
RECONSIDERATION AND REVIEW ON THE RECORD FEES	
Reconsideration fee	\$150.00
Review on the record fee	\$500.00



1.2 Fees for Registrant Firms

Fee Descript	ion	Amount
APPLICATIO	N FEE	
Application	ee for Registration as a Registrant Firm	\$350.00
ANNUAL FE	ES	
Annual fee fo	or Registrant Firm	·
a.	Registrant Firms with only one Professional Registrant employed by or under contract with the Registrant Firm:	\$250.00
b.	Registrant Firms with more than one Professional Registrant employed by or under contract with the Registrant Firm, or Registrant Firms that are sole practitioners with more than 2 Trainees employed by or under contract with the Registrant Firm:	\$500*SQRT(n), where n = # of Professional Registrants and Trainees, but does not include non-practising individual Registrants employed by or under contract with the Registrant Firm.
Annual fee fe at some time	or a Registrant Firm granted enrolment/ registration ether than beginning of annual renewal cycle	Prorated, based on annual fee formula.
Annual fee fe non-practisii 25]	or non-practising Registrant Firm (that has held ng status for more than 2 years)[Repealed 2021-06-	50% of full fee
SPECIAL AS	SESSMENTS	
Special asse	ssments (if any)	·
LATE FEES		
Late fee for f	ailure to pay annual fee	15% of Annual Fee of each category above
Late fee for f	ailure to pay a special assessment	15% of special assessment
Late reportin a. Certai b. Perso Office	ng fee for failure to provide: n information published on the register nal and unique email addresses for all Responsible rs and Responsible Registrants	\$100.00



Fee Description	Amount
Late completion fee for Regulation of Firms Training Program (for each Responsible Registrant who completes the Program late)	\$200.00
REVIEW ON THE RECORD FEE	
Review on the record fee	\$500.00



Schedule D – Responsible Registrant Declaration

I, <Full Legal Name>, <Job Title>, make the following statements in support of my application to act as a Responsible Registrant of <Name of Applicant Firm or Registrant Firm> (the "Registrant Firm"), and declare that the following statements are true:

- 1. I understand that for the purpose of this declaration, defined terms are capitalized and have the same meaning as set out in the Bylaws.
- 2. I understand and acknowledge that all Registrant Firms are regulated pursuant to the PGA and regulations, as well as the Bylaws, guidelines, standards, practice advisories, and policies of EGBC. I confirm that I have reviewed those documents and understand the obligations of Registrant Firms and Responsible Registrants set out therein.
- 3. I confirm that I am submitting this declaration for the purpose of registering as a Responsible Registrant for the Registrant Firm or proposed Registrant Firm indicated on this declaration (the "Registrant Firm"). I agree to act as Responsible Registrant for the Registrant Firm, including undertaking the responsibilities of a Responsible Registrant as set out in the Bylaws, guidelines, standards, and policies of EGBC.
- 4. IF A CONTRACTOR OR CONTRACT EMPLOYEE ONLY: I have express authority and access to act on behalf of the Registrant Firm, granted through a written contract or other documentation sufficient to satisfy paragraph (3) above, and can provide a copy of such contract or documentation upon request from EGBC.
- 5. I am registered with EGBC as a Professional Registrant In Good Standing.
- 6. I will notify EGBC if I am currently, or become the subject in the future, of an investigation, inquiry, review, or other disciplinary proceeding in British Columbia or another jurisdiction that could result in my entitlement to practice a profession being cancelled, suspended, restricted, or made subject to limits or conditions.
- 7. I will ensure that the Regulated Practice carried out by the Registrant Firm, including the Regulated Practice carried out on behalf of the Registrant Firm by individuals employed by or under contract with the Registrant Firm, is appropriately reviewed and Authenticated in accordance with the PGA and regulations, as well as the Bylaws, guidelines, standards, practice advisories, and policies of EGBC.
- 8. I understand and acknowledge that I remain fully accountable on behalf of the Registrant Firm for ensuring that the Regulated Practice carried out by the Registrant Firm, including the Regulated Practice carried out on behalf of the Registrant Firm by individuals employed by or under contract with the Registrant Firm, conforms to the PGA



and regulations, as well as the Bylaws, Code of Ethics, guidelines, standards, practice advisories, and policies of EGBC.

- 9. I understand and acknowledge that the Registrant Firm must develop and enforce a Professional Practice Management Plan ("PPMP") that conforms with the requirements of section 7.7.3 of the Bylaws and any additional requirements set out in the PGA and regulations, as well as the Bylaws, guidelines, standards, practice advisories, and policies of EGBC. I further understand and acknowledge that the PPMP must be in place no later than 12 months after the date that the Permit to Practice is issued to the Registrant Firm. I will take all reasonable steps on behalf of the Registrant Firm to ensure that the PPMP is developed, implemented, and adhered to by all individuals employed by or under contract with the Registrant Firm. I will document my approval of the PPMP, ensure that it is updated as required, and ensure that past versions are retained in accordance with section 7.7.3(8) of the Bylaws.
- 10. I understand and acknowledge that the Registrant Firm must develop and enforce quality management policies and procedures applicable to the Regulated Practice carried out by Professional Registrants employed by or under contract with the Registrant Firm. I confirm that I have the necessary authority and will take reasonable steps on behalf of the Registrant Firm to ensure that the quality management policies and procedures related to the Regulated Practice at the Registrant Firm conform to the PGA and regulations, as well as the Bylaws, guidelines, standards, practice advisories, and policies of EGBC, and are implemented and adhered to by all Registrants employed by or under contract with the Registrant Firm. I will ensure that the details of the quality management policies and procedures are documented in the PPMP.
- 11. I understand and acknowledge that, in accordance with the PGA and the Bylaws, EGBC may conduct audits, practice reviews, investigations, and disciplinary proceedings in relation to a Registrant Firm and all work related to related to the Regulated Practice carried out by the Registrant Firm, including the Regulated Practice carried out on behalf of the Registrant Firm by individuals employed by or under contract with the Registrant Firm. I further understand and acknowledge that as Responsible Registrant, it is my responsibility to: facilitate requests for documents, information, site visits, and interviews; respond to communications; and assist with any other items or arrangements required or requested by EGBC in relation to an audit, practice review, investigation, or disciplinary proceeding conducted in relation to the Registrant Firm.
- 12. I confirm that any communications that I receive from EGBC on behalf of the Registrant Firm will be replied to in a prompt and responsive manner by myself or another authorized individual.
- 13. I confirm that I will provide EGBC with accurate information in the course of all correspondence or communications with EGBC on behalf of the Registrant Firm, including providing accurate information at the time of application and in relation to any



subsequent updates or additional information provided to EGBC pursuant to the PGA or Bylaws, as applicable.

- 14. I confirm that I will provide EGBC with up-to-date and accurate contact information for myself and for the Registrant Firm, and will take all reasonable steps to ensure that the information is updated as needed and in accordance with the requirements set out in the PGA or Bylaws.
- 15. I confirm that I will participate in the mandatory Regulation of Firms Training Program provided by EGBC, either:
 - a. If the Registrant Firm does not yet have a Permit to Practice, within 12 months of the Registrant Firm being issued a Permit to Practice by EGBC; or
 - b. If the Registrant Firm has already been issued a Permit to Practice by EGBC at any time, within 3 months of submitting this declaration to EGBC;

AND, in either case, at minimum every 5 years thereafter.

- 16. I confirm that I will contact EGBC immediately should I no longer be willing, able, or authorized to act as a Responsible Registrant in association with the Registrant Firm's Permit to Practice with EGBC.
- 17. I understand that I may authorize other individuals employed by or under contract with the Registrant Firm to apply the Permit to Practice Number to documents on behalf of the Registrant Firm. I understand and acknowledge that I am responsible for ensuring that each application of the Permit to Practice Number on behalf of the Registrant Firm (whether by myself or any other individual who I have authorized to apply the Permit to Practice Number) is in compliance with the PGA and regulations, as well as the Bylaws, guidelines, standards, practice advisories, and policies of EGBC with respect to the use of the Permit to Practice Number.



Schedule E – Responsible Officer Declaration

I, <Full Legal Name>, <Job Title>, make the following statements in support of my application to act as the Responsible Officer of <Name of Applicant Firm or Registrant Firm> (the "Registrant Firm"), and declare that the following statements are true:

- 1. I understand that for the purpose of this declaration, defined terms are capitalized and have the same meaning as set out in the Bylaws.
- 2. I understand and acknowledge that all Registrant Firms are regulated pursuant to the PGA and regulations, as well as the Bylaws, guidelines, standards, practice advisories, and policies of EGBC. I confirm that I have reviewed those documents and understand the obligations of Registrant Firms and Responsible Officers set out therein.
- 3. I confirm that I am submitting this declaration for the purpose of registering as the Responsible Officer of the Registrant Firm or proposed Registrant Firm indicated on this declaration (the "Registrant Firm"). I further confirm that I possess the necessary authority to legally bind the Registrant Firm in relation to all matters falling under the PGA and Bylaws of EGBC, and I agree to undertake the responsibilities of a Responsible Officer set out in the Bylaws, guidelines, standards, and policies of EGBC.
- 4. IF A CONTRACTOR OR CONTRACT EMPLOYEE ONLY: I have express authority and access to act on behalf of the Registrant Firm, granted through a written contract or other documentation sufficient to satisfy paragraph (3) above, and can provide a copy of such contract or documentation upon request from EGBC.
- 5. IF A PROFESSIONAL REGISTRANT OF EGBC: I am registered with EGBC as a Professional Registrant, I confirm that I am currently In Good Standing. I will notify EGBC if I am currently, or become the subject in the future, of an investigation, inquiry, review, or other disciplinary proceeding in British Columbia or another jurisdiction that could result in my entitlement to practice a profession being cancelled, suspended, restricted, or made subject to limits or conditions.
- 6. I will notify EGBC if the Registrant Firm is currently, or becomes subject in the future, of an investigation, inquiry, review, or other disciplinary proceeding in British Columbia or another jurisdiction which could result in the Registrant Firm's entitlement to practice a profession being cancelled, suspended, restricted, or made subject to limits or conditions.
- 7. I understand and acknowledge that if the Registrant Firm employs at least one Professional Registrant and engages in the Regulated Practice in British Columbia, the Registrant Firm must be registered with EGBC and a Permit to Practice must be obtained from EGBC and renewed in accordance with the Bylaws, unless the Registrant Firm is expressly exempt from registration pursuant to the Bylaws.



- 8. I understand and acknowledge that in order to engage in the Reserved Practice in British Columbia, the Registrant Firm must be registered with EGBC and have at least one Professional Registrant designated to act as the Responsible Registrant for each area of practice engaged in by the Registrant Firm. The Registrant Firm must ensure that the Responsible Registrant has the necessary authority to oversee the Regulated Practice carried out by all Registrants employed by our under contract with the Registrant Firm, and to take the steps necessary to ensure compliance with the requirements in the PGA and regulations, as well as the Bylaws, guidelines, standards, practice advisories, and policies of EGBC.
- 9. I understand and acknowledge that the Registrant Firm and its Responsible Registrant must ensure that the Regulated Practice carried out by the Registrant Firm, including the Regulated Practice carried out on behalf of the Registrant Firm by individuals employed by or under contract with the Registrant Firm, is appropriately reviewed and Authenticated in accordance with the PGA and regulations, as well as the Bylaws, guidelines, standards, practice advisories, and policies of EGBC.
- 10. I understand and acknowledge that the Registrant Firm and its Responsible Registrant remain fully accountable for ensuring that the Regulated Practice carried out by the Registrant Firm, including the Regulated Practice carried out on behalf of the Registrant Firm by individuals employed by or under contract with the Registrant Firm, conforms to the PGA and regulations, as well as the Bylaws, Code of Ethics, guidelines, standards, practice advisories, and policies of EGBC.
- 11. I understand and acknowledge that the Registrant Firm must develop and enforce a Professional Practice Management Plan ("PPMP") that conforms with the requirements of section 7.7.3 of the Bylaws and any additional requirements set out in the PGA and regulations, as well as the Bylaws, guidelines, standards, practice advisories, and policies of EGBC. I further understand and acknowledge that the PPMP must be in place no later than 12 months after the date that the Permit to Practice is issued to the Registrant Firm.
- 12. I understand and acknowledge that the Registrant Firm must develop and enforce quality management policies and procedures applicable to the Regulated Practice carried out by Professional Registrants employed or under contract with the Registrant Firm. I further understand and acknowledge that the quality management policies and procedures must conform to the PGA and regulations, as well as the Bylaws, guidelines, standards, practice advisories, and policies of EGBC, and must be implemented and adhered to by all Registrants employed by or under contract with the Registrant Firm. Finally, I understand and acknowledge that the details of the quality management policies and procedures must be documented in the PPMP, and that I must document my approval of the PPMP on behalf of the Registrant Firm.



- 13. I understand and acknowledge that, in accordance with the PGA and the Bylaws, EGBC may conduct audits, practice reviews, investigations, and disciplinary proceedings in relation to a Registrant Firm and the Regulated Practice carried out by a Registrant Firm, including the Regulated Practice carried out on behalf of the Registrant Firm by individuals employed by or under contract with the Registrant Firm. I further understand and acknowledge the obligation of a Registrant Firm to co-operate completely with the audit, practice review, investigation, and discipline processes, including providing all requested documents and information, facilitating site visits and interviews, and managing communications with EGBC in a timely manner.
- 14. I confirm that any communications that I receive from EGBC on behalf of the Registrant Firm will be replied to in a prompt and responsive manner by myself or another authorized individual.
- 15. I confirm that I will provide EGBC with accurate information in the course of all correspondence or communications with EGBC on behalf of the Registrant Firm, including providing accurate information at the time of application and in relation to any subsequent updates or additional information provided to EGBC pursuant to the PGA or Bylaws, as applicable.
- 16. I confirm that I will provide EGBC with up-to-date and accurate contact information for myself and for the Registrant Firm, and will take all reasonable steps to ensure that up-to-date and accurate contact information has been provided to EGBC for the Registrant Firm and all Responsible Registrants of the Registrant Firm, and that this information is updated as needed, in accordance with the requirements set out in the Bylaws. In addition, I will provide (or will designate and supervise an individual within the Registrant Firm who will provide) up-to-date information regarding all Professional Registrants employed by or under contract with the Registrant Firm, and will update that information as needed, in accordance with the requirements set out in the Bylaws.
- 17. I will contact EGBC immediately should I no longer be willing, able, or authorized to act as the Registrant Firm's Responsible Officer in association with the Registrant Firm's Permit to Practice.
- 18. I will contact EGBC should the Registrant Firm wish to cancel its Permit to Practice and will ensure that the Registrant Firm abides by any conditions or requirements as may be directed by EGBC at that time.

6.1 - APPENDIX B

Pursuant to the *Professional Governance Act,* S.B.C. 2018, c. 47

BYLAWS OF ENGINEERS AND GEOSCIENTISTS BC

AS AMENDED JUNE 25, 2021




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1 Definitions and Communications

1.1 Definitions

(1) In these Bylaws the following definitions apply:

"Abuse of Process" means the complaint process is not being fairly or honestly used, or where multiple or successive complaints are made to cause vexation or oppression.

"Accounting Records" means true accounts of

- (a) the assets and liabilities of EGBC,
- (b) the sums of money received and expended by EGBC, and
- (c) the manner in respect of which such receipt and expenditure takes place.

"Alternative Complaint Resolution" means a process or processes for the full or partial resolution of one or more matters to be dealt with at a discipline hearing and includes

- (a) negotiation,
- (b) mediation, or
- (c) other processes the parties agree to.

"**Applicant**" means the same as set out in section 1(1) of the PGA [*Definitions and interpretation*].

"Audit and Practice Review Committee" means the audit and practice review committee established pursuant to section 63(1) of the PGA [Audits and practice reviews].

"Authenticate" means the act of a Professional Registrant Manually Authenticating or Digitally Authenticating a Document.

"**Bad Faith**" refers to a complaint that was made with untruthful, misleading, or unduly insensitive intent where the Complainant is motivated by malice or financial gain.

"Branch" means a geographical group of Registrants.

"Branch Representatives' Chair" means an individual who is appointed by the Council to chair meetings of representatives of each Branch and to act as a liaison between those representatives and the Council.

"Bylaws" means the bylaws of EGBC under the PGA.

"**Certificate Authority**" means a third party approved by EGBC to issue Digital Certificates to Professional Registrants.



"Code of Conduct" means the document created or adopted by a Registrant Firm pursuant to section 7.7.3(1)(a) of the Bylaws.

"Code of Ethics" means the Code of Ethics of EGBC set out in Schedule A of the Bylaws.

"**Committee**" means the same as defined in section 1(1) of the PGA [*Definitions and interpretation*].

"**Communications and Leadership Learning**" means Continuing Education Activities related to advancing an individual Registrant's non-technical knowledge and skills, including communications and leadership skills.

"**Complainant**" means a person who files a complaint against a Registrant and includes a member of the public or another Registrant.

"Conduct of Concern" means the same as defined in section 76(1) of the PGA [Conduct in another jurisdiction].

"**Conduct Unbecoming a Registrant**" means the same as defined in section 1(1) of the PGA [*Definitions and interpretation*].

"**Continuing Education Activity**" means an activity related to advancing an individual Registrant's knowledge in the categories of Ethical Learning, Regulatory Learning, Communications and Leadership Learning, or Technical Learning.

"Continuing Education Hour" means one hour of a Continuing Education Activity that contributes to an individual Registrant's maintenance of competency within the individual Registrant's

- (a) current area(s) of practice, including any anticipated future area(s) of practice, if the individual Registrant is a Professional Registrant, or
- (b) former area(s) of practice, if the individual Registrant is a non-practising Registrant or a life member or life limited licensee.

"**Council**" means the same as defined in section 1(1) of the PGA [*Definitions and interpretation*].

"**Credentials Committee**" means the credentials committee established pursuant to section 44(1) of the PGA [*Credentials committee*].

"Decision Maker" means

- (a) the Registrar in the case of a credentials hearing pursuant to section 5.19 of the Bylaws, and
- (b) the Discipline Hearing Panel in the case of a discipline hearing pursuant to section 10.7 of the Bylaws.



"**Delegated**" means, in relation to Direct Supervision, a Subordinate being directed to undertake certain activities, work, or decisions related to the Regulated Practice on behalf of a Professional Registrant who takes professional responsibility for the work of the Subordinate.

"**Deputy Registrar**" means any individual appointed by the Council as deputy registrar pursuant to section 31(1) of the PGA [*Registrar and register for regulatory body*].

"Different Governing Body" means the same as defined in section 76(1) of the PGA [Conduct in another jurisdiction].

"Digital Certificate" means a certificate issued to a Professional Registrant by a Certificate Authority that attests to the legitimacy of information through the use of encryption.

"**Digitally Authenticating**" means a Professional Registrant applying all of the following to a Document:

- (a) the Professional Registrant's Digital Seal;
- (b) a digital image of the Professional Registrant's signature;
- (c) a digital image of the date of authentication;
- (d) the Professional Registrant's Digital Certificate.

"**Digital Seal**" means a digital image of a Professional Registrant's Manual Seal, with no material variation in format or wording.

"**Direct Supervision**" means the responsibility for the control and conduct of the activities, work, or decisions related to the Regulated Practice that have been Delegated to a Subordinate.

"Disciplinary Order" means any of the following:

- (a) an order made pursuant to section 66(2)(a)(i) of the PGA [*Investigations*];
- (b) an order made pursuant to section 67(1) of the PGA [*Extraordinary action*];
- (c) a consent or undertaking given pursuant to section 72(1) of the PGA [*Reprimand* or remedial action by consent];
- (d) a consent order made pursuant to section 73(2)(a) or (b) of the PGA [*Consent* orders];
- (e) any agreement reached through the Alternative Complaint Resolution process pursuant to section 74 of the PGA [*Alternative complaint resolution*];
- (f) a determination made pursuant to sections 75(5)(b), 75(6), or 75(7) of the PGA [*Discipline hearings*], as applicable;
- (g) an assessment of costs made pursuant to section 81(1) of the PGA [Costs].



"**Discipline Committee**" means the discipline committee established pursuant to section 75(1) of the PGA [*Discipline hearings*].

"**Discipline Hearing Panel**" means a panel of at least 3 members of the Discipline Committee, one of whom must be a Lay Committee Member, that is established by the chair of the Discipline Committee pursuant to section 77(1) of the PGA [*Discipline committee to conduct hearings*] for the purpose of conducting a discipline hearing pursuant to section 75 of the PGA [*Discipline hearings*], or for the purpose of taking action pursuant to section 76 of the PGA [*Conduct in another jurisdiction*].

"**Discipline Resolution Panel**" means a panel of at least 3 members of the Discipline Committee, one of whom must be a Lay Committee Member, that is established by the chair of the Discipline Committee for the purpose of attempting to resolve one or more matters set out in a citation by means other than a discipline hearing pursuant to sections 72 to 74 of the PGA.

"**Document**" includes any physical or electronic record, including but not limited to a report, certificate, memo, specification, drawing, map, or plan, that conveys a design, direction, estimate, calculation, opinion, interpretation, observation, model, or simulation that relates to the Regulated Practice.

"EGA" means the Engineers and Geoscientists Act, R.S.B.C. 1996, c. 116.

"EGBC" means the Association of Professional Engineers and Geoscientists of the Province of British Columbia, also operating as Engineers and Geoscientists BC.

"Electronic Means" includes videoconference, telephone conference, and webcasting.

Ethical Learning", means Continuing Education Activities related to advancing an individual Registrant's knowledge of how to act ethically and meet the ethical obligations of Registrants pursuant to the PGA, regulations, Bylaws, and Code of Ethics.

"**Executive Director**" means the individual appointed by the Council as the chief executive officer of EGBC pursuant to section 32(1)(a) of the PGA [*Officers and committees*], who may also be the Registrar.

"Extraordinary Action Panel" means a panel of at least 3 members of the Discipline Committee, one of whom must be a Lay Committee Member, that is established by the chair of the Discipline Committee for the purpose of considering action that may be taken pursuant to section 67 of the PGA [*Extraordinary action*].

"Firm" means the same as defined in section 1(1) of the PGA [Definitions and interpretation].

"**Frivolous**" refers to a complaint that is obviously unsustainable in law or that displays no reasonable cause for complaint in law.

"Government Registrant" means the same as defined in section 1(1) of the PGA [Definitions and interpretation].



"Incompetent" means the same as defined in section 1(1) of the PGA [Definitions and interpretation].

"Individual With Authority" means an individual that is:

- (a) in respect of a Firm that is a corporation, a director or senior officer;
- (b) in respect of a Firm that is a partnership, a partner;
- (c) in respect of a Firm that is a sole proprietorship, an owner; or
- (d) any other individual that is authorized by a Firm to act in a similar capacity as a director, senior officer, or partner and to make legally binding decisions and take binding action on behalf of the Firm.

"In Good Standing" means a Registrant meets all of the following criteria:

- (a) the Registrant's registration is not suspended;
- (b) the Registrant has paid any annual fee owing to EGBC; and
- (c) if the Registrant is a Registrant Firm,
 - (i) the Registrant Firm's registration and Permit to Practice are not suspended, and
 - (ii) there are no conditions on the Registrant Firm's registration and Permit to Practice prohibiting it from engaging in the Regulated Practice.

"**Inspector**" means the Registrar and any person appointed as an inspector pursuant to section 68 of the PGA [*Inspectors*].

"**Investigation Committee**" means the investigation committee established pursuant to section 64 of the PGA [*Investigation committee*].

"Investigation Subcommittee" means any number of members of the Investigation Committee authorized by the Investigation Committee to carry out an investigation or oversee and take responsibility for an investigation carried out by an Investigator, which members may be the same as those serving on a Resolution Subcommittee.

"Investigator" means any of the following individuals:

- (a) a member of an Investigation Subcommittee;
- (b) an officer or an employee of EGBC or a contractor retained by EGBC who is authorized by the Investigation Committee to carry out an investigation pursuant to section 66(1)(a) of the PGA [Investigations];



(c) an Inspector appointed by the Investigation Committee pursuant to section 68(1) of the PGA [*Inspectors*].

"Lay Committee Member" means the same as defined in section 21 of the PGA [Definition].

"Lay Councillor" means the same as defined in section 1(1) of the PGA [Definitions and interpretation].

"Major Non-Conformance" means a situation in which, based on the evidence provided to the assessor,

- (a) there is systemic failure by a Registrant subject to a compliance audit to meet an applicable regulatory requirement(s), or
- (b) there are reasonable and probable grounds to believe that a Registrant subject to a compliance audit may be engaged in the Regulated Practice in a manner that may pose a risk of significant harm to the environment or to the health or safety of the public or a group of people.

"Manually Authenticating" means a Professional Registrant applying all of the following to a Document:

- (a) the Professional Registrant's Manual Seal;
- (b) the Professional Registrant's handwritten signature;
- (c) the date of authentication.

"Manual Seal" means the ink stamp or embossing machine issued to a Professional Registrant by EGBC that can create an impression on a Document.

"Minor Non-Conformance" means a situation in which, based on the evidence provided to the assessor,

- (a) there has been failure by a Registrant subject to a compliance audit to meet an applicable regulatory requirement(s), but such failure is not systemic, and
- (b) there are no reasonable and probable grounds to believe that the Registrant subject to a compliance audit may be engaged in the Regulated Practice in a manner that may pose a risk of significant harm to the environment or to the health or safety of the public or a group of people.

"Nomination Committee" means the nomination committee established pursuant to section 26(1) of the PGA [*Election of registrant councillors*].

"**Non-Contentious Decision**" means a decision which, pursuant to a policy approved by the Council, may be made by an officer in relation to an application for enrolment, admission, or reinstatement pursuant to the Bylaws.



"Panel" means one or more of the following:

- (a) Extraordinary Action Panel;
- (b) Discipline Resolution Panel;
- (c) Discipline Hearing Panel.

"**Permit to Practice**" means a certificate bearing a Permit to Practice Number that is issued to a Registrant Firm by EGBC and confirms that the Registrant Firm is entitled to engage in the Reserved Practice in British Columbia, subject to any suspensions, limitations, conditions, or restrictions on the Registrant Firm's registration.

"**Permit to Practice Number**" means the unique number that is issued to a Registrant Firm by EGBC and appears on the Permit to Practice.

"PGA" means the Professional Governance Act, S.B.C. 2018, c. 47.

"**Practice Advice Program**" means a program offered by EGBC to assist Registrants in dealing with professional or ethical issues, as required by section 57(1)(d) of the PGA [*Standards of conduct and competence*].

"**Practice Advisor**" means an individual Registrant employed or retained by EGBC who receives and responds to professional or ethical inquiries of Registrants through the Practice Advice Program.

"**Private Sector Firm**" means a Registrant Firm that is designated as a Private Sector Firm pursuant to section 5.12.2(2) of the Bylaws.

"Proceeding" means a motion, application, pre-hearing conference or hearing.

"Practice of Professional Engineering" means the same as defined in Schedule 1, section 5 of the PGA [*Definitions in respect of the Association of Professional Engineers and Geoscientists of the Province of British Columbia*] and prescribed by the *Engineers and Geoscientists Regulation*, B.C. Reg. 14/2021.

"Practice of Professional Geoscience" means the same as defined in Schedule 1, section 5 of the PGA [*Definitions in respect of the Association of Professional Engineers and Geoscientists of the Province of British Columbia*] and prescribed by the *Engineers and Geoscientists Regulation*, B.C. Reg. 14/2021.

"**Professional Misconduct**" means the same as defined in section 1(1) of the PGA [*Definitions and interpretation*].

"**Professional of Record**" means the Professional Registrant who is professionally responsible for activities, work, or Documents related to the Regulated Practice.



"**Professional Practice Management Plan**" means a document that is developed and maintained by a Registrant Firm and must meet the requirements set out in section 7.7.3 of the Bylaws.

"**Professional Registrant**" means a Registrant who is registered in one of the following categories of Registrants:

- (a) professional engineer;
- (b) professional geoscientist;
- (c) professional licensee engineering;
- (d) professional licensee geoscience;
- (e) life member prior to 1998;
- (f) honorary life member.

"**Public Sector Firm**" means a Registrant Firm that is designated as a Public Sector Firm pursuant to section 5.12.1(2) of the Bylaws.

"Recent Historical Member" means the same as defined in section 1.4 of the *Professional Governance General Regulation*, B.C. Reg. 107/2019 [*Definitions*].

"**Register**" means the register on a publicly available website maintained by or on behalf of EGBC pursuant to section 31(3) of the PGA [*Registrar and register for regulatory body*].

"**Registrant**" means the same as defined in Schedule 1, section 5 of the PGA [*Definitions in respect of the Association of Professional Engineers and Geoscientists of the Province of British Columbia*].

"Registrant Firm" means a Firm that is registered with EGBC as a Registrant.

"**Registrar**" means the individual appointed by the Council as registrar pursuant to section 31(1) of the PGA [*Registrar and register for regulatory body*], who may also be the Executive Director.

"**Regulated Practice**" means the same as defined in Schedule 1 section 5 of the PGA [Definitions in respect of the Association of Professional Engineers and Geoscientists of the Province of British Columbia] and prescribed by the Engineers and Geoscientists Regulation, B.C. Reg. 14/2021.

"Regulation of Firms Training Program" means the training program designated by EGBC for providing training and information to Responsible Registrants of Registrant Firms.

"**Regulatory Authority**" means a licensing or certification body for regulating engineering or geoscience in Canada, or an institution in another country that is, in the opinion of the Council, equivalent to EGBC.



"**Regulatory Learning**", means Continuing Education Activities related to advancing an individual Registrant's knowledge of the relevant regulatory requirements, including the PGA, regulations, Bylaws, Code of Ethics, codes, standards, policies, and requirements in relevant legislation.

"**Reporting Year**" means the period beginning on July 1 of a calendar year and ending on June 30 of the following calendar year.

"**Reserved Practice**" means the same as prescribed by the *Engineers and Geoscientists Regulation,* B.C. Reg. 14/2021.

"**Resolution Subcommittee**" means any number of members of the Investigation Committee authorized by the Investigation Committee to attempt to resolve or oversee an attempt to resolve one or more matters subject to investigation pursuant to sections 72 to 74 of the PGA, which members may be the same as those serving on an Investigation Subcommittee.

"**Respondent**" means the same as defined in section 1(1) of the PGA [*Definitions and interpretation*].

"**Responsible Officer**" means an individual who has been designated by a Registrant Firm pursuant to section 5.12(13) of the Bylaws, must meet the requirements set out in sections 5.12(14), (15), (16) and (17) of the Bylaws, and has the responsibilities set out in section 5.12(18) of the Bylaws.

"**Responsible Registrant**" means a Professional Registrant who has been designated by a Registrant Firm pursuant to section 5.12(5) of the Bylaws, must meet the criteria set out in sections 5.12(7) and (8) of the Bylaws, and has the responsibilities set out in section 5.12(9) of the Bylaws.

"**Robert's Rules of Order**" means the procedural rules set out in the guide published by the Robert's Rules Association under the title "Robert's Rules of Order Newly Revised".

"Sole Practitioner" means a Professional Registrant who practises on their own, either in an incorporated or unincorporated manner.

"Structural Design" means a design of a Structure.

"**Structure**" means a series of connected, interrelated elements that form a system that provides adequate rigidity and can resist a series of external load effects applied to it, including its own weight. Examples include temporary or permanent structures such as buildings, retaining walls, large signage, support towers, bridges, dams, and tunnels.

"Subordinate" means any individual who engages in the Regulated Practice under the Direct Supervision of a Professional Registrant.

"Technical Learning" means Continuing Education Activities related to advancing an individual Registrant's technical and professional knowledge and skills within an individual Registrant's area(s) of practice, including any anticipated future area(s) of practice.



"Three-Year Rolling Period" means a period of 3 consecutive Reporting Years, with a new period starting on the first day of each Reporting Year. For greater clarity, Reporting Years 1, 2 and 3 is one period, Reporting Years 2, 3 and 4 is one period, and Reporting Years 3, 4 and 5 is one period, with the pattern continuing.

"**Trainee**" means the same as defined in section 1(1) of the PGA [*Definitions and interpretation*].

"Trivial" refers to a complaint that has no merit and does not warrant further investigation.

"Vexatious" refers to a complaint that has the intent of annoying, harassing, embarrassing, or abusing another party, or abusing the complaint process.

1.2 Written Notice to Registrants

- (1) In all instances where written notice is required to be provided to an individual Registrant pursuant to the PGA or the Bylaws, written notice to the individual Registrant may be provided by way of the individual Registrant's personal and unique email address.
- (2) In all instances where written notice is required to be provided to a Registrant Firm pursuant to the PGA or the Bylaws, written notice to the Registrant Firm may be provided by way of the personal and unique email address of the Responsible Officer or any of the Responsible Registrants of the Registrant Firm.



2 Governance

2.1 Committees Established

- (1) The Nomination Committee is established pursuant to section 26(1) of the PGA [*Election of registrant councillors*].
- (2) The Credentials Committee is established pursuant to section 44(1) of the PGA [*Credentials committee*].
- (3) The Audit and Practice Review Committee is established pursuant to section 63(1) of the PGA [*Audits and practice reviews*].
- (4) The Investigation Committee is established pursuant to section 64 of the PGA [*Investigation committee*].
- (5) The Discipline Committee is established pursuant to section 75(1) of the PGA [*Discipline hearings*].

2.2 Chairs, Vice-Chairs, and Members of Committees

- (1) Except as otherwise prescribed by the Lieutenant Governor in Council or provided in the Bylaws, the Council must appoint a chair of a Committee in accordance with the process and merit-based selection principles prescribed by the Lieutenant Governor in Council pursuant to section 25(1) of the PGA [Selection principles and criteria].
- (2) Except as otherwise prescribed by the Lieutenant Governor in Council or provided in the Bylaws, the Council may appoint a vice-chair of a Committee in accordance with the process and merit-based selection principles prescribed by the Lieutenant Governor in Council pursuant to section 25(1) of the PGA [*Selection principles and criteria*].
- (3) Any vice-chair appointed pursuant to subsection (2) may assume the role of chair in the following situations:
 - (a) whenever the chair is unavailable to act, but not for a term that is longer than the remainder of the term of the chair;
 - (b) whenever there is no chair appointed, until a chair is appointed by the Council or the term of the vice-chair expires.
- (4) At a meeting of a Committee, if neither the chair nor any vice-chair of the Committee attends the meeting in person or by Electronic Means at its appointed time, the Committee members may choose one of their number to chair the meeting.
- (5) A Registrant without the ability to engage in Reserved Practice pursuant to the PGA and Bylaws is not eligible for appointment to any Committee.



- (6) A member, a vice-chair, or a chair of a committee who ceases to be a Registrant In Good Standing is no longer eligible to serve on the Committee and must be removed from the Committee by Council.
- (7) A Committee member serves on a Committee at the pleasure of the Council and may be removed by the Council from a Committee without prior notice to the Committee member.

2.3 Conduct of Committee Meetings

- (1) A Committee may meet or adjourn as it sees fit, including meeting by any combination of Committee members attending in person or by Electronic Means.
- (2) Questions arising at a meeting of a Committee must be decided by a majority of the Committee members attending in person or by Electronic Means, who may each cast one vote on a matter put to a vote.
- (3) Despite subsection (2), the chair of a meeting of a Committee may only vote on a matter put to a vote in the case of an equality of votes, in which case the chair will have a casting vote.
- (4) A resolution that is assented to and adopted by Committee members in writing, although not passed during a meeting of the Committee, is of the same force and effect as if it had been duly passed at a meeting of the Committee.

2.4 Conduct of Council Meetings

- (1) The Council may meet or adjourn as it sees fit, including meeting by any combination of councillors attending in person or by Electronic Means.
- (2) The Council may adopt or establish policies, procedures, or rules of order, consistent with the PGA, applicable regulations, and the Bylaws, for the purpose of regulating the conduct of a meeting of the Council.
- (3) The rules contained in Robert's Rules of Order must govern the conduct of Council meetings, as applicable, except where Robert's Rules of Order are inconsistent with the Bylaws or any policies, procedures, or rules of order adopted or established by Council pursuant to subsection (2).
- (4) A meeting of the Council is open to the public.
- (5) Despite subsection (4), the Council is authorized to hold any meeting or a portion of any meeting in the absence of the public or any other person who is not a councillor pursuant to section 35(2) of the PGA [*Bylaws of council*].
- (6) The Executive Director must
 - (a) call a meeting of the Council at the request of the president of the Council or any 3 councillors, and



- (b) provide reasonable written notice to the Council of the date, hour, place, and purpose of a meeting of the Council.
- (7) At a meeting of the Council, if neither the president of the Council nor the vice president of the Council attend the meeting in person or by Electronic Means at its appointed time, the Council may choose one of their number to chair the meeting, and the chair so chosen may exercise all of the functions and authority of the president of the Council for the conduct of the meeting.
- (8) Questions arising at a meeting of the Council must be decided by a majority of the voting councillors attending in person or by Electronic Means, who may each cast one vote on a matter put to a vote.
- (9) Despite subsection (8), the chair of a meeting of the Council may only vote on a matter put to a vote in the case of an equality of votes, in which case the chair will have a casting vote.
- (10) A resolution that is assented to and adopted by the councillors in writing, although not passed at a meeting of the Council, is of the same force and effect as if it had been duly passed at a meeting of the Council.
- (11) The Executive Director must ensure that minutes are taken at each meeting of the Council.

2.5 Deputy Registrar(s)

(1) Pursuant to section 31(2) of the PGA [*Registrar and register for regulatory body*] the Council authorizes any Deputy Registrar(s) appointed by the Council to exercise any of the powers and perform any of the duties of the Registrar set out in the Bylaws.

2.6 Accounting Records of EGBC

- (1) Accounting Records must be maintained by EGBC and must be available for inspection by the Council.
- (2) No Registrant, other than a Registrant who is on the Council, has any right to inspect any Accounting Records of EGBC, except as authorized by the Council or as required by law.
- (3) The Council may determine whether, to what extent, at what time(s) and place(s), and under what conditions or regulations Accounting Records may be open to the inspection of Registrants that are not on the Council.

2.7 Financial Statements and Audit

(1) Financial statements must be drawn up annually, and such financial statements, together with the books of EGBC, must be audited annually by a chartered professional accountant appointed by the Council as an auditor.



- (2) A report duly signed by the auditor appointed pursuant to subsection (1) must be presented to Registrants, and the Council must cause such report, together with the financial statements of EGBC, to be made available to all Registrants at least 15 days prior to the annual general meeting.
- (3) The auditor's report and the financial statements of EGBC required pursuant to subsection (2) must be accompanied by a report of the Executive Director as to the state of the affairs of EGBC, which must be published on a public website maintained by EGBC at least 15 days prior to the annual general meeting.

2.8 Seal of EGBC

- (1) EGBC must have a seal.
- (2) EGBC's seal must be affixed by the Executive Director or those persons designated by the Executive Director, to those instruments determined by the Executive Director.

2.9 Branches

(1) Pursuant to section 35(1)(g) of the PGA [*Bylaws of council*], the Council may continue or establish Branches.



3 General Meetings

3.1 Conduct of General Meetings

- (1) A general meeting must be held in the manner provided in section 33 of the PGA [General meetings of regulatory bodies].
- (2) At the discretion of the Council, a general meeting may be held with Registrants attending
 - (a) in person,
 - (b) by Electronic Means, or
 - (c) in any combination of Registrants attending in person or by Electronic Means.
- (3) The Council may adopt or establish policies, procedures, or rules of order, consistent with the PGA, applicable regulations, and the Bylaws, for the purpose of regulating the conduct of a general meeting.
- (4) The rules contained in Robert's Rules of Order must govern the conduct of general meetings, as applicable, except where Robert's Rules of Order are inconsistent with the Bylaws or any policies, procedures, or rules of order adopted or established by Council pursuant to subsection (3).
- (5) Any policies, procedures, or rules of order adopted or established by the Council prior to the general meeting pursuant to subsection (3) must be published on a public website maintained by EGBC prior to the general meeting to which the policies, procedures, or rules of order are to apply.
- (6) The Executive Director must ensure that minutes are taken at each general meeting.

3.2 Request for General Meetings

(1) A written request that the Council call a general meeting pursuant to section 33(4) of the PGA [*General meetings of regulatory bodies*] must be accompanied by a notice setting out specifically the business to be transacted at the general meeting.

3.3 Notice of General Meetings

- (1) Notice of the time and place of a general meeting must be
 - (a) published on a public website maintained by EGBC, and
 - (b) provided in writing to Registrants In Good Standing,

at least 21 days prior to the general meeting.



- (2) If the Council has determined pursuant to section 3.1(2) of the Bylaws that a general meeting will be held by Electronic Means, or by any combination of Registrants attending in person or by Electronic Means, this determination must be included in the notice of the general meeting that is published pursuant to subsection (1).
- (3) Accidental omissions in the delivery of notice or non-receipt of a notice required pursuant to subsection (1) by any Registrant entitled to receive notice does not invalidate the proceedings at a general meeting.

3.4 Chair of General Meetings

- (1) The president of the Council must act as chair of a general meeting.
- (2) Despite subsection (1), the vice president of the Council must act as chair of a general meeting if the president of the Council
 - (a) does not attend in person or by Electronic Means at the time appointed for holding the general meeting, or
 - (b) is not willing to act as chair of the general meeting.
- (3) Despite subsections (1) and (2), the Council may choose one of their number to chair the general meeting if both the president of the Council and the vice president of the Council
 - (a) do not attend the general meeting in person or by Electronic Means at its appointed time, or
 - (b) are not willing to act as chair of the general meeting.

3.5 Quorum for General Meetings

- (1) The quorum requirement for a general meeting is 50 individual Registrants In Good Standing, whether attending the general meeting
 - (a) in person, or
 - (b) by Electronic Means, if the Council has determined that Registrants may attend the general meeting by Electronic Means pursuant to section 3.1(2) of the Bylaws.

3.6 Eligibility and Entitlement to Vote

- (1) A Registrant is eligible to vote in a resolution, a referendum, and an election of the Council if the Registrant, at the time the Registrant casts the Registrant's vote
 - (a) is In Good Standing, and
 - (b) belongs to one of the following categories of Registrants:



- (i) Trainee;
- (ii) professional engineer;
- (iii) professional geoscientist;
- (iv) professional licensee engineering;
- (v) professional licensee geoscience;
- (vi) life member prior to 1998;
- (vii) honorary life member;
- (viii) non-practising;
- (ix) life members or life limited licensees.

3.7 Resolutions Proposed by Registrants

- (1) A Registrant who has voting rights pursuant to section 3.6 of the Bylaws may deliver a written notice to the Executive Director not fewer than 30 days before the date set for a general meeting requesting the consideration of a resolution at the general meeting.
- (2) A written notice delivered by a Registrant pursuant to subsection (1) must
 - (a) identify the Registrant as the mover of the resolution,
 - (b) identify another Registrant who has voting rights pursuant to section 3.6 of the Bylaws as a seconder of the resolution, and
 - (c) contain the text of the resolution, which must not include a preamble.
- (3) A resolution delivered by a Registrant pursuant to subsections (1) and (2) must be reviewed by the Executive Director to ensure the resolution is eligible for consideration at a general meeting, in accordance with any policies, procedures, or rules of order adopted or applicable pursuant to sections 3.1(3) and (4) of the Bylaws.
- (4) If a resolution is eligible for consideration at the general meeting pursuant to subsection
 (3) the Executive Director must do all of the following at least 14 days before the date of the general meeting:
 - (a) deliver written notice of the resolution to Registrants who have voting rights pursuant to section 3.6 of the Bylaws;
 - (b) publish notice of the resolution, including the text of the resolution, on a public website maintained by EGBC.



(5) The accidental omission to deliver written notice of a resolution to, or the non-receipt of written notice by, any Registrant entitled to receive notice does not invalidate the resolution.

3.8 Voting on Resolutions

- (1) A vote of a general meeting may be taken in the manner determined by the Council, subject to the PGA, applicable regulations, and the Bylaws.
- (2) When a resolution is decided by a vote of a general meeting,
 - (a) the chair of the general meeting must declare that the resolution has been carried or lost, and
 - (b) minutes made that the resolution has been carried or lost are conclusive evidence of that fact, without proof of the number or proportion of the votes recorded in favour or against the resolution.
- (3) A Registrant must have one vote in a resolution put to a vote of the general meeting if the Registrant has voting rights pursuant to section 3.6 of the Bylaws and is attending the general meeting
 - (a) in person, or
 - (b) by Electronic Means, if the Council has determined that Registrants may attend the general meeting by Electronic Means pursuant to section 3.1(2) of the Bylaws.
- (4) Despite subsection (3), the chair of a general meeting may only vote on a resolution put to a vote in the case of an equality of votes, in which case the chair will have a casting vote.
- (5) Except as provided in section 34 of the PGA [*Implementing resolutions of general meetings*], a resolution approved at a general meeting does not bind the Council, any Committee, or any officer, employee, or agent of EGBC in the exercise of its or their powers or in performance of its or their duties under the PGA or any other enactment.

3.9 Adjourning General Meetings

- (1) The chair of a general meeting may adjourn the general meeting from time to time and from place to place.
- (2) The only business that may be transacted at an adjourned general meeting is that business left unfinished at the meeting from which the adjournment took place.
- (3) When a general meeting is adjourned for less than 30 days, it is not necessary for EGBC to give notice of the adjourned general meeting, or of the business to be transacted at the adjourned general meeting.



(4) When a general meeting is adjourned for 30 days or more, notice of the adjourned general meeting must be given by EGBC in the same manner as notice of the original meeting.



4 Nominations and Election of Council

4.1 Nomination Committee Composition

- (1) The Nomination Committee must be composed of between 5 and 7 members appointed by the Council.
- (2) The members of the Nomination Committee appointed by the Council pursuant to subsection (1) must include
 - (a) the immediate past president of EGBC, who will serve as chair of the Nomination Committee,
 - (b) at least one Lay Committee Member, and
 - (c) the Branch Representatives Chair.
- (3) If the immediate past president of EGBC cannot be appointed as or serve as chair of the Nomination Committee, the Council must appoint a Lay Councillor as the chair of the Nomination Committee.
- (4) If the Branch Representatives Chair cannot be appointed to or serve on the Nomination Committee, the Council must appoint a delegate.
- (5) No member of the Council may be appointed to or serve on the Nomination Committee, except
 - (a) the immediate past president of EGBC, or
 - (b) a Lay Councillor, if the immediate past president of EGBC is unable to serve as chair of the Nomination Committee.

4.2 **Powers of the Nomination Committee**

(1) The Nomination Committee has the functions and duties assigned to it in the PGA.

4.3 Criteria for Nomination of Candidates

- (1) Pursuant to section 25(2)(a) of the PGA [Selection principles and criteria], a candidate nominated by the Nomination Committee for a position as Registrant councillor, including the position of president of the Council, must be a Registrant In Good Standing.
- (2) Pursuant to section 25(2)(a) of the PGA [*Selection principles and criteria*], a candidate nominated by the Nomination Committee for the position of president of the Council must meet at least one of the following experience requirements prior to the date of taking office, if such a candidate is available for nomination:
 - (a) one year of experience as a councillor for EGBC;



- (b) equivalent experience as determined by the Nomination Committee.
- (3) A Registrant who is not In Good Standing must not be nominated by the Nomination Committee for a position as Registrant councillor, including the position of president of the Council.

4.4 List of Candidates

- (1) The list of candidates nominated by the Nomination Committee must be
 - (a) signed by the chair of the Nomination Committee,
 - (b) accompanied by the written consent of all candidates,
 - (c) provided to the Executive Director, and
 - (d) published on a public website maintained by EGBC

at least 90 days prior to the annual general meeting.

4.5 Election Procedures

- (1) The election of Registrant councillors, including the president of the Council, must be by paper ballot or electronic ballot, as determined by the Council.
- (2) The Executive Director must prepare a ballot containing the names of all candidates nominated by the Nomination Committee.
- (3) Voting must be closed at noon on the 15th day prior to the annual general meeting, and ballots received after that time must not be counted.
- (4) Voting for more than one president of the Council or more than the number of Registrant councillors to be elected will render the applicable part of the ballot invalid.
- (5) Voting for less than one president of the Council or less than the number of Registrant councillors to be elected will not invalidate the ballot.
- (6) Ballots cast in an election must be tabulated at least 10 days prior to the annual general meeting.
- (7) The candidate for the position of president of the Council who receives the most votes in the election is elected to that position.
- (8) The candidates for positions as Registrant councillors who receive the most votes in the election are elected to those positions.



- (9) If there are any vacancies in the Council to be filled because of an election, the candidate or candidates receiving the next highest number of votes must be elected for the unexpired term or terms to be filled.
- (10) If there is a tie vote between 2 or more candidates, the Executive Director must hold a random draw to determine the successful candidate.
- (11) The Executive Director must inform each candidate in the election of the results of the election as soon as practicable, and the results of the election must be announced at the annual general meeting.
- (12) The successful candidates for positions as Registrant councillors, including the position of president of the Council, must take office at the close of the annual general meeting.
- (13) The Executive Director must not authorize the destruction of any paper ballots or the deletion of any electronic ballots cast in an election until 3 months after the date on which the annual general meeting was held.

4.6 Term Lengths

- (1) At each election of Registrant councillors held pursuant to the Bylaws,
 - (a) the president of the Council must be elected for a one-year term, pursuant to section 24(3)(a) of the PGA [*Term limits*] and
 - (b) one-third of the other Registrant councillors must be elected for a 3-year term, pursuant to section 24(1) of the PGA [*Term limits*].
- (2) After each election held pursuant to the Bylaws, the vice president of the Council must be selected by the Council from among the Registrant councillors for a one-year term pursuant to section 24(3)(b) of the PGA [*Term limits*].



5 Credentials and Registrants

5.1 Powers of the Credentials Committee

- (1) The Credentials Committee has the functions and duties assigned to it in the PGA and delegated to it by Council in subsections (2) and (3).
- (2) The Council authorizes the Credentials Committee to exercise the Council's powers pursuant to the following sections of the PGA, other than the Council's bylaw-making authority:
 - (a) section 32(1)(b) [Officers and committees], in order to appoint officers for the purpose of carrying out the powers delegated pursuant to subsection (3)(b);
 - (b) section 66(2)(a)(ii) [*Investigations*] with respect to applications for registration as an individual Registrant.
- (3) The Council authorizes the Credentials Committee to act pursuant to the following sections of the PGA:
 - (a) section 45 [*Application for enrolment, admission or reinstatement as registrant*] with respect to applications for registration as an individual Registrant;
 - (b) section 32(5)(b) [Officers and committees], to delegate the powers pursuant to section 45(1) of the PGA [Application for enrolment, admission or reinstatement as registrant] to one or more officers for the sole purpose of the officer(s) making a Non-Contentious Decision with respect to applications for registration as an individual Registrant.

5.2 Powers of the Audit and Practice Review Committee

- (1) The Audit and Practice Review Committee has the functions and duties assigned to it in the PGA and delegated to it by the Council in this section of the Bylaws with respect to applications for registration as a Registrant Firm.
- (2) The Council authorizes the Audit and Practice Review Committee to exercise the Council's powers pursuant to the following sections of the PGA, other than the Council's bylaw-making authority:
 - (a) section 32(1)(b) [Officers and committees], in order to appoint officers for the purpose of carrying out the powers delegated to the Audit and Practice Review Committee pursuant to subsection (3)(b);
 - (b) section 66(2)(a)(ii) [*Investigations*] with respect to applications for registration as a Registrant Firm.
- (3) The Council authorizes the Audit and Practice Review Committee to act pursuant to the following sections of the PGA:



- (a) section 45 [*Application for enrolment, admission or reinstatement as registrant*], with respect to applications for registration as a Registrant Firm;
- (b) section 32(5)(b) [Officers and committees], to delegate to one or more officers the powers granted to the Audit and Practice Review Committee by the Council pursuant to this section of the Bylaws, with respect to applications for registration as a Registrant Firm.

5.3 Powers of the Registrar

(1) The Council authorizes the Registrar to exercise the Council's powers pursuant to sections 48(1), 48(2), 48(3), and 48(4) of the PGA [*Review on the record*] for the purpose of conducting reviews on the record pursuant to section 5.22 of the Bylaws.

5.4 Categories of Registrants

(1) The following categories and subcategories of Registrants are set out in sections 5.5 to 5.16 of the Bylaws:

Category of Registrant	Subcategory of Registrant	Bylaw Section
Trainee	Engineer-in-Training Geoscientist-in-Training	5.5 5.5.1 5.5.2
Professional Engineer	Designated Structural Engineer	5.6 5.6.1
Professional Geoscientist		5.7
Professional Licensee Engineering		5.8
Professional Licensee Geoscience		5.9
Life Member Prior to 1998		5.10
Honorary Life Member		5.11
Registrant Firm	Public Sector Firm Private Sector Firm	5.12 5.12.1 5.12.2
Non-Practising Individual Registrant		5.13
Non-Practising Registrant Firm		5.14
Life Member or Life Limited Licensee		5.15
Honorary Member		5.16



5.5 Trainees

- (1) The category of Registrant called "Trainee" is established pursuant to section 42(2) of the PGA [*Categories of registrants and bylaws for categories of registrants*].
- (2) A Trainee must not serve as a Registrant councillor, or as a member of any Committee.

5.5.1 Engineer-in-Training

- (1) The subcategory of Registrant called "engineer-in-training" is established under the category of Trainee pursuant to section 42(2) of the PGA [*Categories of registrants and bylaws for categories of registrants*].
- (2) Only a Registrant who is designated an engineer-in-training may hold themselves out to be an engineer-in-training and use the post-nominal "EIT".
- (3) An engineer-in-training may only use a title containing the word "engineer" or any form or abbreviation of the word "engineer", if the designation "engineer-in-training" or "EIT" is used next to the title and given the same degree of prominence.
- (4) An engineer-in-training must not represent themselves as a Professional Registrant.
- (5) An engineer-in-training must not engage in any area of the Reserved Practice except under the Direct Supervision of an individual who is legally entitled to independently practise in that area of the Reserved Practice, and that area of the Reserved Practice is of the type that may be provided under supervision pursuant to section 54(2) of the PGA [*Prohibitions regarding reserved practice*].
- (6) Pursuant to section 46(1) of the PGA [*Enrolment of trainees*], an Applicant for enrolment as an engineer-in-training must provide the following to the Credentials Committee:
 - (a) a completed application for enrolment as an engineer-in-training;
 - (b) any applicable application, examination, interview, or other applicable fees specified in section 6.1(1) and Schedule C of the Bylaws;
 - (c) evidence satisfactory to the Credentials Committee of the following:
 - (i) the Applicant's identity and legal name;
 - (ii) that the Applicant is of good character and good repute;
 - (iii) that the Applicant has
 - (A) graduated in applied science, engineering, or geoscience from an institute of learning approved by the Credentials Committee in a program approved by the Credentials Committee, or



- (B) the equivalent of
 - a university-level bachelor's degree in applied science or engineering, from an institution of learning not approved by the Credentials Committee, or in a program not approved by the Credentials Committee, but has passed
 - (1) examinations, assigned by the Credentials Committee from the syllabus published by the Credentials Committee, in the discipline of engineering of the Applicant's degree, that demonstrate that the Applicant's knowledge is equivalent to the knowledge of those who have graduated from an institute of learning approved by the Credentials Committee in a program in applied science or engineering approved by the Credentials Committee, or
 - (2) examinations, requiring special knowledge in branches of learning specified by the Credentials Committee, of an association or institute approved by the Credentials Committee, or
 - (II) 4 years of full-time post-secondary education in applied science, engineering, geoscience, science, or technology, and has demonstrated equivalency to graduation from an institute of learning approved by the Credentials Committee in a program in applied science, engineering, or geoscience approved by the Credentials Committee, by passing the Credentials Committee assigned
 - (1) examinations or coursework, applicable to the discipline or area of practice in which the Applicant wishes to be examined, to address deficiencies in syllabus or knowledge requirements coverage as determined by the Credentials Committee, or
 - (2) examinations, requiring special knowledge in branches of learning specified by the Credentials Committee, of an association or institute approved by the Credentials Committee.

5.5.2 Geoscientist-in-Training

(1) The subcategory of Registrant called "geoscientist-in-training" is established under the category of Trainee pursuant to section 42(2) of the PGA [*Categories of registrants and bylaws for categories of registrants*].



- (2) Only a Registrant who is designated a geoscientist-in-training may hold themselves out to be a geoscientist-in-training and use the post-nominal "GIT".
- (3) A geoscientist-in-training may only use a title containing the word "geologist", "geophysicist", "geochemist", or "geoscientist", or any form or abbreviation thereof if the designation "geoscientist-in-training" or "GIT" is used next to the title and given the same degree of prominence.
- (4) A geoscientist-in-training must not represent themselves as a Professional Registrant.
- (5) A geoscientist-in-training must not engage in any area of the Reserved Practice except under the Direct Supervision of an individual who is legally entitled to independently practise in that area of the Reserved Practice, and that area of the Reserved Practice is of the type that may be provided under supervision pursuant to section 54(2) of the PGA [*Prohibitions regarding reserved practice*].
- (6) Pursuant to section 46(1) of the PGA [*Enrolment of trainees*], an Applicant for enrolment as a geoscientist-in training must provide the following to the Credentials Committee:
 - (a) a completed application for enrolment as a geoscientist-in-training;
 - (b) any applicable application, examination, interview or other applicable fees specified in section 6.1(1) and Schedule C of the Bylaws;
 - (c) evidence satisfactory to the Credentials Committee of the following:
 - (i) the Applicant's identity and legal name;
 - (ii) that the Applicant is of good character and good repute;
 - (iii) that the Applicant has
 - (A) graduated in applied science, geoscience, or science from an institute of learning approved by the Credentials Committee in a program approved by the Credentials Committee, or
 - (B) the equivalent of 4 years of full-time post-secondary education in applied science, engineering, geoscience, science, or technology, and has demonstrated equivalency to graduation from an institute of learning approved by the Credentials Committee in a program in applied science, geoscience, or science approved by the Credentials Committee, by passing the Credentials Committee assigned
 - examinations or coursework, applicable to the discipline or area of practice in which the Applicant wishes to be examined, to address deficiencies in syllabus or knowledge requirements coverage as determined by the Credentials Committee, or



 examinations, requiring special knowledge in branches of learning specified by the Credentials Committee, of an association or institute approved by the Credentials Committee.

5.6 Professional Engineer

- (1) The category of Registrant called "professional engineer" is established pursuant to section 42(2) of the PGA [*Categories of registrants and bylaws for categories of registrants*].
- (2) Only a Registrant who is designated a professional engineer may hold themselves out to be a professional engineer and use the post-nominal "P.Eng.".
- (3) A professional engineer may engage in the Reserved Practice.
- (4) Pursuant to section 47(1) of the PGA [*Admission and reinstatement of registrants*], an Applicant for registration as a professional engineer must provide the following to the Credentials Committee:
 - (a) a completed application for registration as a professional engineer;
 - (b) any applicable application, examination, interview, course, or other applicable fees specified in section 6.1(1) and Schedule C of the Bylaws;
 - (c) evidence satisfactory to the Credentials Committee of the following:
 - (i) the Applicant's identity and legal name;
 - (ii) that the Applicant is of good character and good repute;
 - (iii) that the Applicant has obtained the necessary level of competency in English to engage in the Regulated Practice in British Columbia;
 - (iv) that the Applicant has completed the academic requirements pursuant to section 5.5.1(6)(c)(iii) of the Bylaws;
 - (v) that the Applicant has engineering experience that
 - (A) is sufficiently current to demonstrate competency with current practices,
 - (B) is supported by the Applicant's academic subjects of study, continuing education, or examinations assigned by the Credentials Committee,
 - (C) is broad-based and at the level of complexity and responsibility that demonstrates that the Applicant
 - (I) has applied engineering principles at an appropriate level,



- (II) is ready to accept the full professional responsibility to engage in the Regulated Practice, and
- (III) has reached the level of professional maturity needed to judge when the Applicant is out of the Applicant's area of professional competence,
- (D) is validated by
 - a minimum of 4 Professional Registrants, or equivalent licensed engineering or geoscience practitioners from a Regulatory Authority, who
 - (1) practise in the same discipline of engineering as the Applicant or a related discipline, and
 - (2) have detailed knowledge of the work of the Applicant, or
 - (II) validators satisfactory to the Credentials Committee, where the Credentials Committee is satisfied that the Applicant cannot comply with the requirement in paragraph (c)(v)(D)(I),
- (E) is in conformance with general and discipline-specific experience guidelines published by the Credentials Committee,
- (F) demonstrates that the Applicant has achieved the key competencies established by the Council at the required level of competence established by the Council in a minimum of 4 years, and
- (G) demonstrates that the Applicant is competent to practise in British Columbia through achievement of Canadian environment competencies established by the Council at the required level of competence established by the Council, or by any alternative means established by the Council;
- (vi) that the Applicant has the requisite knowledge of the PGA, the Bylaws, the Code of Ethics, and professional practice issues, demonstrated by successful completion of
 - (A) a course in law and ethics approved by the Council, and
 - (B) an examination in professional practice approved by the Council.
- (5) Despite subsection (4)(c), the Credentials Committee may accept the following qualifications without further examination:
 - (a) the qualifications required by subsections (4)(c)(iii) to (4)(c)(vi) if the Applicant



- (i) holds registration or licensure as the equivalent of a professional engineer in good standing with a Regulatory Authority for engineering in another jurisdiction in Canada, and
- (ii) is not subject to any practice limitations, restrictions, or conditions in the jurisdiction of the Regulatory Authority that are relevant to practice in British Columbia;
- (b) the qualifications required by subsections (4)(c)(iv) and (4)(c)(v) if the Applicant
 - (i) holds registration or licensure as the equivalent of a professional engineer in good standing with a Regulatory Authority in another country that is, in the opinion of the Council, equivalent to EGBC, and
 - (ii) is not subject to any practice limitations, restrictions, or conditions in the jurisdiction of the Regulatory Authority that are relevant to practice in British Columbia.

5.6.1 Designated Structural Engineer

- (1) The subcategory of Registrant called "designated structural engineer" is established as a subcategory of professional engineer pursuant to section 42(2) of the PGA [*Categories of registrants and bylaws for categories of registrants*].
- (2) Only a professional engineer who is a Professional Registrant and who is designated a designated structural engineer may hold themselves out to be a designated structural engineer and use the post-nominal "Struct.Eng.".
- (3) Pursuant to section 42(2)(d) of the PGA [*Categories of registrants and bylaws for categories of registrants*], the Credentials Committee may designate a professional engineer as a designated structural engineer when the Credentials Committee is satisfied that the professional engineer demonstrates the requisite qualifications to be designated as a designated structural engineer.
- (4) Pursuant to section 42(2)(d) of the PGA [*Categories of registrants and bylaws for categories of registrants*], to be designated as a designated structural engineer, a professional engineer must provide the following:
 - (a) a completed application for designation as a designated structural engineer;
 - (b) any applicable application, examination, or other applicable fees specified in section 6.1(2) and Schedule C of the Bylaws;
 - (c) evidence satisfactory to the Credentials Committee that the professional engineer
 - (i) is of good character and good repute,



- (ii) has at least 6 years of significant post-graduation structural engineering experience as specified by the Council, including 2 years in responsible charge of significant engineering work as specified by the Council, that includes seismic design of buildings or other Structures in significant seismic regions as specified by the Council,
- (iii) has completed examination(s) in structural engineering knowledge, solutions, codes and practice, as specified by the Council, and
- (iv) has demonstrated active practice and completion of continuing education, as specified by the Council.
- (5) To maintain accreditation as a designated structural engineer, a designated structural engineer must
 - (a) actively practise structural engineering for at least 750 hours each year and provide confirmation of such to EGBC by 11:59 PM (Pacific Time) on the last day of each Reporting Year,
 - (b) comply with all applicable continuing education requirements set out in section 7.6 of the Bylaws, and
 - (c) comply with any additional requirements to maintain accreditation as a designated structural engineer, as determined by the Council.

5.7 Professional Geoscientist

- (1) The category of Registrant called "professional geoscientist" is established pursuant to section 42(2) of the PGA [*Categories of registrants and bylaws for categories of registrants*].
- (2) Only a Registrant who is designated a professional geoscientist may hold themselves out as a professional geoscientist and use the post-nominal "P.Geo.".
- (3) A professional geoscientist may engage in the Reserved Practice.
- (4) Pursuant to section 47(1) of the PGA [*Admission and reinstatement of registrants*], an Applicant for registration as a professional geoscientist must provide the following to the Credentials Committee:
 - (a) a completed application for registration as a professional geoscientist;
 - (b) any applicable application, examination, interview, course, or other applicable fees specified in section 6.1(1) and Schedule C of the Bylaws;
 - (c) evidence satisfactory to the Credentials Committee of the following:
 - (i) of the Applicant's identity and legal name;


- (ii) that the Applicant is of good character and good repute;
- (iii) that the Applicant has obtained the necessary level of competency in English to engage in the Regulated Practice in British Columbia;
- (iv) that the Applicant has completed the academic requirements pursuant to section 5.5.2 (6)(c)(iii) of the Bylaws;
- (v) that the Applicant has geoscience experience that
 - (A) is sufficiently current to demonstrate competency with current practices,
 - (B) is supported by the Applicant's academic subjects of study, continuing education or examinations assigned by the Credentials Committee,
 - (C) is broad-based and at the level of complexity and responsibility that demonstrates that the Applicant
 - (I) has applied geoscience principles at an appropriate level,
 - (II) is ready to accept the full professional responsibility to engage in the Regulated Practice, and
 - (III) has reached the level of professional maturity needed to judge when the Applicant is out of the Applicant's area of professional competence,
 - (D) is validated by
 - a minimum of 4 Professional Registrants, or equivalent licensed engineering or geoscience practitioners from a Regulatory Authority, who
 - (1) practise in the same discipline of geoscience as the Applicant or a related discipline, and
 - (2) have detailed knowledge of the work of the Applicant, or
 - validators satisfactory to the Credentials Committee, where the Credentials Committee is satisfied that the Applicant cannot comply with the requirement in paragraph (c)(v)(D)(I),
 - (E) is in conformance with general and discipline-specific experience guidelines published by the Credentials Committee,
 - (F) demonstrates that the Applicant has achieved the work experience competencies established by the Council in a minimum of 4 years, and



- (G) demonstrates that the Applicant is competent to practise in British Columbia through achievement of Canadian environment competencies established by the Council at the required level of competence established by the Council, or by any alternative means established by the Council;
- (vi) that the Applicant has the requisite knowledge of the PGA, the Bylaws, the Code of Ethics and professional practice issues, demonstrated by successful completion of
 - (1) a course in law and ethics approved by the Council, and
 - (2) an examination in professional practice approved by the Council.
- (5) Despite subsection (4)(c), the Credentials Committee may accept the following qualifications without further examination:
 - (a) the qualifications required by subsections (4)(c)(iii) to (4)(c)(vi) if the Applicant
 - holds registration or licensure as the equivalent of a professional geoscientist in good standing with a Regulatory Authority for geoscience in another jurisdiction in Canada, and
 - (ii) is not subject to any practice limitations, restrictions, or conditions in the jurisdiction of the Regulatory Authority that are relevant to practice in British Columbia;
 - (b) the qualifications required by subsections (4)(c)(iv) and (4)(c)(v) if the Applicant
 - (i) holds registration or licensure as the equivalent of a professional geoscientist in good standing with a Regulatory Authority in another country that is, in the opinion of the Council, equivalent to EGBC, and
 - (ii) is not subject to any practice limitations, restrictions, or conditions in the jurisdiction of the Regulatory Authority that are relevant to practice in British Columbia.

5.8 Professional Licensee Engineering

- (1) The category of Registrant called "professional licensee engineering" is established pursuant to section 42(2) of the PGA [*Categories of registrants and bylaws for categories of registrants*].
- (2) On the coming into force of the PGA, individuals who held a limited licence to practise professional engineering pursuant to the EGA are continued as professional licensees engineering.



- (3) Only a Registrant who is designated as a professional licensee engineering may hold themselves out to be a professional licensee engineering and use the post-nominal "P.L.Eng.".
- (4) A professional licensee engineering may only engage in the authorized area of the Reserved Practice that is specified on their licence.
- (5) Pursuant to section 47(1) of the PGA [*Admission and reinstatement of registrants*], an Applicant for registration as a professional licensee engineering must provide the following to the Credentials Committee:
 - (a) a completed application for registration as a professional licensee engineering;
 - (b) any applicable application, examination, interview, course, or other applicable fees specified in section 6.1(1) and Schedule C of the Bylaws;
 - (c) a proposed authorized area of practice;
 - (d) evidence satisfactory to the Credentials Committee of the following:
 - (i) the Applicant's identity and legal name;
 - (ii) that the Applicant is of good character and good repute;
 - (iii) that the Applicant has obtained the necessary level of competency in English to engage in the Regulated Practice in British Columbia;
 - (iv) that the Applicant understands the role and obligations of a professional licensee engineering;
 - (v) that the Applicant undertakes to practise within the authorized area of practice approved by the Credentials Committee and in accordance with other requirements related to practice that may be specified by the Credentials Committee;
 - (vi) that the Applicant has a science degree in a discipline and from a university program approved by the Council, a degree or diploma in engineering technology from an institution approved by the Council in a program approved by the Council, or other academic qualifications acceptable to the Council;
 - (vii) that the Applicant has completed any examinations assigned by the Credentials Committee;
 - (viii) that the Applicant has a minimum of 8 years of experience in engineering that
 - (A) includes up to 4 of the years spent by the Applicant in obtaining the academic qualifications referred to in paragraph (d)(vi),



- (B) concludes with at least 2 years of experience within the proposed authorized area of practice to which the licence is to apply,
- (C) is sufficiently current to demonstrate competency with current practices,
- (D) is supported by the Applicant's academic subjects of study, continuing education or examinations assigned by the Credentials Committee,
- (E) is at the level of complexity and responsibility that demonstrates that the Applicant
 - (I) has applied engineering principles at an appropriate level,
 - (II) is ready to accept the full professional responsibility to engage in the Applicant's proposed authorized area of practice, and
 - (III) has reached the level of professional maturity needed to judge when the Applicant is out of the Applicant's area of professional competence,
- (F) is validated by
 - a minimum of 4 Professional Registrants, or equivalent licensed engineering or geoscience practitioners from a Regulatory Authority, who
 - (1) practise in the same discipline of engineering as the Applicant or a related discipline, and
 - (2) have detailed knowledge of the work of the Applicant, or
 - validators satisfactory to the Credentials Committee, where the Credentials Committee is satisfied that the Applicant cannot comply with the requirement in paragraph (d)(viii)(F)(I),
- (G) is in conformance with general and discipline-specific experience guidelines published by the Credentials Committee,
- (H) demonstrates that, within the proposed authorized area of practice, the Applicant has achieved the key competencies established by the Council at the required level of competence established by the Council in a minimum of 4 years, and
- (I) demonstrates that the Applicant is competent to practise in British Columbia within the proposed authorized area of practice through achievement of Canadian environment competencies established by the Council at the required level of competence established by the Council, or by any alternative means established by the Council;



- (ix) that the Applicant has the requisite knowledge of the PGA, the Bylaws, the Code of Ethics and professional practice issues, demonstrated by successful completion of
 - (A) a course in law and ethics approved by the Council, and
 - (B) an examination in professional practice approved by the Council.
- (6) Despite subsection (5)(d), the Credentials Committee may accept the qualifications required by subsections (5)(d)(vi) to (5)(d)(ix) without further examination if the Applicant
 - (a) holds registration or licensure as the equivalent of a professional licensee engineering in good standing with a Regulatory Authority for engineering in another jurisdiction in Canada, and
 - (b) is not subject to any practice limitations, restrictions, or conditions in the jurisdiction of the Regulatory Authority that are relevant to practice in British Columbia.

5.9 Professional Licensee Geoscience

- (1) The category of Registrant called "professional licensee geoscience" is established pursuant to section 42(2) of the PGA [*Categories of registrants and bylaws for categories of registrants*].
- (2) On the coming into force of the PGA, individuals who held a limited licence to practise professional geoscience pursuant to the EGA are continued as professional licensees geoscience.
- (3) Only a Registrant who is designated as a professional licensee geoscience may hold themselves out to be a professional licensee geoscience and use the post-nominal "P.L.Geo.".
- (4) A professional licensee geoscience may only engage in the authorized area of the Reserved Practice that is specified on their licence.
- (5) Pursuant to section 47(1) of the PGA [*Admission and reinstatement of registrants*], an Applicant for registration as a professional licensee geoscience must provide the following to the Credentials Committee:
 - (a) a completed application for registration as a professional licensee geoscience;
 - (b) any applicable application, examination, interview, course, or other applicable fees specified in section 6.1(1) and Schedule C of the Bylaws;
 - (c) a proposed authorized area of practice;
 - (d) evidence satisfactory to the Credentials Committee of the following:



- (i) the Applicant's identity and legal name;
- (ii) that the Applicant is of good character and good repute;
- (iii) that the Applicant has obtained the necessary level of competency in English to engage in the Regulated Practice in British Columbia;
- (iv) that the Applicant understands the role and obligations of a professional licensee geoscience;
- (v) that the Applicant undertakes to practise within the authorized area of practice approved by the Credentials Committee and in accordance with other requirements related to practice that may be specified by the Credentials Committee;
- (vi) that the Applicant has a science degree in a discipline and from a university program approved by the Council, a degree or diploma in geoscience technology from an institution approved by the Council in a program approved by the Council, or other academic qualifications acceptable to the Council;
- (vii) that the Applicant has completed any examinations assigned by the Credentials Committee;
- (viii) that the Applicant has a minimum of 8 years of experience in geoscience that
 - (A) includes up to 4 of the years spent by the Applicant in obtaining the academic qualifications referred to in paragraph (d)(vi),
 - (B) concludes with at least 2 years of experience within the proposed authorized area of practice to which the licence is to apply,
 - (C) is sufficiently current to demonstrate competency with current practices,
 - (D) is supported by the Applicant's academic subjects of study, continuing education or examinations assigned by the Credentials Committee,
 - (E) is at the level of complexity and responsibility that demonstrates that the Applicant
 - (I) has applied geoscience principles at an appropriate level,
 - (II) is ready to accept the full professional responsibility to engage in the proposed authorized area of practice, and
 - (III) has reached the level of professional maturity needed to judge when the Applicant is out of the Applicant's area of professional competence,



- (F) is validated by
 - a minimum of 4 Professional Registrants, or equivalent licensed engineering or geoscience practitioners from a Regulatory Authority, who
 - (1) practise in the same discipline of geoscience as the Applicant or a related discipline, and
 - (2) have detailed knowledge of the work of the Applicant, or
 - (II) validators satisfactory to the Credentials Committee, where the Credentials Committee is satisfied that the Applicant cannot comply with the requirement in paragraph (d)(viii)(F)(I),
- (G) is in conformance with general and discipline-specific experience guidelines published by the Credential Committee,
- (H) demonstrates that, within the proposed authorized area of practice, the Applicant has achieved the key competencies established by the Council at the required level of competence established by the Council in a minimum of 4 years, and
- (I) demonstrates that the Applicant is competent to practise in British Columbia within the proposed authorized area of practice through achievement of Canadian environment competencies established by the Council at the required level of competence established by the Council, or by any alternative means established by the Council;
- (ix) that the Applicant has the requisite knowledge of the PGA, the Bylaws, the Code of Ethics and professional practice issues, demonstrated by successful completion of
 - (A) a course in law and ethics approved by the Council, and
 - (B) an examination in professional practice approved by the Council.
- (6) Despite subsection (5)(d), the Credentials Committee may accept the qualifications required by subsections (5)(d)(vi) to (5)(d)(ix) without further examination if the Applicant
 - (a) holds registration or licensure as the equivalent of a professional licensee geoscience in good standing with a Regulatory Authority for geoscience in another jurisdiction in Canada, and
 - (b) is not subject to any practice limitations, restrictions, or conditions in the jurisdiction of the Regulatory Authority that are relevant to practice in British Columbia.



5.10 Life Member Prior to 1998

- (1) The category of Registrant called "life member prior to 1998" is established only for life members whose status had vested pursuant to the prior EGBC bylaws before December 31, 1997 pursuant to section 42(2) of the PGA [*Categories of registrants and bylaws for categories of registrants*].
- (2) No individuals other than those described in subsection (1) may be granted registration in the category of Registrant called "life member prior to 1998".
- (3) A life member whose status had vested pursuant to the prior EGBC bylaws before December 31, 1997 retains the rights and privileges of the category of professional engineer established pursuant to section 5.6 of the Bylaws without payment of the annual fee.
- (4) A life member whose status had vested pursuant to the prior EGBC bylaws before December 31, 1997 has the obligations of a Professional Registrant pursuant to the PGA and the Bylaws, including applicable continuing education requirements.

5.11 Honorary Life Member

- (1) The category of Registrant called "honorary life member" is established only for honorary life members whose status had vested pursuant to the prior EGBC bylaw 10(c.2) [Honorary Life Membership or Licensure] pursuant to section 42(2) of the PGA [Categories of registrants and bylaws for categories of registrants].
- (2) No individuals other than those described in subsection (1) may be granted registration in the category of Registrant called "honorary life member".
- (3) An honorary life member whose status had vested pursuant to the prior bylaw 10(c.2) [Honorary Life Membership or Licensure] retains the rights and privileges of the category of professional engineer established pursuant to section 5.6 of the Bylaws, or professional geoscientist established pursuant to section 5.7 of the Bylaws, as applicable, without payment of the annual fee.
- (4) An honorary life member whose status had vested pursuant to the prior bylaw 10(c.2) [Honorary Life Membership or Licensure] has the obligations of a Professional Registrant pursuant to the PGA and the Bylaws, including applicable continuing education requirements.

5.12 Registrant Firm

- (1) The category of Registrant called "Registrant Firm" is established pursuant to section 42(2) of the PGA [*Categories of registrants and bylaws for categories of registrants*].
- (2) A Registrant Firm may carry out the Reserved Practice and may have appropriately qualified individuals employed by or under contract with the Registrant Firm carry out the Reserved Practice on its behalf.



- (3) A Registrant Firm must not serve as a member of Council or any Committee.
- (4) Pursuant to section 47(1) of the PGA [*Admission and reinstatement of registrants*], an Applicant for registration as a Registrant Firm must provide the following to the Audit and Practice Review Committee:
 - (a) the names of
 - (i) the Applicant's Responsible Officer,
 - (ii) the Applicant's Responsible Registrant(s), and
 - (iii) all individual Registrants employed by or under contract with the Applicant;
 - (b) the number of individuals employed by or under contract with the Registrant Firm who are registrants of each regulatory body under the PGA other than EGBC;
 - (c) a completed declaration by each of the Applicant's Responsible Registrant(s), in the form set out in Schedule D;
 - (d) a completed declaration by the Applicant's Responsible Officer, in the form set out in Schedule E;
 - (e) all names, both registered and unregistered, under which the Applicant does or has done business over the past 10 years within Canada;
 - (f) the Applicant's industry or industries of practice and area(s) of practice;
 - (g) if the Applicant is a corporation:
 - (i) the Applicant's incorporation number;
 - (ii) the date of the Applicant's incorporation;
 - (iii) a copy of the Applicant's certificate of incorporation, certificate of amalgamation, certificate of continuation, or equivalent, from the home jurisdiction of the Applicant;
 - (iv) any certificate of name change or certificate of restoration, if applicable;
 - (v) a copy of the Applicant's shareholder register, unless the Applicant is a publicly traded corporation, in which case the Applicant is exempt from this paragraph;
 - (vi) a copy of the Applicant's register of directors and officers;



- (h) if the Applicant is a partnership:
 - (i) the Applicant's registered business name, if applicable;
 - (ii) a copy of the register of partners;
- (i) if the Applicant is a sole proprietorship:
 - (i) the Applicant's registered business name, if applicable;
 - (ii) the name of the owner of the sole proprietorship;
- a statement confirming whether EGBC or a Different Governing Body has ever cancelled, suspended, or restricted the ability to engage in the Regulated Practice of the Applicant or another person with a direct or indirect ownership interest in the Applicant as the result of a disciplinary process;
- (k) the addresses of all of the Applicant's offices in British Columbia, or, if the Applicant does not have any offices in British Columbia, all of the business location(s) in British Columbia where Professional Registrants will be engaged in the Regulated Practice on behalf of the Applicant;
- (I) any applicable application fees and annual fees specified in sections 6.1(1), 6.4(2), 6.4(5), and Schedule C of the Bylaws;
- (m) any additional information or documentation
 - (i) regarding indirect ownership of the Applicant, or
 - (ii) that may otherwise be requested by the Audit and Practice Review Committee or an officer appointed by the Audit and Practice Review Committee.
- (5) A Registrant Firm must designate at least one individual as a Responsible Registrant for each area of practice engaged in by the Registrant Firm.
- (6) A Responsible Registrant may be designated for more than one area of practice at a Registrant Firm.
- (7) An individual designated as a Responsible Registrant of a Registrant Firm pursuant to subsection (5) must be a Professional Registrant who is employed by or under contract with the Registrant Firm and who has the ability to engage in the Reserved Practice.
- (8) An individual designated as a Responsible Registrant of a Registrant Firm pursuant to subsection (5) must submit a completed declaration to EGBC in the form set out at Schedule D.



- (9) A Responsible Registrant must ensure that the Regulated Practice undertaken by Professional Registrants on behalf of the Registrant Firm meets the ethical, quality management, and continuing education requirements pursuant to the Bylaws.
- (10) If all Responsible Registrants designated for an area of practice at a Registrant Firm cease to meet any of the criteria set out in subsections (7) and (8), the Registrant Firm must immediately designate at least one new Responsible Registrant for that area of practice.
- (11) If a Registrant Firm fails to comply with subsections (5) or (10), the Audit and Practice Review Committee or an officer appointed by the Audit and Practice Review Committee must place a condition on the Registrant Firm's registration and Permit to Practice prohibiting it from engaging in the Regulated Practice until such time as the Registrant Firm has complied with subsections (5) or (10).
- (12) An individual may act as a Responsible Registrant for more than one Registrant Firm.
- (13) A Registrant Firm must designate one individual as the Responsible Officer of the Registrant Firm, who may also be a Responsible Registrant.
- (14) An individual designated as the Responsible Officer of a Registrant Firm pursuant to subsection (13) must be an individual who is employed by or under contract with the Registrant Firm.
- (15) If an individual designated as the Responsible Officer by a Registrant Firm pursuant to subsection (13) is also a Registrant, the individual must be a Registrant In Good Standing who is employed by or under contract with the Registrant Firm.
- (16) An individual designated as the Responsible Officer of a Registrant Firm pursuant to subsection (13) must submit a completed declaration to EGBC in the form set out at Schedule E.
- (17) A Responsible Officer must be an Individual With Authority at the Registrant Firm.
- (18) A Responsible Officer must ensure that the Registrant Firm meets its obligations pursuant to the PGA and the Bylaws.
- (19) If the Responsible Officer of a Registrant Firm ceases to meet any of the criteria set out in subsections (14), (15), (16), or (17), the Registrant Firm must immediately designate a new Responsible Officer.
- (20) If a Registrant Firm fails to comply with subsections (13) or (19), the Audit and Practice Review Committee or an officer appointed by the Audit and Practice Review Committee must place a condition on the Registrant Firm's registration and Permit to Practice prohibiting it from engaging in the Regulated Practice until such time as the Registrant Firm has complied with subsections (13) or (19).



(21) Any oral submissions made on behalf of a Registrant Firm pursuant to the Bylaws may be made by an Individual With Authority at the Registrant Firm.

5.12.1 Public Sector Firm

- (1) The subcategory of Registrant called "Public Sector Firm" is established under the category of Registrant Firm pursuant to section 42(2) of the PGA [*Categories of registrants and bylaws for categories of registrants*].
- (2) Pursuant to section 42(2)(d) of the PGA [*Categories of registrants and bylaws for categories of registrants*], the Audit and Practice Review Committee or an officer appointed by the Audit and Practice Review Committee may designate a Registrant Firm as a Public Sector Firm where the Audit and Practice Review Committee or an officer appointed by the Audit and Practice Review Committee is satisfied that
 - (a) the Registrant Firm is a Government Registrant, or
 - (b) the Registrant Firm is a local public body as defined in schedule 1 of the *Freedom of Information and Protection of Privacy Act,* R.S.B.C. 1996, c. 165.
- (3) If a decision is made pursuant to the PGA or the Bylaws to suspend or cancel the registration and Permit to Practice of a Public Sector Firm, or to put a condition on a Public Sector Firm's registration and Permit to Practice prohibiting it from engaging in the Regulated Practice, then
 - (a) EGBC must notify the Office of the Superintendent of Professional Governance of the decision,
 - (b) any suspension, cancellation, or condition on a Public Sector Firm's registration and Permit to Practice prohibiting it from engaging in the Regulated Practice must take effect no earlier than 10 days after the notice pursuant to paragraph (a) has been provided, and
 - (c) publication of the decision must be delayed until the earlier of
 - (i) 10 days after the notice pursuant to paragraph (a) has been provided, or
 - (ii) the date on which a decision of the Lieutenant Governor in Council with respect to exercising the power at section 83 of the PGA becomes known to the public.
- (4) The Audit and Practice Review Committee or an officer appointed by the Audit and Practice Review Committee may change the subcategory of a Registrant Firm from Public Sector Firm to Private Sector Firm if the Registrant Firm no longer meets the criteria set out in subsection (2).



5.12.2 Private Sector Firm

- (1) The subcategory of Registrant called "Private Sector Firm" is established under the category of Registrant Firm pursuant to section 42(2) of the PGA [*Categories of registrants and bylaws for categories of registrants*].
- (2) Pursuant to section 42(2)(d) of the PGA [*Categories of registrants and bylaws for categories of registrants*], any Registrant Firm that the Audit and Practice Review Committee or an officer appointed by the Audit and Practice Review Committee has not designated as Public Sector Firm must be designated as a Private Sector Firm.
- (3) The Audit and Practice Review Committee or an officer appointed by the Audit and Practice Review Committee may change the subcategory of a Registrant Firm from Private Sector Firm to Public Sector Firm if the Audit and Practice Review Committee or an officer appointed by the Audit and Practice Review Committee determines that the Registrant Firm meets the criteria set out in section 5.12.1(2) of the Bylaws.

5.13 Non-Practising Individual Registrant

- (1) The category of Registrant called "non-practising individual Registrant" is established pursuant to section 42(2) of the PGA [*Categories of registrants and bylaws for categories of registrants*].
- (2) Any Professional Registrant In Good Standing may apply to the Registrar to change their category of registration to non-practising.
- (3) A non-practising individual Registrant must not engage in the Reserved Practice.
- (4) A non-practising individual Registrant must annually commit to the Council not to engage in the Reserved Practice until released from the commitment by the Council in writing.
- (5) A non-practising individual Registrant must only use the following professional designation(s), as applicable:

Engineers

- (a) Professional Engineer (Non-Practising);
- (b) P.Eng. (Non-Practising);
- (c) Professional Engineer (Retired);
- (d) P.Eng. (Retired);

Geoscientists

(e) Professional Geoscientist (Non-Practising);



- (f) P.Geo. (Non-Practising);
- (g) Professional Geoscientist (Retired);
- (h) P.Geo. (Retired);

Licensees

- (i) Professional Licensee Engineering (Non-Practising);
- (j) P.L.Eng. (Non-Practising);
- (k) Professional Licensee Engineering (Retired);
- (I) P.L.Eng. (Retired);
- (m) Professional Licensee Geoscience (Non-Practising);
- (n) P.L.Geo. (Non-Practising);
- (o) Professional Licensee Geoscience (Retired);
- (p) P.L.Geo. (Retired).
- (6) A non-practising individual Registrant who applies to reinstate status as a Professional Registrant must
 - (a) pay the applicable fees as set out in section 6.1(1) and Schedule C of the Bylaws, and
 - (b) demonstrate compliance with the requirements for reinstatement of status as a Professional Registrant set out in section 5.23 of the Bylaws.

5.14 Non-Practising Registrant Firm

- (1) The category of Registrant called "non-practising Registrant Firm" is established pursuant to section 42(2) of the PGA [*Categories of registrants and bylaws for categories of registrants*].
- (2) Any Registrant Firm In Good Standing may apply to the Audit and Practice Review Committee to change its category of registration to non-practising.
- (3) A non-practising Registrant Firm must not engage in the Reserved Practice and must not authorize any individual Registrant to engage in the Reserved Practice on behalf of the non-practising Registrant Firm.
- (4) A non-practising Registrant Firm must annually commit to the Council not to engage in the Reserved Practice until released from the commitment by the Council in writing.



- (5) A non-practising Registrant Firm must not advertise or hold itself out as providing any services related to or requiring the application of the Reserved Practice.
- (6) A non-practising Registrant Firm must
 - (a) clearly and visibly include the designation "non-practising" after the Registrant Firm's name or Permit to Practice Number wherever it is used in any way related to the Regulated Practice, and
 - (b) expressly advise of the Registrant Firm's non-practising status in any oral communications on behalf of the Registrant Firm that are in any way related to the Regulated Practice.
- (7) A non-practising Registrant Firm must continue to meet all requirements set out in the PGA, regulations, and the Bylaws, except where expressly exempted from such requirements, and nothing in this section postpones or defers the deadlines or requirements set out in the PGA, regulations, and Bylaws.
- (8) A non-practising Registrant Firm that applies for reinstatement of status as a Registrant Firm must demonstrate compliance with the requirements for reinstatement of status as a Registrant Firm set out in section 5.24 of the Bylaws.
- (9) If a non-practising Registrant Firm does not have its status as a Registrant Firm reinstated within 2 years of the date on which the Registrant Firm's status was changed to nonpractising, the non-practising Registrant Firm's registration and Permit to Practice must be cancelled.

5.15 Life Member or Life Limited Licensee

- (1) The category of Registrant called "life member or life limited licensee" is established only for:
 - (a) life members or life limited licensees whose status had vested pursuant to the prior bylaw 10(c.1) [*Life Membership or Licensure*], pursuant to section 42(2) of the PGA [*Categories of registrants and bylaws for categories of registrants*].
 - (b) Registrants previously in the registration categories of "life member prior to 1998" or "honorary life member" who elect to change their registration category to life member or life limited licensee.
- (2) No individuals other than those described in subsection (1) may be granted registration in the category of Registrant called "life member or life limited licensee".
- (3) A life member or life limited licensee retains voting privileges without payment of the annual fee but does not have the right to engage in the Reserved Practice.
- (4) A life member or life limited licensee must not engage in the Reserved Practice.



- (5) A life member or life limited licensee must annually commit to the Council not to engage in the Reserved Practice until released from the commitment by the Council in writing.
- (6) A life member or life limited licensee must only use the following professional designation(s), as applicable:

Engineers

- (a) Professional Engineer (Non-Practising);
- (b) P.Eng. (Non-Practising);
- (c) Professional Engineer (Retired);
- (d) P.Eng. (Retired);

Geoscientists

- (e) Professional Geoscientist (Non-Practising);
- (f) P.Geo. (Non-Practising);
- (g) Professional Geoscientist (Retired);
- (h) P.Geo. (Retired);

Licensees

- (i) Professional Licensee Engineering (Non-Practising);
- (j) P.L.Eng. (Non-Practising);
- (k) Professional Licensee Engineering (Retired);
- (I) P.L.Eng. (Retired);
- (m) Professional Licensee Geoscience (Non-Practising);
- (n) P.L.Geo. (Non-Practising);
- (o) Professional Licensee Geoscience (Retired);
- (p) P.L.Geo. (Retired).
- (7) A Registrant whose life status vested pursuant to the prior EGBC bylaw 10(c.1) [Life Membership or Licensure] who applies to reinstate status as a Professional Registrant must



- (a) pay the applicable fees as set out in section 6.1(1) and Schedule C of the Bylaws, and
- (b) demonstrate compliance with the requirements for reinstatement of status as a Professional Registrant set out in section 5.23 of the Bylaws.

5.16 Honorary Member

- (1) The category of Registrant called "honorary member" is established only for honorary members whose status had vested pursuant to the prior EGBC bylaw 10(d) [*Honorary Membership*], pursuant to section 42(2) of the PGA [*Categories of registrants and bylaws for categories of registrants*].
- (2) No individuals other than those described in subsection (1) may be granted registration in the category of Registrant called "honorary member".
- (3) An honorary member whose status had vested pursuant to the prior EGBC bylaw 10(d) [*Honorary Membership*] retains honorary status with EGBC without the payment of fees.
- (4) Honorary status is a ceremonial designation and does not on its own accord confer any rights or responsibilities under the PGA or the Bylaws.
- (5) An honorary member's status continues at the pleasure of the Council and may be revoked at the Council's discretion without prior notice to the honorary member.

5.17 Registration and Exemptions from Registration as a Registrant Firm

- (1) Subject to the PGA, associated regulations, and subsection (3), every Firm that engages in the Regulated Practice and is owned by or employs at least one Professional Registrant must register as a Registrant Firm and obtain a Permit to Practice from EGBC.
- (2) If the Audit and Practice Review Committee learns that a Firm is registered as a Registrant Firm, but does not, or at the time of registration did not, engage in the Regulated Practice or meet any one of the other requirements for registration pursuant to section 5.12, the Audit and Practice Review Committee must cause a condition to be placed on the Registrant Firm's registration and Permit to Practice prohibiting it from engaging in the Regulated Practice until the necessary requirements are met.
- (3) A Firm may apply in writing to the Audit and Practice Review Committee for an exemption from the requirement to register as a Registrant Firm and obtain a Permit to Practice from EGBC if any of the following apply:
 - (a) EGBC has an agreement in place with another regulatory body that exempts the Firm from registration with EGBC;
 - (b) the Firm is solely conducting research or providing education.



- (4) An application for an exemption submitted by a Firm pursuant to subsection (3) must include:
 - (a) a clear indication of how the Firm qualifies for an exemption;
 - (b) any evidence that supports the Firm's application for an exemption; and
 - (c) a declaration confirming that if the Firm no longer qualifies for the exemption, the Firm will submit an application for registration pursuant to the Bylaws.

5.18 Decisions Regarding Applications for Enrolment, Admission, and Reinstatement

- (1) On receiving an application for enrolment, admission, or reinstatement of status in any of the categories of individual Registrants pursuant to sections 5.5 to 5.11 of the Bylaws,
 - (a) the Credentials Committee may
 - (i) grant the application,
 - (ii) grant the application subject to conditions or limitations on the registration, or
 - (iii) reject the application, with written reasons,
 - (b) the Registrar, after a credentials hearing on good character and good repute held pursuant to section 5.19 of the Bylaws, may
 - (i) grant the application,
 - (ii) grant the application subject to conditions or limitations on the registration, or
 - (iii) reject the application, with written reasons, or
 - (c) an officer appointed by the Credentials Committee, in the case of a Non-Contentious Decision, may grant the application.
- (2) On receiving an application for admission or reinstatement of status as a Registrant Firm pursuant to sections 5.12 or 5.24 of the Bylaws, the Audit and Practice Review Committee or an officer appointed by the Audit and Practice Review Committee may
 - (a) grant the application,
 - (b) grant the application subject to conditions or limitations on the registration, or
 - (c) reject the application, with written reasons.

5.19 Credentials Hearing on Good Character and Good Repute of an Individual Applicant



- (1) The Credentials Committee may order a credentials hearing be conducted by the Registrar before the Registrar makes a decision pursuant to section 5.18(1)(b) of the Bylaws if the Credentials Committee determines that there is a serious concern that an individual Applicant does not meet the requirement to be of good character and good repute.
- (2) A credentials hearing must be conducted in accordance with the procedure set out in Schedule B of the Bylaws, unless otherwise directed by the Registrar.
- (3) If a decision is posted publicly following a credentials hearing held pursuant to subsection
 (2), the Registrar may anonymize or redact any identifying, personal or sensitive information of
 - (a) a person other than the Applicant/Respondent, if the Registrar determines the disclosure of such information is not necessary to satisfy the public interest, or
 - (b) the Applicant/Respondent if the Applicant/Respondent suffers from a physical or mental ailment, an emotional disturbance or an addiction to alcohol or drugs that impairs the Applicant's/Respondent's ability to practise.

5.20 Rejection of Application on the Basis of an Indictable Offence

- (1) If the Credentials Committee is satisfied that an individual Applicant has been convicted of an indictable offence, the Credentials Committee may summarily reject the application pursuant to section 66(2)(a)(ii) of the PGA [*Investigations*].
- (2) If the Audit and Practice Review Committee or an officer appointed by the Audit and Practice Review Committee is satisfied that an Applicant for registration as a Registrant Firm has been convicted of an indictable offence, the Audit and Practice Review Committee or an officer appointed by the Audit and Practice Review Committee may summarily reject the application pursuant to section 66(2)(a)(ii) of the PGA [*Investigations*].
- (3) Before proceeding pursuant to subsections (1) or (2), the Credentials Committee, the Audit and Practice Review Committee, or an officer appointed by the Audit and Practice Review Committee, as applicable, must be satisfied that the nature of the indictable offence or the circumstances under which the offence was committed give rise to concerns that the Applicant has displayed
 - (a) Professional Misconduct,
 - (b) Conduct Unbecoming a Registrant, or
 - (c) Incompetent performance of duties undertaken while engaged in the Regulated Practice.



- (4) Before proceeding pursuant to subsections (1) or (2), the Credentials Committee, the Audit and Practice Review Committee, or an officer appointed by the Audit and Practice Review Committee, as applicable, must provide written notice to the Applicant that
 - (a) action may be undertaken pursuant to section 66(2)(a)(ii) of the PGA [*Investigations*], and
 - (b) the Applicant may, by a specified date, make written submissions to the Credentials Committee, the Audit and Practice Review Committee, or an officer appointed by the Audit and Practice Review Committee, as applicable.
- (5) The Credentials Committee may order a credentials hearing by the Registrar for an individual Applicant, in the place of or in addition to the written submissions referred to in subsection (4)(b).
- (6) If an Applicant is an Applicant for registration as a Registrant Firm, the Audit and Practice Review Committee or an officer appointed by the Audit and Practice Review Committee may order that oral submissions be made in place of or in addition to the written submissions referred to in subsection (4)(b), which are to be made in accordance with the procedures set out in Schedule B of the Bylaws unless otherwise directed by the Audit and Practice Review Committee or an officer appointed by the Audit and Practice Review Committee.
- (7) Despite subsections (4), (5), and (6), if the Credentials Committee, the Audit and Practice Review Committee, or an officer appointed by the Audit and Practice Review Committee, as applicable, considers it necessary to protect the public interest, the Credentials Committee, the Audit and Practice Review Committee, or an officer appointed by the Audit and Practice Review Committee, as applicable, may proceed pursuant to subsections (1) or (2) without
 - (a) providing notice to the Applicant,
 - (b) providing the Applicant with an opportunity to make written submissions to the Credentials Committee, the Audit and Practice Review Committee, or an officer appointed by the Audit and Practice Review Committee, as applicable, or
 - (c) in the case of an individual Applicant, providing the Applicant with the opportunity to have a credentials hearing by the Registrar.
- (8) The Credentials Committee or the Audit and Practice Review Committee, as applicable, may approve policies and procedures for summarily rejecting the application of an Applicant pursuant to this section of the Bylaws.
- (9) Any policies and procedures for summarily rejecting the application of an Applicant that are approved by the Credentials Committee or the Audit and Practice Review Committee pursuant to subsection (8) must be published on a public website maintained by EGBC.

5.21 Reconsideration of a Decision of the Credentials Committee



- (1) Within 30 days of receipt of a decision of the Credentials Committee made pursuant to section 5.18(1)(a) of the Bylaws, an individual Applicant may apply in writing to the Credentials Committee for a reconsideration.
- (2) An application for a reconsideration submitted by an individual Applicant pursuant to subsection (1) must include all of the following:
 - (a) a clear indication of the decision of the Credentials Committee;
 - (b) the position of the Applicant suggesting the decision of the Credentials Committee was flawed;
 - (c) any evidence that was not previously before the Credentials Committee that the Applicant wants to be considered; and
 - (d) the relief sought by the Applicant.
- (3) An application for a reconsideration submitted by an individual Applicant pursuant to subsection (1) must be accompanied by all applicable reconsideration fees as set out in section 6.3(1) and Schedule C of the Bylaws.
- (4) After considering an application for a reconsideration, the Credentials Committee must, with written reasons,
 - (a) confirm the original decision of the Credentials Committee, or
 - (b) substitute the original decision of the Credentials Committee.
- (5) The Credentials Committee may approve policies and procedures for the conduct of reconsiderations pursuant to this section of the Bylaws.
- (6) Any policies and procedures for the conduct of reconsiderations that are approved by the Credentials Committee pursuant to subsection (5) must be published on a public website maintained by EGBC.
- (7) No Applicant for registration as a Registrant Firm may apply for a reconsideration pursuant to this section of the Bylaws.

5.22 Review on the Record

(1) Within 30 days of receipt of a decision of the Credentials Committee made pursuant to sections 5.18(1)(a) or 5.21(4) of the Bylaws, or a decision of the Audit and Practice Review Committee or an officer appointed by the Audit and Practice Review Committee made pursuant to section 5.18(2) of the Bylaws, an Applicant may apply in writing to the Registrar for a review on the record.



- (2) An application for a review on the record submitted by an Applicant pursuant to subsection(1) must set out all of the following:
 - (a) a clear indication of the decision(s) of the Credentials Committee, Audit and Practice Review Committee or officer appointed by the Audit and Practice Review Committee;
 - (b) the position of the Applicant suggesting the decision of the Credentials Committee, Audit and Practice Review Committee, or officer appointed by the Audit and Practice Review Committee was flawed; and
 - (c) the relief sought by the Applicant.
- (3) An application for a review on the record submitted by an Applicant pursuant to subsection
 (1) must be accompanied by all applicable review on the record fees as set out in section
 6.3(2) and Schedule C of the Bylaws.
- (4) A review on the record must be conducted in writing unless otherwise directed by the Registrar.
- (5) The Registrar may only consider evidence that was not previously before the Credentials Committee, the Audit and Practice Review Committee, or officer appointed by the Audit and Practice Review Committee if the Registrar determines that all of the following special circumstances exist which make it necessary to consider evidence that was not previously before the Credentials Committee, the Audit and Practice Review Committee, or officer appointed by the Audit and Practice Review Committee:
 - (a) the evidence is such that the applicant, through the exercise of reasonable due diligence, could not have discovered and submitted it before the decision was made by the Credentials Committee, the Audit and Practice Review Committee, or the officer appointed by the Audit and Practice Review Committee;
 - (b) the evidence is relevant in the sense that it bears upon a decisive or potentially decisive issue in the matter;
 - (c) the evidence is credible in the sense that it is reasonably capable of belief;
 - (d) the evidence is such that, if believed, it could reasonably, when taken with the other evidence that was before the Credentials Committee, the Audit and Practice Review Committee, or officer appointed by the Audit and Practice Review Committee, be expected to have affected the decision of the Credentials Committee, the Audit and Practice Review Committee, or officer appointed by the Audit and Practice Review Committee.
- (6) To request that the Registrar consider evidence that was not before the Credentials Committee, the Audit and Practice Review Committee, or the officer appointed by the Audit and Practice Review Committee the Applicant must, in the application for a review on the record,



- (a) specify what evidence the Applicant wants to be considered, and
- (b) set out how the criteria set out in subsections (5)(a) to (d) are met.
- (7) Following a review on the record, the Registrar must, with written reasons,
 - (a) confirm the decision of the Credentials Committee, the Audit and Practice Review Committee, or the officer appointed by the Audit and Practice Review Committee, or
 - (b) substitute the decision of the Credentials Committee, the Audit and Practice Review Committee, or the officer appointed by the Audit and Practice Review Committee, including any conditions or limitations on the registration of the Applicant.
- (8) The Council may approve policies and procedures for the conduct of reviews on the record pursuant to this section of the Bylaws.
- (9) Any policies and procedures for the conduct of reviews on the record approved by the Council pursuant to subsection (8) must be published on a public website maintained by EGBC.

5.23 Reinstatement of Status as a Professional Registrant

- (1) An Applicant for reinstatement of status as a Professional Registrant must provide the following to the Credentials Committee:
 - (a) an application for reinstatement of status as a Professional Registrant;
 - (b) any applicable application, examination, interview, course or other applicable fees specified in section 6.1(1) and Schedule C of the Bylaws;
 - (c) evidence satisfactory to the Credentials Committee
 - (i) of Applicant's identity and legal name, if not previously submitted, and
 - (ii) that the Applicant is of good character and good repute, including a declaration that the Applicant is of good character and repute.
- (2) In addition to the requirements set out in subsection (1), an Applicant for reinstatement of status as a Professional Registrant must provide proof that the Applicant has complied with all applicable continuing education program requirements for Professional Registrants as set out in section 7.6 of the Bylaws if
 - (a) the Applicant's registration as a Professional Registrant has lapsed or been cancelled for 6 months or less, or
 - (b) the Applicant is



- (i) in good standing and has the right to practise with a Regulatory Authority, and
- (ii) not subject to any practice limitations, restrictions, or conditions in the jurisdiction of the Regulatory Authority that are relevant to practice in British Columbia.
- (3) In addition to the requirements set out in subsection (1), an Applicant for reinstatement of status as a Professional Registrant must provide the following to the Credentials Committee, if the Applicant's registration as a Professional Registrant has lapsed or been cancelled for between 6 months to 18 months:
 - (a) a letter of explanation as to why the Applicant wishes to reinstate status as a Professional Registrant;
 - (b) a declaration that the Applicant has read and is familiar with applicable standards, policies, plans, and practices established by the government or by EGBC, including applicable professional practice guidelines and advisories that are relevant to the intended practice of the Applicant;
 - (c) proof that the Applicant has complied with all applicable continuing education program requirements for Professional Registrants as set out in section 7.6 of the Bylaws.
- (4) In addition to the requirements pursuant to subsection (1), an Applicant for reinstatement of status as a Professional Registrant must provide the following to the Credentials Committee if the Applicant's registration as a Professional Registrant has lapsed or been cancelled for between 18 months to 3 years:
 - (a) a letter of explanation as to why the Applicant wishes to reinstate status as a Professional Registrant;
 - (b) a declaration that the Applicant has read and is familiar with applicable standards, policies, plans, and practices established by the government or by EGBC, including applicable professional practice guidelines and advisories that are relevant to the intended practice of the Applicant;
 - (c) a letter of explanation as to how the Applicant has maintained practice competency, including through the completion of continuing education;
 - (d) professional references, in number satisfactory to the Credentials Committee and who are able to attest to the Applicant's good character, good repute, and practice competency;
 - (e) a current professional record of the Applicant's work experience;
 - (f) evidence of completion of the Professional Engineering and Geoscience Practice in BC Online Seminar, or a seminar that is deemed equivalent by the Credentials Committee;



- (g) at the discretion of the Credentials Committee, evidence of completion of continuing education on such terms as set by the Credentials Committee.
- (5) In addition to the requirements set out in subsection (1), an Applicant for reinstatement of status as a Professional Registrant must provide the following to the Credentials Committee, if the Applicant's registration as a Professional Registrant has lapsed or been cancelled for more than 3 years:
 - (a) a letter of explanation as to why the Applicant wishes to reinstate status as a Professional Registrant;
 - (b) a declaration that the Applicant has read and is familiar with applicable standards, policies, plans, and practices established by the government or by EGBC, including applicable professional practice guidelines and advisories that are relevant to the intended practice of the Applicant;
 - (c) a letter of explanation as to how the Applicant has maintained practice competency, including through the completion of continuing education;
 - (d) professional references, in number satisfactory to the Credentials Committee and whose professional relationship with the Applicant covers the total number of years since the Applicant last had status as a Professional Registrant and who are able to attest to the Applicant's good character, good repute, and practice competency;
 - (e) a current professional record of the Applicant's work experience;
 - (f) completion of the Professional Engineering and Geoscience Practice in BC Online Seminar, regardless of whether it or a seminar that is deemed equivalent by the Council has previously been completed by the Applicant;
 - (g) evidence of the successful completion of an examination in professional practice approved by the Council;
 - (h) at the discretion of the Credentials Committee, evidence of completion of
 - (i) assigned experience under the Direct Supervision of a Professional Registrant for a period of time and on such terms as set by the Credentials Committee, and provision of a reference from that Professional Registrant, and
 - (ii) continuing education on such terms as set by the Credentials Committee.

5.24 Reinstatement of Status as a Practising Registrant Firm

- (1) A non-practising Registrant Firm applying for reinstatement of status as a practising Registrant Firm must provide the following to the Audit and Practice Review Committee:
 - (a) an application for reinstatement of status as a practising Registrant Firm;



- (b) any applicable fees specified in section 6.2(3) and Schedule C of the Bylaws;
- (c) the names of all individual Registrants employed by or under contract with the nonpractising Registrant Firm;
- (d) a completed declaration by each of the non-practising Registrant Firm's Responsible Registrant(s), as set out in Schedule D;
- (e) a completed declaration by the non-practising Registrant Firm's Responsible Officer, as set out in Schedule E;
- (f) if the non-practising Registrant Firm is a corporation:
 - (i) the non-practising Registrant Firm's incorporation number;
 - (ii) the date of the non-practising Registrant Firm's incorporation;
 - (iii) a copy of the non-practising Registrant Firm's certificate of incorporation, amalgamation, certificate of continuation, or equivalent from the home jurisdiction of the non-practising Registrant Firm;
 - (iv) any certificate of name change or certificate of restoration, if applicable;
 - a copy of the non-practising Registrant Firm's shareholder register, unless the non-practising Registrant Firm is a publicly traded corporation, in which case it is exempt from this paragraph; and
 - (vi) a copy of the non-practising Registrant Firm's register of directors and officers;
- (g) if the non-practising Registrant Firm is a partnership:
 - (i) the non-practising Registrant Firm's registered business name, if applicable; and
 - (ii) a copy of the register of partners; and,
- (h) if the non-practising Registrant Firm is a sole proprietorship:
 - (i) the non-practising Registrant Firm's registered business name, if applicable; and
 - (ii) the name of the owner of the sole proprietorship;
- (i) written notice of any changes to the information set out in section 5.28(3) of the Bylaws, and updated information as applicable, to be published on the Register.



- (2) In granting a non-practising Registrant Firm's application for reinstatement of status as a practising Registrant Firm, the Audit and Practice Review Committee or an officer appointed by the Audit and Practice Review Committee may require
 - (a) the reinstated Registrant Firm to undergo a compliance audit pursuant to section 8.7 of the Bylaws, either
 - (i) immediately on being granted reinstatement of status as a practising Registrant Firm,
 - (ii) within 12 months of being granted reinstatement of status as a practising Registrant Firm,
 - (iii) at the time the reinstated Registrant Firm would have next undergone a compliance audit if it had not changed its category of registration to non-practising Registrant Firm, or
 - (iv) within any other timeframe as determined by the Audit and Practice Review Committee or an officer appointed by the Audit and Practice Review Committee, and
 - (b) any Responsible Registrant(s) of the reinstated Registrant Firm to undertake the Regulation of Firms Training Program pursuant to section 7.7.1 of the Bylaws, either
 - (i) within 12 months of being granted reinstatement of status as a practising Registrant Firm,
 - (ii) at the time the reinstated Registrant Firm would have next undergone a compliance audit if it had not changed its category of registration to non-practising Registrant Firm, or
 - (iii) within any other timeframe as determined by the Audit and Practice Review Committee or an officer appointed by the Audit and Practice Review Committee.
- (3) Upon being granted reinstatement of status as a practising Registrant Firm, a reinstated Registrant Firm must have an up-to-date Professional Practice Management Plan in place that meets the requirements set out in sections 7.7.3(1) and 7.7.3(2) of the Bylaws.

5.25 Reinstatement as a Trainee, a Non-Practising Registrant, or a Life Member or Life Limited Licensee

- (1) An individual whose enrolment as a Trainee has lapsed or been cancelled must provide the following to the Credentials Committee to apply for reinstatement as a Trainee:
 - (a) an application for reinstatement;



- (b) any applicable application or other fees specified in section 6.1(1) and Schedule C of the Bylaws;
- (c) evidence satisfactory to the Credentials Committee
 - (i) of the Applicant's identity and legal name, if not previously submitted, and
 - (ii) that the Applicant is of good character and good repute.
- (2) An Applicant whose registration as a non-practising Registrant or a life member or life limited licensee has lapsed or been cancelled must provide the following to the Credentials Committee to apply for reinstatement as a non-practising Registrant or a life member or life limited licensee, as applicable:
 - (a) an application for reinstatement;
 - (b) any applicable application or other fees specified in section 6.1(1) and Schedule C of the Bylaws;
 - (c) evidence satisfactory to the Credentials Committee
 - (i) of the Applicant's identity and legal name, if not previously submitted, and
 - (ii) that Applicant is of good character and good repute.

5.26 Ceasing Status as a Registrant

- (1) An individual Registrant seeking cancellation of the individual Registrant's enrolment or registration with EGBC must apply in writing to the Registrar for cancellation of enrolment or registration.
- (2) A Registrant Firm seeking cancellation of the Registrant Firm's registration and Permit to Practice with EGBC must apply in writing to the Audit and Practice Review Committee for cancellation of the Registrant Firm's registration and Permit to Practice, which must be signed by the Responsible Officer of the Registrant Firm.
- (3) A request made by a Registrant Firm pursuant to subsection (2) must state:
 - (a) the reason(s) that the Registrant Firm is seeking cancellation of the Registrant Firm's registration and Permit to Practice, and
 - (b) a list of all ongoing activities or work related to the Regulated Practice in which the Registrant Firm is involved.

5.27 Register of Individual Registrants

(1) The Registrar must maintain a Register of all current and former individual Registrants and Recent Historical Members.



- (2) A former individual Registrant or Recent Historical Member must be listed on the Register for 10 calendar years after the calendar year in which the former individual Registrant or Recent Historical Member ceased to be registered with EGBC.
- (3) Despite subsection (1), the Register must not include former Trainees.
- (4) For a currently registered individual Registrant, in addition to the information set out in section 31(3) of the PGA [*Registrar and register for regulatory body*], the Registrar must include the following information on the Register:
 - (a) the individual Registrant's professional designation;
 - (b) if an individual Registrant is a professional licensee engineering or a professional licensee geoscience, the authorized area of practice identified on the individual Registrant's licence;
 - (c) the original discipline of the individual Registrant's registration;
 - (d) for all Registrants with the ability to engage in the Reserved Practice, the individual Registrant's self-declared industry or industries of practice and area(s) of practice;
 - (e) the municipality, province or state, and country in which the individual Registrant is based;
 - (f) if applicable, the name of the individual Registrant's employer;
 - (g) for all Registrants with the ability to engage in the Reserved Practice, business contact information for the individual Registrant, which may be provided by way of the individual Registrant's
 - (i) business email address,
 - (ii) business telephone number,
 - (iii) business mailing address, or
 - (iv) business website, if the business website contains any of the business contact information for the individual Registrant that is listed in paragraphs (g)(i) to (iii);
 - (h) the later of the date on which the individual Registrant was first granted
 - (i) enrolment as a Trainee, or
 - (ii) registration as a Registrant other than a Trainee;
 - (i) the start date of the individual Registrant's current registration as a Registrant or enrolment as a Trainee;



- (j) the expiry date of the individual Registrant's current registration as a Registrant or enrolment as a Trainee;
- (k) the date(s) of any:
 - (i) expiration(s) of the individual Registrant's registration;
 - (ii) cancellation(s) of the individual Registrant's registration; or,
 - (iii) suspension(s) of the individual Registrant's registration;
- (I) any Disciplinary Order(s) respecting the individual Registrant.
- (5) For a former individual Registrant, in addition to the information set out in section 31(3) of the PGA [*Registrar and register for regulatory body*], the Registrar must include the following information on the Register:
 - (a) the former individual Registrant's former professional designation(s);
 - (b) if the former individual Registrant was a professional licensee engineering or a professional licensee geoscience, the authorized area of practice that was previously identified on the former individual Registrant's licence;
 - (c) the original discipline of the former individual Registrant's registration;
 - (d) the municipality, province or state, and country in which the former individual Registrant was based;
 - (e) the date on which the former individual Registrant was first granted registration;
 - (f) the date(s) of any
 - (i) expiration(s) of the former individual Registrant's registration;
 - (ii) cancellation(s) of the former individual Registrant's registration; or,
 - (iii) suspension(s) of the former individual Registrant's registration;
 - (g) any Disciplinary Order(s) respecting the former individual Registrant.
- (6) For a Recent Historical Registrant, in addition to the information set out in section 31(3) of the PGA [*Registrar and register for regulatory body*], the Registrar must include the following information on the Register:
 - (a) the Recent Historical Member's former professional designation(s);



- (b) if the Recent Historical Member held a limited licence to practise professional engineering or geoscience pursuant to the EGA, the authorized area of practice identified on the Recent Historical Member's former licence;
- (c) the original discipline of the Recent Historical Member's registration;
- (d) the date on which the Recent Historical Member was first granted registration with EGBC;
- (e) the date(s) of any:
 - (i) expiration(s) of the registration or membership of the Recent Historical Member;
 - (ii) cancellation(s) of the registration or membership of the Recent Historical Member; or,
 - (iii) suspension(s) of the registration or membership of the Recent Historical Member;
- (f) any Disciplinary Order(s) respecting the Recent Historical Member.
- (7) An individual Registrant may apply in writing to the Registrar to have the information listed in subsections (4)(e) to (g) omitted from the Register if the publication if such information would reasonably threaten the safety of the individual Registrant or another person.
- (8) The information listed in subsections (4)(k), (4)(l), (5)(e), (5)(f), (6)(e), and (6)(f) must appear on the Register for as long as a Registrant is listed on the Register pursuant to subsections (1) and (2).

5.28 Register of Registrant Firms

- (1) The Registrar must maintain a Register of all current and former Registrant Firms.
- (2) A former Registrant Firm must be listed on the Register for 10 years after ceasing to be a Registrant Firm.
- (3) For a currently registered Registrant Firm, in addition to the information set out in section 31(3) of the PGA [*Registrar and register for regulatory body*], the Registrar must include the following information on the Register:
 - (a) the Registrant Firm's Permit to Practice Number;
 - (b) the Registrant Firm's self-declared industry or industries of practice and area(s) of practice;
 - (c) the municipality, province or state, and country in which the Registrant Firm's main office is located;



- (d) the business location(s) in British Columbia where Professional Registrants will be engaged in the Regulated Practice on behalf of the Registrant Firm;
- (e) the names of the Responsible Registrant(s) and the Responsible Officer of a Registrant Firm;
- (f) the area(s) of practice to which each Responsible Registrant of the Registrant Firm is designated;
- (g) the business contact information of the Responsible Registrant(s) and the Responsible Officer of the Registrant Firm, which may be provided by way of the Responsible Registrant(s) and the Responsible Officer's
 - (i) business email address,
 - (ii) business telephone number, or
 - (iii) business mailing address;
- (h) the date on which the Registrant Firm was first granted registration as a Registrant Firm;
- (i) the start date of the Registrant Firm's current registration as a Registrant Firm;
- (j) the expiry date of the Registrant Firm's current registration as a Registrant Firm;
- (k) the date(s) of any:
 - (i) expiration(s) of the Registrant Firm's registration and Permit to Practice;
 - (ii) cancellation(s) of the Registrant Firm's registration and Permit to Practice;
 - (iii) suspension(s) of the Registrant Firm's registration and Permit to Practice;
 - (iv) condition(s) on the Registrant Firm's registration and Permit to Practice prohibiting the Registrant Firm from engaging in the Regulated Practice;
- (I) any Disciplinary Order(s) respecting the Registrant Firm.
- (4) For a former Registrant Firm, in addition to the information set out in section 31(3) of the PGA [*Registrar and register for regulatory body*], the Registrar must include the following information on the Register:
 - (a) the former Registrant Firm's Permit to Practice Number;



- (b) the municipality, province or state, and country in which the former Registrant Firm's main office was located;
- (c) the names of the Responsible Registrant(s) and the Responsible Officer of the former Registrant Firm;
- (d) the area(s) of practice to which each Responsible Registrant of the former Registrant Firm was designated;
- (e) the date on which the former Registrant Firm was first granted registration as a Registrant Firm;
- (f) the date(s) of any:
 - (i) expiration(s) of the Registrant Firm's registration and Permit to Practice;
 - (ii) cancellation(s) of the Registrant Firm's registration and Permit to Practice;
 - (iii) suspension(s) of the Registrant Firm's registration and Permit to Practice;
 - (iv) condition(s) on the Registrant Firm's registration and Permit to Practice prohibiting the former Registrant Firm from engaging in the Regulated Practice;
- (g) any Disciplinary Order(s) respecting the former Registrant Firm.
- (5) The information listed in subsections (3)(k), (3)(l), (4)(f), and (4)(g) must appear on the Register for as long as a Registrant Firm is listed on the Register pursuant to subsections (1) and (2).

5.29 Information Collected Annually and Published on the Register

- (1) By 11:59 PM (Pacific Time) on June 30, the last day of each Reporting Year, an individual Registrant must provide EGBC with the information that is required to be published on the Register pursuant to sections 5.27(4)(d), (e), (f), and (g) of the Bylaws.
- (2) An individual Registrant must provide written notice to EGBC regarding any change to the information that is required pursuant to subsection (1) within 30 days of the change taking effect.
- (3) By 11:59 PM (Pacific Time) on March 31 of each year, a Registrant Firm must provide EGBC with the information that is required to be published on the Register pursuant to sections 5.28(3)(b), (c), (d), (e), (f), and (g) of the Bylaws.
- (4) A Registrant Firm must provide written notice to EGBC regarding any change to the information that is required pursuant to subsection (3) within 30 days of the change taking effect.



5.30 Information Collected Annually and not Published on the Register

- (1) By 11:59 PM (Pacific Time) on June 30, the last day of each Reporting Year, an individual Registrant must provide EGBC with
 - (a) the individual Registrant's personal and unique email address,
 - (b) A declaration confirming whether the Registrant has been:
 - (i) convicted of an offence under a federal or provincial statute, or an equivalent offence in another jurisdiction,
 - (ii) the subject of an investigation, inquiry, review, or other disciplinary proceeding by a Different Governing Body, that could result in
 - (A) the Registrant's entitlement to practise a profession being cancelled, suspended, restricted, or made subject to limits or conditions,
 - (B) if the Registrant is a Trainee, the Trainee's entrance to a profession being denied, or
 - (C) if the Registrant is a Registrant Firm, the Registrant Firm's permit, license, or authorization to practice a profession being cancelled, suspended, restricted, or made subject to limits or conditions, or
 - (iii) the subject of a disciplinary action taken by a Different Governing Body, including an agreement resulting in the resolution of an investigation or disciplinary process,

which is not to be published on the Register.

- (2) An individual Registrant must provide written notice to EGBC regarding any change to the individual Registrant's personal and unique email address within 30 days of the change taking effect.
- (3) By 11:59 PM (Pacific Time) on March 31 of each year, a Registrant Firm must provide EGBC with
 - (a) the personal and unique email addresses of each Responsible Registrant and the Responsible Officer of the Registrant Firm,
 - (b) the names of all individual Registrants employed by or under contract with the Registrant Firm,
 - (c) the number of individuals employed by or under contract with the Registrant Firm who are registrants of each regulatory body under the PGA other than EGBC, and



- (d) A declaration confirming whether the Registrant Firm has been:
 - (i) convicted of an offence under a federal or provincial statute, or an equivalent offence in another jurisdiction,
 - the subject of an investigation, inquiry, review, or other disciplinary proceeding by a Different Governing Body, that could result in the Registrant Firm's permit, license, or authorization to practice a profession being cancelled, suspended, restricted, or made subject to limits or conditions, or
 - (iii) the subject of a disciplinary action taken by a Different Governing Body, including an agreement resulting in the resolution of an investigation or disciplinary process,

which is not to be published on the Register except as required pursuant to section 5.28 of the Bylaws.

(4) A Registrant Firm must provide written notice to EGBC regarding any change to the information that is required pursuant to subsections (3)(a) or (b) within 30 days of the change taking effect.

5.31 Failure to Provide Required Information

- (1) An individual Registrant who fails to provide EGBC with any of the information required pursuant to sections 5.29(1) or 5.30(1) of the Bylaws must, by 11:59 PM (Pacific Time) on September 30 in the following Reporting Year,
 - (a) provide EGBC with the required information, and
 - (b) send to EGBC the late reporting fee specified in Schedule C of the Bylaws.
- (2) A Registrant Firm who fails to provide EGBC with any information required pursuant to sections 5.29(3) or 5.30(3) of the Bylaws must, by 11:59 PM (Pacific Time) on May 31 of the same year,
 - (a) provide EGBC with the required information, and
 - (b) send to EGBC the late reporting fee specified in Schedule C of the Bylaws.
- (3) If a Registrant fails comply with the requirements set out in subsections (1) or (2), as applicable, the Registrant's registration must be suspended, and, if the Registrant is a Registrant Firm, a condition must be placed on the Registrant Firm's registration and Permit to Practice prohibiting it from engaging in the Regulated Practice until such requirements are complete.
- (4) If an individual Registrant fails to comply with the requirements set out in subsection (1) by 11:59 PM (Pacific Time) on December 31 of the same year,



- (a) the Registrant's registration is cancelled, or
- (b) if the Registrant is a Trainee, the Trainee's enrolment is cancelled.
- (5) If a Registrant Firm fails to comply with the requirements set out in subsection (2) by 11:59 PM (Pacific Time) on August 31 of the same year, the Registrant Firm's registration and Permit to Practice are cancelled.

5.32 Information Collected Immediately and not Published on the Register

- (1) A Registrant who is convicted of an offence under a federal or provincial statute, or an equivalent offence in another jurisdiction, must immediately on becoming aware of the conviction provide written notice to EGBC specifying the particulars of the conviction.
- (2) A Registrant who becomes the subject of an investigation, inquiry, review, or other disciplinary proceeding by a Different Governing Body, that could result in
 - (a) the Registrant's entitlement to practise a profession being cancelled, suspended, restricted, or made subject to limits or conditions,
 - (b) if the Registrant is a Trainee, the Trainee's entrance to a profession being denied, or
 - (c) if the Registrant is a Registrant Firm, the Registrant Firm's permit, license, or authorization to practice a profession being cancelled, suspended, restricted, or made subject to limits or conditions,

must immediately on becoming aware of the investigation, inquiry, review, or proceeding provide written notice to EGBC and provide particulars of the issue.

- (3) A Registrant who becomes the subject of a disciplinary action taken by a Different Governing Body, including an agreement resulting in the resolution of an investigation or disciplinary process, must immediately upon reaching the agreement or becoming aware of the disciplinary action, provide written notice to EGBC specifying the particulars of the agreement or disciplinary action.
- (4) A Registrant Firm must provide written notice to EGBC within 15 days of the occurrence of any of the following situations:
 - (a) there is a merger, acquisition, closure, or dissolution of the Registrant Firm;
 - (b) the Registrant Firm
 - (i) becomes the subject of an application for a bankruptcy order,
 - (ii) makes an assignment for the general benefit of creditors, or
 - (iii) makes or becomes the subject of a Division I or Division II proposal,


as set out in the Bankruptcy and Insolvency Act, R.S.C. 1985, c. B-3.

5.33 Issuance of Certificate or Permit to Practice

- (1) The Registrar must issue to an individual Registrant a certificate of registration and, on payment of the annual fee, confirmation that the Registrant is In Good Standing.
- (2) The Registrar must issue to a Registrant Firm a Permit to Practice and, on payment of the annual fee, confirmation that the Registrant Firm is In Good Standing.



6 Fees

6.1 Application Fees

- (1) An Applicant for enrolment, admission, or reinstatement of status as a Registrant pursuant to sections 5.5 to 5.16, 5.23, 5.24, or 5.25 of the Bylaws must send to EGBC the full amount of all applicable application, examination, interview, or course fees specified in Schedule C of the Bylaws.
- (2) In addition to any fees applicable pursuant to subsection (1), a professional engineer who applies for designation as a designated structural engineer pursuant to section 5.6.1 must send to EGBC the full amount of all applicable application and examination fees specified in Schedule C of the Bylaws.

6.2 Registration Fees

- (1) Within 30 days of being granted registration as an individual Registrant other than a Trainee, an individual Registrant must send to EGBC the full amount of the applicable registration fee specified in Schedule C of the Bylaws.
- (2) Within 30 days of being designated as a designated structural engineer, a designated structural engineer must send to EGBC the full amount of the applicable designation fee specified in Schedule C of the Bylaws.

6.3 Reconsideration and Review on the Record Fees

- (1) An individual Applicant who applies for a reconsideration must send to EGBC the full amount of all applicable reconsideration fees specified in Schedule C of the Bylaws.
- (2) An Applicant who applies for a review on the record must send to EGBC the full amount of all applicable review on the record fees specified in Schedule C of the Bylaws.

6.4 Annual Fees

- (1) An individual Registrant must send to EGBC the full amount of the applicable annual fee specified in Schedule C of the Bylaws by 11:59 PM (Pacific Time) on December 31 of each year.
- (2) Subject to subsection (4), a Registrant Firm must send to EGBC the full amount of the applicable annual fee specified in Schedule C of the Bylaws by 11:59 PM (Pacific Time) on May 31 of each year.
- (3) A non-practising Registrant Firm that has held non-practising status for 2 years or less is exempt from paying the applicable annual fee.
- (4) In addition to the annual fee set out in subsection (2), a Registrant Firm that was engaged in the Regulated Practice on or after July 1, 2021 but is not immediately registered pursuant to these Bylaws must pay the annual fee specified in Schedule C of the Bylaws



for each year or portion of a year, up to a maximum of 3 years, that the Registrant Firm would have been required to pay the annual fee to EGBC if the Registrant Firm had been granted registration on July 1, 2021.

(5) A Registrant that is granted enrolment, admission, or reinstatement of status at some time other than the beginning of the annual fee cycle must pay a prorated annual fee specified in Schedule C of the Bylaws within 30 days of being granted enrolment, admission, or reinstatement.

6.5 Special Assessments

- (1) An individual Registrant must send to EGBC the full amount of an applicable special assessment specified in Schedule C of the Bylaws by 11:59 PM (Pacific Time) on December 31 of each year.
- (2) A Registrant Firm must send to EGBC the full amount of an applicable special assessment specified in Schedule C of the Bylaws by 11:59 PM (Pacific Time) on May 31 of each year.

6.6 Additional Manual Seal(s) or Certificate(s)

(1) A Registrant who requires additional Manual Seal(s) or certificate(s) of registration from EGBC must send to EGBC the full amount of all applicable fees specified in Schedule C of the Bylaws at the time that the Registrant requests the additional Manual Seal(s) or certificate(s) of registration.

6.7 Exemption, Reduction, Deferral, or Refund of Fees

- (1) On receiving a written application by an individual Registrant, the Registrar may exempt, reduce, defer, or refund all or part of a fee or special assessment specified in Schedule C of the Bylaws if the Registrar is satisfied that the imposition of the fee or special assessment would cause undue financial hardship for the individual Registrant, or if there are extenuating circumstances that warrant the exemption, reduction, deferral, or refund.
- (2) On receiving a written application by a Registrant Firm, the Registrar may waive payment of all or part of a fee for the Registrant Firm specified in sections 6.1(1), 6.4(2), 6.4(4), 6.5(2), or Schedule C of the Bylaws, pursuant to section 50(1)(h) of the PGA [*Fees and special assessments*], if the Registrar is satisfied that
 - (a) the Registrant Firm was a member of EGBC's Organizational Quality Management Program as of June 30, 2021, and
 - (b) the Registrant Firm had paid all outstanding fees and any amounts owing pursuant to its membership in the Organizational Quality Management program as of June 30, 2021.
- (3) A Registrant Firm is not eligible to apply for the reduction, deferral, or refund of fees or special assessments, except in accordance with subsection (2).



6.8 Failure to Pay Fees

- (1) An individual Registrant who fails to pay the full amount of an applicable annual fee or special assessment pursuant to sections 6.4(1) or 6.5(1) of the Bylaws must send to EGBC the full amount of the applicable annual fee or special assessment and the applicable late fee specified in Schedule C of the Bylaws, by 11:59 PM (Pacific Time) on January 31 of the following year.
- (2) Pursuant to section 31(4)(b) of the PGA [*Registrar and register for regulatory body*], if a Registrant fails to pay a required
 - (a) registration fee pursuant to section 6.2(1) of the Bylaws,
 - (b) designation fee pursuant to section 6.2(2) of the Bylaws,
 - (c) for an individual Registrant, a prorated annual fee pursuant to section 6.4(5) of the Bylaws, or
 - (d) annual fee, special assessment, or late fee pursuant to section 6.8(1) of the Bylaws,

the Registrar must cancel the Registrant's registration, or if the Registrant is a Trainee, the Trainee's enrolment, or if the Registrant is a Registrant Firm, the Registrant Firm's registration and Permit to Practice.

- (3) A Registrant Firm or a non-practising Registrant Firm that fails to pay the full amount of an applicable annual fee or special assessment pursuant to sections 6.4(2), 6.4(4), or 6.5(2) of the Bylaws must send to EGBC the full amount of the applicable annual fee or special assessment and late fee specified in Schedule C of the Bylaws by 11:59 PM (Pacific Time) on June 30 of the same year.
- (4) If a Registrant Firm or non-practising Registrant Firm fails to comply with the requirements set out in subsection (3), the Registrar must place a condition on the Registrant Firm's registration and Permit to Practice prohibiting it from engaging in the Regulated Practice until all fees outstanding pursuant to subsection (3) have been paid.
- (5) Pursuant to section 31(4)(b) of the PGA [*Registrar and register for regulatory body*], if a Registrant Firm or non-practising Registrant Firm that is subject to a condition prohibiting it from engaging in the Regulated Practice pursuant to subsection (4) fails to pay the full amount of all applicable outstanding fees by 11:59 PM (Pacific Time) on August 31 of the same year, the Registrar must cancel the Registrant Firm or non-practising Registrant Firm's registration and Permit to Practice.



7 Standards of Conduct and Competence

7.1 Definitions

(1) For the purpose of this Part, "Registrant" includes a former Registrant where applicable, pursuant to section 56(1) of the PGA [*Definition and Application*].

7.2 Code of Ethics

(1) A Registrant must adhere to the Code of Ethics as set out in Schedule A of the Bylaws.

7.3 Standards of Competence – Quality Management Requirements

- (1) The standards of competence quality management requirements set out in sections 7.3.1 to 7.3.8 of the Bylaws are established pursuant to section 57(1)(b) of the PGA [*Standards of Conduct and Competence*].
- (2) A Registrant must comply with the standards of competence set out in sections 7.3.1 to 7.3.7 of the Bylaws at all times while engaged in the Regulated Practice.
- (3) A non-practising Registrant Firm is exempt from the requirements set out in sections 7.3.1, 7.3.3, 7.3.4(4)(a), 7.3.4(4)(b), 7.3.4(4)(c), 7.3.5, 7.3.6, and 7.3.8 of the Bylaws while maintaining its non-practising status and not engaged in the Regulated Practice.

7.3.1 Standard for Use of Professional Practice Guidelines

- (1) EGBC shall publish professional practice guidelines approved by the Council on a public website maintained by EGBC and shall update professional practice guidelines as necessary.
- (2) A Professional Registrant must have regard for applicable standards, policies, plans, and practices established by the government or by EGBC, including professional practice guidelines published pursuant to subsection (1), by establishing, maintaining, and following documented procedures in order to do all of the following:
 - (a) stay informed of, knowledgeable about, and meet the intent of all applicable standards, policies, plans, and practices established by the government or by EGBC, including professional practice guidelines published pursuant to subsection (1), that are relevant to the Professional Registrant's Regulated Practice;
 - (b) document in writing the reason(s) for a departure from any relevant portion of a professional practice guideline published pursuant to subsection (1).
- (3) A Registrant Firm must do all of the following:
 - (a) establish, maintain, and follow documented policies and procedures in order to



- (i) obtain information and details in a timely manner regarding professional practice guidelines published pursuant to subsection (1) that are relevant to the Regulated Practice carried out by the Registrant Firm and Professional Registrants employed by or under contract with the Registrant Firm, and
- (ii) inform the Professional Registrants employed by or under contract with the Registrant Firm in a timely and effective manner of professional practice guidelines published pursuant to subsection (1) that are relevant to the Regulated Practice carried out by the Registrant Firm and Professional Registrants employed by or under contract with the Registrant Firm;
- (b) take reasonable steps to facilitate all Professional Registrants employed by or under contract with the Registrant Firm in adhering to the obligations of Professional Registrants pursuant to subsection (2).

7.3.2 Standard for Retention and Preservation of Complete Project Documentation

- (1) A Professional Registrant must establish, maintain, and follow documented procedures for the retention and preservation of complete project documentation related to the Regulated Practice engaged in by the Professional Registrant, including copies of physical or electronic versions of
 - (a) correspondence,
 - (b) investigations,
 - (c) surveys,
 - (d) reports,
 - (e) data,
 - (f) background information,
 - (g) assessments,
 - (h) designs,
 - (i) specifications,
 - (j) field reviews,
 - (k) testing information,
 - (I) models,
 - (m) simulations,



- (n) quality assurance documentation,
- (o) drawings,
- (p) calculations, and
- (q) copies of all Authenticated Documents.
- (2) A Registrant Firm must establish, maintain, and follow documented policies and procedures for the retention and preservation of complete project documentation related to the Regulated Practice engaged in by the Registrant Firm, which documentation is not limited to, but must include if they existed, physical and electronic versions of
 - (a) correspondence,
 - (b) investigations,
 - (c) surveys,
 - (d) reports,
 - (e) data,
 - (f) background information,
 - (g) assessments,
 - (h) designs,
 - (i) specifications,
 - (j) field reviews,
 - (k) testing information,
 - (I) models,
 - (m) simulations,
 - (n) quality assurance documentation,
 - (o) drawings,
 - (p) calculations, and
 - (q) copies of all Authenticated Documents.



- (3) Complete project documentation must be retained and preserved for at least 10 years after the later of the completion of the project or when the documentation is no longer used.
- (4) A Registrant Firm must do all of the following:
 - (a) establish and maintain documented policies, plans, and procedures
 - (i) in order to ensure that, if any of the situations set out in section 5.32(4) occur with respect to a Registrant Firm, complete project documentation is preserved in accordance with subsection (3) and such documentation is accessible in the event of a request pursuant to the PGA or Bylaws, and
 - (ii) for all individuals employed by or under contract with the Registrant Firm to follow in relation to the retention and preservation of complete project documentation and the obligations of Professional Registrants and Registrant Firms pursuant to this section of the Bylaws;
 - (b) ensure that all individuals employed by or under contract with the Registrant Firm adhere to the documented policies and procedures of the Registrant Firm established pursuant to paragraph (a);
 - (c) take reasonable steps to facilitate the Professional Registrants employed by or under contract with the Registrant Firm in adhering to the obligations of Professional Registrants pursuant to subsections (1) and (3).
- (5) A Professional Registrant who is employed by or under contract with a Registrant Firm may satisfy their obligations pursuant to this section of the Bylaws with respect to any project documentation produced during the course of their employment or contract with the Registrant Firm by
 - (a) taking reasonable steps to confirm that
 - the Registrant Firm has in place documented policies and procedures for the retention and preservation of all project documentation produced by the Professional Registrant during the course of or related to their employment or contract with the Registrant Firm, and
 - (ii) that the documented policies and procedures referred to in paragraph (a)(i) are in accordance with the requirements set out in subsections (2), (3), and (4), and
 - (b) consistently adhering to the documented policies and procedures of the Registrant Firm with respect to retention and preservation of project documentation established pursuant to subsection (4)(a) during the course of the Professional Registrant's employment or contract with the Registrant Firm.



- (6) A Professional Registrant who ceases to be employed by or under contract with a Registrant Firm may continue to satisfy their obligation to retain and preserve complete project documentation pursuant to subsection (3) by ensuring that
 - (a) an agreement is in place with the Registrant Firm regarding the retention and preservation of all project documentation produced by the Professional Registrant during the course of their employment or contract with the Registrant Firm, and
 - (b) the agreement referenced in paragraph (a) requires either the Professional Registrant or the Registrant Firm, or both, to retain and preserve all project documentation in accordance with the requirements of this section of the Bylaws.

7.3.3 Standard for Field Reviews

- (1) Field reviews must be completed during the construction, manufacturing, fabrication, implementation, testing, or commissioning of work related to the Regulated Practice by a Professional Registrant, or a Subordinate under the Professional Registrant's Direct Supervision, in a manner that is appropriate to the level of risk that has been assessed through a documented risk assessment.
- (2) If applicable pursuant to subsection (1), a Professional Registrant must establish, maintain, and follow documented procedures for documented field reviews of work related to the Regulated Practice in British Columbia.
- (3) Through a field review, a Professional Registrant, or a Subordinate under the Professional Registrant's Direct Supervision, must determine whether the construction, manufacturing, fabrication, implementation, testing, or commissioning of work related to the Regulated Practice substantially complies with the concepts or intent reflected in the Documents prepared for the work related to the Regulated Practice.
- (4) If applicable pursuant to subsection (1), a Registrant Firm must do all of the following:
 - (a) establish and maintain documented policies and procedures for Professional Registrants employed by or under contract with the Registrant Firm to follow in relation to field reviews and the obligations of Professional Registrants pursuant to this section of the Bylaws, which may include:
 - (i) process flowcharts,
 - (ii) checklists, or
 - (iii) forms;
 - (b) ensure that the Professional Registrants employed by or under contract with the Registrant Firm adhere to the documented policies and procedures of the Registrant Firm established pursuant to paragraph (a);



(c) take reasonable steps to facilitate the Professional Registrants employed by or under contract with the Registrant Firm in adhering to the obligations of Professional Registrants pursuant to subsections (1), (2), and (3).

7.3.4 Standard for Checks

- (1) A Professional Registrant must establish, maintain, and follow documented procedures for regular, documented checks of the Professional Registrant's work related to the Regulated Practice using a written quality control process appropriate to the level of risk that has been assessed through a documented risk assessment.
- (2) The procedures established pursuant to subsection (1) must include:
 - (a) how risk will be assessed;
 - (b) the minimum frequency for checks to be conducted, dependent on the degree of risk assessed pursuant to (a);
 - (c) the required qualifications of the checker;
 - (d) how the check will be documented, including:
 - (i) who conducted the check;
 - (ii) the date that the check was completed;
 - (iii) what was checked; and
 - (iv) issues identified by the checker, if any;
 - (v) correction(s) and corrective action(s), if any, in response to issues identified by the checker.
 - (e) what must be checked, including but not limited to:
 - (i) input requirements;
 - (ii) input data;
 - (iii) calculations;
 - (iv) drawings;
 - (v) assessments;
 - (vi) designs;



- (vii) software outputs;
- (viii) communications that include directives, recommendations, or opinions related to the Regulated Practice;
- (ix) reports;
- (x) recommendations; and,
- (xi) other activities or work related to the Regulated Practice, including activities or work related to manufacturing, high technology, computer software development, operations, and maintenance activities.
- (3) A Professional Registrant must ensure that a documented check has been conducted in accordance with the procedures established pursuant to subsection (1) on all activities or work related to the Regulated Practice that will be issued or delivered to any other party.
- (4) A Registrant Firm must do all of the following:
 - (a) establish and maintain documented policies and procedures for Professional Registrants employed by or under contract with the Registrant Firm to follow in relation to documented checks and the obligations of Professional Registrants pursuant to this section of the Bylaws, which may include
 - (i) process flowcharts,
 - (ii) checklists, or
 - (iii) forms;
 - (b) ensure that the Professional Registrants employed by or under contract with the Registrant Firm adhere to the documented policies and procedures established pursuant to paragraph (a);
 - (c) take reasonable steps to facilitate the Professional Registrants employed by or under contract with the Registrant Firm in adhering to the obligations of Professional Registrants pursuant to subsections (1), (2), and (3);
 - (d) retain complete documentation related to checks conducted by any Professional Registrant employed by or under contract with the Registrant Firm, in accordance with section 7.3.2 of the Bylaws.

7.3.5 Standard for Independent Review(s) of Structural Designs

(1) All Structural Designs require documented independent review(s) prior to Documents being issued for construction or implementation.



- (2) Despite subsection (1), EGBC may identify classes of Structures that do not require documented independent review(s) of Structural Designs.
- (3) A Professional of Record must
 - (a) complete a documented risk assessment after conceptual design and before detailed design of a Structural Design to determine the following:
 - (i) the appropriate frequency for the required documented independent review(s) of the Structural Design;
 - (ii) whether the required documented independent review(s) of the Structural Design must be conducted by
 - (A) an appropriately qualified and experienced Professional Registrant who has not been previously involved in the Structural Design and is employed by the same Firm employing the Professional of Record, or
 - (B) an appropriately qualified and experienced Professional Registrant who has not been previously involved in the Structural Design and is employed by a Firm other than the Firm employing the Professional of Record.
 - (b) record their rationale for the determinations made pursuant to paragraphs (a)(i) and (ii),
 - (c) document actions taken or not taken, along with the rationale for that decision, as a result of the independent review(s), including any actions taken or not taken as a result of information received pursuant to subsection (7)(d),
 - (d) communicate the actions and rationale documented pursuant to paragraph (c) to the Professional Registrant tasked with completing the documented independent review in an appropriately timely manner.
- (4) Despite subsection (3)(b), EGBC may identify classes of Structures for which required documented independent reviews must be conducted by an appropriately experienced Professional Registrant who has not been previously involved in the Structural Design and is employed by a Firm other than the Firm employing the Professional of Record.
- (5) Documented independent review(s) of Structural Designs must not replace the regular, documented checks required pursuant to section 7.3.4 of the Bylaws.
- (6) If applicable pursuant to subsection (1) and not exempted pursuant to subsection (2), a Professional Registrant must establish, maintain, and follow documented procedures for documented independent review(s) of Structural Designs.
- (7) A Professional Registrant tasked with completing a documented independent review of a Structural Design must



- (a) have appropriate experience in the type and scale of the Structural Design subject to the documented independent review,
- (b) determine the extent of the documented independent review based on the progressive findings of the documented independent review and record the rationale for this determination,
- (c) evaluate any related Documents to determine if they are complete, consistent, and in general compliance with applicable codes, standards, and other requirements,
- (d) communicate any issues found during the independent review(s) to the Professional of Record in an appropriately timely manner,
- (e) complete a documented record of the documented independent review that meets the intent of the documented independent review sign off form issued by EGBC, and
 - (i) provide this documented record to
 - (A) the Professional of Record, and
 - (B) the authority having jurisdiction, if requested, and
 - (ii) retain and preserve this documented record for a period of 10 years in accordance with section 7.3.2(3),
- (f) examine representative samples of the structural assumptions, continuity of gravity and lateral load paths, stability, and detailing, and
- (g) perform numerical calculations on a sample of gravity and lateral force resisting elements necessary to satisfy any concerns of the Professional Registrant tasked with completing the documented independent review, as appropriate.
- (8) While a documented risk assessment and a documented independent review of each instance of repetitive designs of individual structural components is not required,
 - (a) the maintenance of design quality must be confirmed through
 - (i) an initial documented initial risk assessment and documented independent review, and
 - (ii) documented risk assessments and documented independent reviews at intervals,
 - (b) a documented process must be in place that identifies the criteria used to determine what types of designs are considered repetitive and the interval frequency for maintaining the design quality, and



- (c) the documented record produced through
 - (i) the initial documented risk assessment and documented independent review, and
 - (ii) documented risk assessments and documented independent reviews at intervals

must be retained and preserved for a minimum of 10 years after the last use of the repetitive design and made available to any person using the Structural Design, in accordance with section 7.3.2(3).

- (9) If applicable pursuant to subsection (1), and not exempted pursuant to subsection (2), a Registrant Firm must do all of the following:
 - (a) establish and maintain documented policies and procedures for Professional Registrants employed by or under contract with the Registrant Firm to follow in relation to independent review of structural designs and the obligations of Professional Registrants pursuant to this section of the Bylaws, which may include
 - (i) checklists, or
 - (ii) signoff forms;
 - (b) take reasonable steps to ensure that a Professional Registrant conducting a documented independent review pursuant to this section of the Bylaws has sufficient and acceptable knowledge, training, and experience to conduct the documented independent review;
 - (c) ensure that the Professional Registrants employed by or under contract with the Registrant Firm adhere to the documented policies and procedures of the Registrant Firm established pursuant to paragraph (a);
 - (d) take reasonable steps to facilitate the Professional Registrants employed by or under contract with the Registrant Firm in adhering to the obligations of Professional Registrants pursuant to subsections (1) to (8).

7.3.6 Standard for Independent Review(s) of High-Risk Professional Activities or Work

- (1) A professional activity or work that has been identified by a Professional of Record as high-risk through a documented risk assessment requires documented independent review(s) before the professional activity or work is submitted to those who will be relying on it.
- (2) Despite subsection (1), EGBC may establish criteria for professional activities or work, or identify specific professional activities or work, that
 - (a) do not require documented independent review(s), or



- (b) require documented independent review(s), even if the professional activities or work are not identified by a Professional of Record as high-risk through a documented risk assessment.
- (3) A Professional of Record must
 - (a) complete a documented risk assessment prior to the initiation of a professional activity or work to determine the following:
 - (i) whether a professional activity or work is high-risk;
 - (ii) if documented independent review(s) of the professional activity or work is required, the appropriate frequency for the required documented independent review(s);
 - (iii) if documented independent review(s) of the professional activity or work is required, whether the required documented independent review(s) must be conducted by
 - (A) an appropriately qualified and experienced Professional Registrant who has not been previously involved in the professional activity or work and is employed by the same Firm employing the Professional of Record, or
 - (B) an appropriately qualified and experienced Professional Registrant who has not been previously involved in the professional activity or work and is employed by a Firm other than the Firm employing the Professional of Record,
 - (b) record their rationale for the determinations made pursuant to paragraphs (a)(i), (ii), (iii), and (iv),
 - (c) document actions taken or not taken, along with the rationale for that decision, as a result of the independent review(s), including any actions taken or not taken as a result of information received pursuant to subsection (7)(d),
 - (d) communicate the actions and rationale documented pursuant to paragraph (c) to the Professional Registrant tasked with completing the documented independent review in an appropriately timely manner.
- (4) Despite subsection (3)(c), EGBC may identify specific professional activities or work for which required documented independent reviews must be conducted by an appropriately experienced Professional Registrant who has not been previously involved in the professional activity or work and is employed by a Firm other than the Firm employing the Professional of Record.
- (5) Documented independent review(s) of a professional activity or work must not replace the regular, documented checks required pursuant to section 7.3.4 of the Bylaws.



- (6) If applicable pursuant to subsection (1) and not exempted pursuant to subsection (2), a Professional Registrant must establish, maintain, and follow documented procedures for documented independent review(s) of a professional activity or work.
- (7) A Professional Registrant tasked with completing a documented independent review of a professional activity or work must
 - (a) have appropriate experience in the type and scale of the professional activity or work subject to the documented independent review,
 - (b) determine the extent of the documented independent review based on the progressive findings of the documented independent review and record the rationale for this determination,
 - (c) evaluate any Documents related to the professional activity or work to determine if they are complete, consistent, and in general compliance with applicable codes, standards, and other requirements, and
 - (d) communicate any issues found during the independent review(s) to the Professional of Record in an appropriately timely manner
 - (e) complete a documented record of the documented independent review that meets the intent of the documented independent review sign off form issued by EGBC and
 - (i) provide this documented record to
 - (A) the Professional of Record, and
 - (B) the authority having jurisdiction, if requested, and
 - (ii) retain and preserve this documented record for a period of 10 years, in accordance with section 7.3.2(3).
- (8) While a documented risk assessment and a documented independent review of each instance of repetitive professional activities or work is not required,
 - (a) the maintenance of activity or work quality must be confirmed through
 - (i) an initial documented risk assessment and documented independent review, and
 - (ii) documented risk assessments and documented independent reviews at intervals,
 - (b) a documented process must be in place that identifies the criteria used to determine what types of professional activities or work are considered repetitive and the interval frequency for maintaining the activity or work quality, and



- (c) the documented record produced through
 - (i) the initial documented risk assessment and documented independent review, and
 - (ii) documented risk assessments and documented independent reviews at intervals

must be retained and preserved for a minimum of 10 years after the last use of the repetitive professional activity or work and made available to any person undertaking the professional activity or work, in accordance with section 7.3.2(3).

- (9) A Registrant Firm must do all of the following:
 - (a) establish and maintain documented policies and procedures for Professional Registrants employed by or under contract with the Registrant Firm to follow in relation to independent review of high-risk professional activities or work and the obligations of Professional Registrants pursuant to this section of the Bylaws, which may include
 - (i) checklists, or
 - (ii) signoff forms;
 - (b) take reasonable steps to ensure that a Professional Registrant conducting a documented independent review pursuant to this section of the Bylaws has sufficient and acceptable knowledge, training, and experience to conduct the review;
 - (c) ensure that Professional Registrants employed by or under contract with the Registrant Firm adhere to the documented policies and procedures of the Registrant Firm established pursuant to paragraph (a);
 - (d) take reasonable steps to facilitate Professional Registrants employed by or under contract with the Registrant Firm in adhering to the obligations of Professional Registrants pursuant to subsections (1) to (8).

7.3.7 Standard for Issuance of Manual Seal and Authenticating Documents

- (1) EGBC may provide a Professional Registrant In Good Standing with a Manual Seal bearing the following information:
 - (a) the Professional Registrant's first initial(s), middle initial(s), and last name(s);
 - (b) the words "professional engineer", "professional geoscientist", "professional licensee engineering", or "professional licensee geoscience", as applicable.
- (2) EGBC retains ownership of a Manual Seal issued by EGBC.



- (3) A Professional Registrant must establish, maintain, and follow documented procedures related to a Professional Registrant's Manual Seal, a Professional Registrant's Digital Seal, and Authenticating Documents, in accordance with the requirements set out in this section of the Bylaws.
- (4) Only a Professional Registrant may Authenticate a Document.
- (5) A Professional Registrant must Authenticate
 - (a) a Document that
 - (i) the Professional Registrant has prepared in their professional capacity or has been prepared under their Direct Supervision,
 - (ii) contains content related to the Regulated Practice, and
 - (iii) will be relied on by others, or
 - (b) a Document that is otherwise required to be Authenticated by applicable legislation, associated regulations, the Bylaws, or standards approved by the Council.
- (6) Despite subsection (5), a Professional Registrant who is a professional licensee engineering or a professional licensee geoscience must not Authenticate Documents outside the authorized area of practice identified on their licence.
- (7) If a deliverable is provided in a format that cannot be reasonably read by an individual, a Professional Registrant must adhere to an authentication process that has been prescribed by standards or guidelines approved by the Council.
- (8) A Professional Registrant must not charge a fee for only Authenticating a Document.
- (9) With respect to Manually Authenticating, a Professional Registrant must not allow another person to apply any of the following:
 - (a) the Professional Registrant's Manual Seal, or a likeness or digital image of the Professional Registrant's Manual Seal, except under the Professional Registrant's express and written authorization, which authorization must be specific to each application and not an ongoing authorization;
 - (b) the Professional Registrant's handwritten signature, or a likeness of the Professional Registrant's handwritten signature, under any circumstances;
 - (c) the date of Authentication, except under the Professional Registrant's express and written authorization, which authorization must be specific to each application and not an ongoing authorization.



- (10) With respect to Digitally Authenticating, a Professional Registrant must not allow another person to do any of the following:
 - (a) apply the Professional Registrant's Digital Certificate under any circumstances;
 - (b) gain access to the Professional Registrant's Digital Certificate or to any password, PIN, or other factor used to secure access to or control over the Professional Registrant's Digital Certificate, under any circumstances.
- (11) In the event of suspension or cancellation of a Professional Registrant's registration,
 - (a) the Professional Registrant must return their Manual Seal to EGBC upon request,
 - (b) EGBC will disable any Digital Certificate issued to the Professional Registrant for the period of the suspension or cancellation, and
 - (c) the Professional Registrant must not Authenticate any Document for the period of the suspension or cancellation.
- (12) A Registrant must ensure that any Manual Seal and any Digital Certificate issued to them remains secure and under their sole control at all times.
- (13) A Registrant Firm must do all of the following:
 - (a) establish and maintain documented policies and procedures for all individuals employed by or under contract with the Registrant Firm to follow in relation to the use of a Manual Seal, the use of a Digital Seal, the Authentication of Documents, and the obligations of Professional Registrants pursuant to subsections (1) to (12);
 - (b) ensure that all individuals employed by or under contract with the Registrant Firm adhere to the documented policies and procedures of the Registrant Firm established pursuant to paragraph (a);
 - (c) take reasonable steps to facilitate the individual Registrants employed by or under contract with the Registrant Firm in adhering to the obligations of individual Registrants pursuant to subsections (1) to (12).
- (14) If a Professional Registrant employed by or under contract with a Registrant Firm Authenticates a Document on behalf of the Registrant Firm, the Registrant Firm's Permit to Practice Number must be applied visibly to the Document.
- (15) Only the following individuals may apply a Registrant Firm's Permit to Practice Number to a Document:
 - (a) a Responsible Registrant of the Registrant Firm;



- (b) a Professional Registrant employed by or under contract with the Registrant Firm who has been authorized by a Responsible Registrant to apply the Registrant Firm's Permit to Practice Number.
- (16) A Registrant Firm must not allow any person to apply the Registrant Firm's Permit to Practice Number to a Document other than the individuals set out in subsection (15).
- (17) If a Registrant Firm has reasonable and probable grounds to believe that any person has applied the Registrant Firm's Permit to Practice Number to a Document other than the individuals set out in subsection (15), the Registrant Firm must report the person to EGBC and provide EGBC with any information requested by EGBC regarding the circumstances of the application of the Permit to Practice Number.
- (18) In the event that a Registrant Firm's registration and Permit to Practice are cancelled, suspended, or subject to a condition prohibiting the Registrant Firm from engaging in the Regulated Practice,
 - (a) the Registrant Firm must not allow any person to apply the Registrant Firm's Permit to Practice Number to a Document,
 - (b) the Registrant Firm must not allow or cause the Registrant Firm's Permit to Practice Number to appear on any communication, website, document, or in any other manner that could suggest that the Registrant Firm's registration and Permit to Practice Number are not cancelled, suspended, or subject to a condition prohibiting the Registrant Firm from engaging in the Regulated Practice and
 - (c) a Professional Registrant must not
 - (i) apply the Registrant Firm's Permit to Practice Number to a Document, or
 - (ii) authorize another Professional Registrant to apply the Registrant Firm's Permit to Practice Number to a Document.

7.3.8 Standard for Delegation and Direct Supervision

- (1) A Professional Registrant who will Delegate work or decisions related to the Regulated Practice to a Subordinate must establish, maintain, and follow documented procedures for Delegation in accordance with the requirements set out in this section of the Bylaws.
- (2) A Professional Registrant must ensure that work or decisions related to the Regulated Practice that are Delegated to a Subordinate are carried out under the Direct Supervision of the Professional Registrant.
- (3) A professional licensee engineering or professional licensee geoscience may only provide Direct Supervision of work or decisions related to the Regulated Practice that are within the authorized area of practice on their licence.



- (4) If any Professional Registrants employed by or under contract with a Registrant Firm will Delegate work or decisions related to the Regulated Practice to a Subordinate, or if the Registrant Firm employs any individuals who will act as a Subordinate, the Registrant Firm must do all of the following:
 - (a) establish and maintain documented policies and procedures for Professional Registrants and Subordinates employed by or under contract with the Registrant Firm to follow in relation to Delegation, Direct Supervision, and the obligations of Professional Registrants pursuant to subsections (1), (2), and (3);
 - (b) ensure that the Professional Registrants and Subordinates employed by or under contract with the Registrant Firm adhere to the documented policies and procedures of the Registrant Firm established pursuant to paragraph (a);
 - (c) take reasonable steps to facilitate Professional Registrants and Subordinates employed by or under contract with the Registrant Firm in adhering to the obligations of Professional Registrants and Subordinates pursuant to subsections (1), (2), and (3).

7.4 Practice Advice Program

- (1) The Practice Advice Program consists of the following components:
 - (a) Practice Advisors will receive and respond to professional or ethical inquiries of Registrants through email, telephone, or in person, with responses being
 - (i) provided either immediately or after consultation with appropriate parties, and
 - to the best of their knowledge, in compliance with current legislative requirements, regulatory requirements, and standards and guidelines issued by EGBC;
 - (b) documentation dealing with professional or ethical issues must be made available to Registrants on a public website maintained by EGBC, including professional practice guidelines, ethical guidelines, practice advisories, frequently asked questions, or magazine publications, on a basis determined by EGBC;
 - (c) training sessions dealing with professional or ethical issues must be made available to Registrants through webinars or in person workshops, on a basis determined by EGBC.
- (2) The Practice Advice Program excludes the following subjects:
 - (a) legal advice, including legal advice on commercial law, employment law, or criminal law issues;
 - (b) endorsement or checking of activities or work related to the Regulated Practice;



- (c) employment terms or conditions;
- (d) mediation or resolution of disputes between Registrants and others, including clients, owners, and employers.
- (3) Any information exchanged in a professional or ethical inquiry received pursuant to subsection (1)(a) may be retained by EGBC.

7.5 Professional Liability Insurance and Secondary Professional Liability Insurance

- (1) Before entering into an agreement to provide services related to the Regulated Practice to the public, a Professional Registrant or a Registrant Firm must provide written notice to a client regarding whether
 - (a) the Professional Registrant or the Registrant Firm holds professional liability insurance, and
 - (b) if the Professional Registrant or the Registrant Firm does hold professional liability insurance, whether the professional liability insurance is applicable to the services related to the Regulated Practice that are in question.
- (2) The written notice provided by a Professional Registrant or a Registrant Firm pursuant to subsection (1) must include a provision for an acknowledgement of the written notice to be signed by the client.
- (3) There is established a category of professional liability insurance, separate from the professional liability insurance mentioned in subsection (1), referred to as secondary professional liability insurance, that all Registrants, except Registrant Firms, must carry and maintain.
- (4) The Council may
 - (a) establish the terms, conditions, policies and procedures applicable to the secondary professional liability insurance program,
 - (b) require that the secondary professional liability insurance program, subject to the terms and conditions of the policy, provide coverage to Registrants who would otherwise have no professional liability insurance coverage for claims against them, and
 - (c) establish the fees to be paid by Registrants, for the secondary professional liability insurance program.

7.6 Continuing Education Program

7.6.1 Commencement of the Continuing Education Program



(1) The first Reporting Year and Three-Year Rolling Period commence on July 1, 2021.

7.6.2 Trainees and the Continuing Education Program

(1) A Trainee is not required to complete any of the continuing education program requirements set out in this section of the Bylaws.

7.6.3 Mandatory Continuing Education Hours and Activities for Professional Registrants

- (1) In each Three-Year Rolling Period, a Professional Registrant must complete at least 60 Continuing Education Hours.
- (2) In each Reporting Year, a Professional Registrant must complete at least one Continuing Education Hour of Ethical Learning.
- (3) In each Reporting Year, a Professional Registrant must complete at least one Regulatory Learning module referred to in section 7.6.14(1) of the Bylaws.
- (4) The mandatory Continuing Education Hours required pursuant to subsection (1) may include Continuing Education Hours related to Technical Learning or Communications and Leadership Learning.
- (5) In order for the Continuing Education Hours required pursuant to subsection (1) to be considered complete, an individual Registrant must record in EGBC's electronic system the following information about the Continuing Education Activities associated with the Continuing Education Hours:
 - (a) the date(s) of each Continuing Education Activity;
 - (b) the provider or source of each Continuing Education Activity;
 - (c) the number of Continuing Education Hours earned from each Continuing Education Activity; and
 - (d) whether each Continuing Education Activity involved Ethical Learning, Regulatory Learning, Communications and Leadership Learning, or Technical Learning.

7.6.4 Mandatory Continuing Education Plan for Professional Registrants

- (1) In each Reporting Year, a Professional Registrant must complete a continuing education plan which sets out all of the following information:
 - (a) the Professional Registrant's area(s) of practice, including any anticipated changes;



- (b) a declaration that the Registrant has assessed the risks of the Registrant's Regulated Practice to the public and the environment;
- (c) a description as to how the Professional Registrant has assessed the risks identified in subsection (b);
- (d) the Professional Registrant's learning goals and priorities; and
- (e) the Continuing Education Activities that the Professional Registrant plans to undertake in order to advance the learning goals and priorities identified in subsection (d).
- (2) A Professional Registrant must electronically submit the continuing education plan required pursuant to subsection (1) to EGBC by 11:59 PM (Pacific Time) on the last day of each Reporting Year.

7.6.5 Mandatory Continuing Education Hours and Activities for Designated Structural Engineers

(1) In addition to the continuing education program requirements for Professional Registrants set out in section 7.6.3 and 7.6.4 of the Bylaws, a Professional Registrant who is a designated structural engineer must complete 60 Continuing Education Hours of Technical Learning related to their structural engineering area(s) of practice in each Three-Year Rolling Period.

7.6.6 Mandatory Continuing Education Hours and Activities for Non-Practising Registrants and Life Member or Life Limited Licensee Registrants

- (1) In each Three-Year Rolling Period, a non-practising Registrant or a life member or life limited licensee must complete, at a minimum,
 - (a) one Continuing Education Hour of Ethical Learning, and
 - (b) one Regulatory Learning module referred to in section 7.6.14(1) of the Bylaws.

7.6.7 Continuing Education Program Declaration

- (1) All individual Registrants must electronically submit a continuing education program declaration to EGBC by 11:59 PM (Pacific Time) on June 30, the last day of each Reporting Year, which must confirm
 - (a) the number of completed Continuing Education Hours the individual Registrant is reporting for that Reporting Year,
 - (b) that the individual Registrant has recorded the details of the Continuing Education Activities associated with the declared Continuing Education Hours pursuant to section 7.6.3(5) of the Bylaws,



- (c) that the individual Registrant has uploaded a valid and up-to-date CE Plan pursuant to section 7.6.4(2) of the Bylaws, and
- (d) that the information provided by the individual Registrant pursuant to this section is true and correct to the best of the individual Registrant's knowledge.
- (2) All individual Registrants must retain all documentation that supports their continuing education program declaration for a minimum of 5 years after the continuing education program declaration was made.

7.6.8 Exemptions from the Continuing Education Program

- An individual Registrant may be granted an exemption, on an annual basis, from any or all of the continuing education program requirements set out in sections 7.6.3, 7.6.4, 7.6.5, 7.6.6, or 7.6.7 of the Bylaws for a specified Reporting Year by
 - (a) an officer appointed by the Audit and Practice Review Committee, if the individual Registrant was on parental leave, medical leave, or compassionate care leave for at least 6 months during the Reporting Year, or
 - (b) the Audit and Practice Review Committee, if the individual Registrant
 - (i) was on parental leave, medical leave, or compassionate care leave for less than 6 months during the Reporting Year, or
 - (ii) has other extenuating circumstances.
- An application by an individual Registrant to be granted an exemption pursuant to subsection (1) must be submitted in writing to EGBC by 11:59 PM (Pacific Time) on April 30 of the applicable Reporting Year.
- (3) If an exemption granted pursuant to subsection (1) reduces the number of Continuing Education Hours that an individual Registrant is required to complete for a Reporting Year, there must be a corresponding reduction in the number of Continuing Education Hours that the individual Registrant is required to complete for the applicable Three-Year Rolling Period.

7.6.9 Failure to Submit a Continuing Education Program Declaration

- (1) An individual Registrant who fails to submit a continuing education program declaration pursuant to section 7.6.7(1) of the Bylaws by 11:59 PM (Pacific Time) on the last day of the Reporting Year, but has otherwise completed all applicable requirements of the continuing education program, must
 - (a) submit the continuing education program declaration, and
 - (b) send to EGBC the late reporting fee specified in Schedule C of the Bylaws,



by 11:59 PM (Pacific Time) on September 30 in the following Reporting Year.

- (2) If an individual Registrant fails to comply with the requirements set out in subsection (1), the individual Registrant's registration must be suspended until such requirements are complete.
- (3) If an individual Registrant fails to comply with the requirements set out in subsection (1) by 11:59 PM (Pacific Time) on December 31, the individual Registrant's registration must be cancelled.

7.6.10 Late Exemption from Continuing Education Plan, Hours, or Activities

- (1) An individual Registrant who fails to comply with the obligations pursuant to sections 7.6.3, 7.6.4, 7.6.5, or 7.6.6 Bylaws, as applicable, by 11:59 PM (Pacific Time) on the last day of the Reporting Year may be granted a late exemption from any or all of these requirement(s) on an annual basis by the Audit and Practice Review Committee, if the individual Registrant
 - (a) was on parental leave, medical leave, or compassionate care leave during the Reporting Year, or
 - (b) has other extenuating circumstances.
- An application by an individual Registrant to be granted an exemption pursuant to subsection (1) must be submitted in writing to EGBC by 11:59 PM (Pacific Time) on July 31 in the following Reporting Year.
- (3) If a late exemption granted pursuant to subsection (1) reduces the number of Continuing Education Hours that an individual Registrant is required to complete for a Reporting Year, there must be a corresponding reduction in the number of Continuing Education Hours that the individual Registrant is required to complete for the applicable Three-Year Rolling Period.
- (4) An individual Registrant who is granted an exemption pursuant to subsection (1) must send to EGBC the late exemption fee specified in Schedule C of the Bylaws, but is not required to pay to EGBC the late reporting fee specified in Schedule C or the late completion fee specified in Schedule C.
- (5) The Audit and Practice Review Committee may, in its discretion, refund the late exemption fee required pursuant to subsection (4) if an individual Registrant
 - (a) failed to apply for an exemption by the deadline specified in section 7.6.8(2) of the Bylaws due to extenuating circumstances,
 - (b) submitted an application to be granted an exemption in writing to EGBC by 11:59 PM (Pacific Time) on the last day of the Reporting Year, and



(c) was granted an exemption by the Audit and Practice Review Committee pursuant to subsection (1).

7.6.11 Failure to Complete Continuing Education Plan, Hours, or Activities

- (1) An individual Registrant who fails to comply with the obligations pursuant to section 7.6.3, 7.6.4 or 7.6.6, of the Bylaws, as applicable, by 11:59 PM (Pacific Time) on the last day of the Reporting Year and is not granted a late exemption pursuant to section 7.6.10 of the Bylaws must
 - (a) complete and submit a continuing education plan,
 - (b) complete the required Continuing Education Hours, Ethical Learning activities, or Regulatory Learning activities,
 - (c) submit a continuing education program declaration,
 - (d) send to EGBC the late completion fee specified in Schedule C of the Bylaws, and
 - (e) send to EGBC the late reporting fee specified in Schedule C of the Bylaws,

by 11:59 PM (Pacific Time) on September 30 in the following Reporting Year.

- (2) If an individual Registrant fails to comply with the requirements set out in subsection (1), the individual Registrant's registration must be suspended until such requirements are complete and such completion is certified by the Audit and Practice Review Committee.
- (3) If an individual Registrant fails to comply with the requirements set out in subsection (1) by 11:59 PM (Pacific Time) on December 31, the individual Registrant's registration must be cancelled.
- (4) A designated structural engineer who fails to complete required Technical Learning activities pursuant to section 7.6.5(1) of the Bylaws by 11:59 PM (Pacific Time) on the last day of the Reporting Year and is not granted a late exemption pursuant to section 7.6.10(1) of the Bylaws must
 - (a) complete the required Technical Learning activities,
 - (b) submit a continuing education program declaration,
 - (c) send to EGBC the late completion fee specified in Schedule C of the Bylaws, and
 - (d) send to EGBC the late reporting fee specified in Schedule C of the Bylaws,
 - by 11:59 PM (Pacific Time) on September 30 in the following Reporting Year.
- (5) If a designated structural engineer fails to comply with the requirements set out in subsection (4), the designated structural engineer's designation as a designated structural



engineer must be suspended until such requirements are complete and such completion is certified by the Audit and Practice Review Committee.

- (6) If a designated structural engineer fails to comply with the requirements set out in subsection (4) by 11:59 PM (Pacific Time) on December 31, the designated structural engineer's designation as a designated structural engineer is cancelled.
- (7) If an individual Registrant is required to complete a continuing education plan, Continuing Education Hours, Ethical Learning activities, Regulatory Learning activities, or Technical Learning activities to fulfill a requirement for the previous Reporting Year, these cannot be applied to fulfill a requirement for the Reporting Year in which they are completed.

7.6.12 Avoiding or Delaying a Suspension

- If an individual Registrant fails to comply with the requirements in section 7.6.9(1), 7.6.11(1), or 7.6.11(4) of the Bylaws due to extenuating circumstances, including being on parental leave, medical leave, or compassionate care leave, the Audit and Practice Review Committee may order that
 - (a) the individual Registrant's registration not be suspended pursuant to section 7.6.9(2), 7.6.11(2), or 7.6.11(5) of the Bylaws, or
 - (b) the individual Registrant's suspension pursuant to section 7.6.9(2), 7.6.11(2), or 7.6.11(5) of the Bylaws be delayed for a specified period of time.
- (2) At least 60 days before a suspension pursuant to section 7.6.9(2), 7.6.11(2), or 7.6.11(5) of the Bylaws can take effect, the Audit and Practice Review Committee must deliver to the individual Registrant written notice of
 - (a) the date on which the suspension will take effect,
 - (b) the reasons for the suspension, and
 - (c) the deadline by which the individual Registrant may submit a written application to the Audit and Practice Review Committee for an order pursuant to subsection (1).

7.6.13 Newly Registered Individual Registrants

- (1) For an individual Registrant who is first granted registration with EGBC between July 1 and December 31 in a Reporting Year, the first Reporting Year and the first Three-Year Rolling Period are deemed to begin on July 1 of the same Reporting Year in which the individual Registrant is first granted registration with EGBC.
- (2) For an individual Registrant who is first granted registration with EGBC between January 1 and March 31 in a Reporting Year,
 - (a) the first Reporting Year is deemed to begin on July 1 of the same Reporting Year in which the individual Registrant is first granted registration with EGBC, and



- (b) the first Three-Year Rolling Period is deemed to begin on July 1 of the next Reporting Year, but any Continuing Education Hours or Continuing Education Activities completed by the individual Registrant in the same Reporting Year in which the individual Registrant is first granted registration with EGBC may be applied to fulfill the individual Registrant's continuing education requirements for the first Three-Year Rolling Period.
- (3) For an individual Registrant who is first granted registration with EGBC between April 1 and June 30 in a Reporting Year,
 - (a) the first Reporting Year is deemed to begin on July 1 of the next Reporting Year, and
 - (b) the first Three-Year Rolling Period is deemed to begin on July 1 of the next Reporting Year, but any Continuing Education Hours or Continuing Education Activities completed by the individual Registrant in the same Reporting Year in which the individual Registrant is first granted registration with EGBC may be applied to fulfill the individual Registrant's continuing education requirements for the first Three-Year Rolling Period.
- (4) Despite subsection (3)(a), a Professional Registrant who is first granted registration with EGBC between April 1 and June 30 in a Reporting Year must complete and submit a continuing education plan pursuant to section 7.6.4 of the Bylaws for the same Reporting Year in which the Professional Registrant is first granted registration with EGBC.

7.6.14 Mandatory Regulatory Learning Modules

- (1) EGBC will facilitate the development, maintenance, and updating of a series of mandatory Regulatory Learning modules to enable
 - (a) a Professional Registrant to meet the requirement set out in section 7.6.3(3) of the Bylaws, and
 - (b) a non-practising Registrant or a life member or life limited licensee to meet the requirement set out in section 7.6.6(1)(b) of the Bylaws.
- (2) The series of mandatory Regulatory Learning modules referred to in subsection (1) must be designed to ensure that there is at least one Regulatory Learning module in each Three-Year Rolling Period that focuses on Indigenous history, Indigenous engagement, and reconciliation as it relates to the Regulated Practice in British Columbia.

7.6.15 Optional Continuing Education Opportunities

(1) EGBC will facilitate the offering of other continuing education opportunities related to Ethical Learning, Regulatory Learning, Communications and Leadership Learning, and Technical Learning.



(2) The continuing education opportunities offered pursuant to subsection (1) will include education opportunities related to knowledge and guidance on Indigenous history, Indigenous engagement, and reconciliation as it relates to the Regulated Practice in British Columbia.

7.6.16 Continuing Education Program by Registrant Firms

- (1) A Registrant Firm must develop, maintain, and follow documented procedures to support individual Registrants employed by or under contract with the Registrant Firm in
 - (a) meeting the individual Registrants' continuing education program requirements pursuant to sections 7.6.3, 7.6.4, 7.6.5, 7.6.6, and 7.6.7, as applicable, and
 - (b) maintaining the individual Registrants' competency with respect to the role(s) of the individual Registrants and the activities or work engaged in by the individual Registrants on behalf of the Registrant Firm.
- (2) Each year, a Registrant Firm that has more than one Professional Registrant employed or under contract with the Registrant Firm must conduct a documented review with each Professional Registrant employed by or under contract with the Registrant Firm, in order to confirm that the Professional Registrant is maintaining the Professional Registrant's competency with respect to the Regulated Practice.
- (3) A Registrant Firm must retain all documentation that supports a documented review of a Professional Registrant conducted pursuant to subsection (2) for a minimum of 5 years after the documented review was completed.
- (4) A non-practising Registrant Firm is exempt from the requirements in this section of the Bylaws while maintaining its non-practising status.

7.7 Permit to Practice Requirements

7.7.1 Regulation of Firms Training Program

- (1) Each Responsible Registrant designated by a Registrant Firm upon the initial registration of the Registrant Firm who has not completed the Regulation of Firms Training Program within the last 5 years must complete the Regulation of Firms Training Program within
 - (a) 12 months of the date that the Permit to Practice is issued to the Registrant Firm, and
 - (b) every 5 years thereafter.



- (2) Each Responsible Registrant designated by a Registrant Firm after the initial registration of the Registrant Firm who has not completed the Regulation of Firms Training Program within the last 5 years must complete the Regulation of Firms Training Program within
 - (a) 3 months of the date that the written notice of the Responsible Registrant's designation is submitted to EGBC, and
 - (b) every 5 years thereafter.
- (3) An individual who is a Responsible Registrant for more than one Registrant Firm may complete the Regulation of Firms Training Program for more than one Registrant Firm at the same time.
- (4) A non-practising Registrant Firm and any individuals designated as a Responsible Registrant of the non-practising Registrant Firm are exempt from the requirements set out in this section of the Bylaws while the non-practising Registrant Firm maintains its nonpractising status.

7.7.2 Failure to Complete Regulation of Firms Training Program

- (1) If any Responsible Registrant of a Registrant Firm fails to complete the Regulation of Firms Training Program pursuant to sections 7.7.1(1) or 7.7.1(2) of the Bylaws,
 - (a) the Responsible Registrant identified in subsection (1) must complete the Regulation of Firms Training Program, and
 - (b) the Registrant Firm must send to EGBC the late completion fee specified in Schedule C of the Bylaws

by 11:59 PM (Pacific Time) on the date that is 2 months after the deadline specified in section 7.7.1(1) or 7.7.1(2) of the Bylaws, as applicable.

- (2) If a Registrant Firm fails to comply with the requirements set out in subsection (1), a condition must be placed on the Registrant Firm's registration and Permit to Practice prohibiting it from engaging in the Regulated Practice until such requirements are complete.
- (3) If a Registrant Firm fails to comply with the requirements set out in subsection (1) within 2 months of having the condition placed on the Registrant Firm's registration and Permit to Practice pursuant to subsection (2), the Registrant Firm's registration and Permit to Practice must be cancelled.

7.7.3 Professional Practice Management Plan

(1) A Registrant Firm must develop and maintain a Professional Practice Management Plan that contains, at a minimum, the following elements:



- (a) a Code of Conduct that explains how the Registrant Firm will ensure compliance with ethical standards by the Registrant Firm and by all individuals employed by or under contract with the Registrant Firm, including compliance with
 - (i) the Code of Ethics of EGBC set out in Schedule A of the Bylaws,
 - (ii) any guidelines on human rights, equity, diversity, or inclusion that have been approved by the Council, and
 - (iii) ethical business practices addressing corruption, conflict of interest, and contractual matters;
- (b) a plan for how the Registrant Firm will ensure compliance with the standards of competence and quality management requirements pursuant to section 7.3 of the Bylaws;
- (c) a plan for how the Registrant Firm will ensure compliance with the continuing education requirements pursuant to section 7.6 of the Bylaws; and
- (d) a section setting out
 - (i) the organizational structure of the Registrant Firm,
 - (ii) the names of the Registrant Firm's Responsible Officer and Responsible Registrant(s),
 - (iii) the Registrant Firm's area(s) of practice, and
 - (iv) the Responsible Registrant(s) designated to each area of practice at the Registrant Firm.
- (2) A Registrant Firm's Professional Practice Management Plan must have documented approval by the Responsible Officer and each Responsible Registrant of the Registrant Firm.
- (3) A Registrant Firm's Professional Practice Management Plan must be in place no later than 12 months after the date that a Permit to Practice is issued to the Registrant Firm.
- (4) A Registrant Firm must adhere to the Registrant Firm's Professional Practice Management Plan.
- (5) A Registrant Firm must ensure that individuals employed by or under contract with the Registrant Firm are provided access to, understand the content of, and adhere to the Registrant Firm's Professional Practice Management Plan.
- (6) Despite subsections (4) and (5), a Registrant Firm or an individual Registrant may depart from the quality management requirements included in the Registrant Firm's Professional



Practice Management Plan pursuant to subsection (1)(b) if it is appropriate to do so for an identified reason, which must be

- (a) documented by the Registrant Firm or the individual Registrant, and
- (b) supported by a written rationale that is consistent with the Registrant Firm's or the individual Registrant's obligations pursuant to the PGA, applicable regulations, and the Bylaws.
- (7) A Registrant Firm must
 - (a) annually review and, if necessary, revise the Registrant Firm's Professional Practice Management Plan to ensure its suitability and effectiveness,
 - (b) document the annual review conducted pursuant to paragraph (a), and the approval of the review by the Responsible Officer and each Responsible Registrant at the Registrant Firm, and
 - (c) when requested by EGBC, submit the Registrant Firm's Professional Practice Management Plan to EGBC within 5 business days.
- (8) A Registrant Firm must retain all approved versions of the Registrant Firm's Professional Practice Management Plan for a minimum of 10 years after the Professional Practice Management Plan is no longer in use by the Registrant Firm.
- (9) A non-practising Registrant Firm is exempt from the requirements set out in subsections 7(a) and (b) of the Bylaws while maintaining its non-practising status.

7.7.4 Suspension or Cancellation of a Registrant Firm's Registration and Permit to Practice

- (1) If a Registrant Firm's registration is suspended or under any limitation, condition, or restriction for any period pursuant to the PGA or the Bylaws, the Registrant Firm's Permit to Practice is also suspended or under the same limitation, condition, or restriction for that same period.
- (2) If a Registrant Firm's registration is cancelled pursuant to the PGA or the Bylaws, the Registrant Firm's Permit to Practice is also cancelled.

7.8 **Prohibited Contracts**

(1) A Registrant must not enter into or agree to enter into any contract that would result in or require the breach of any duty under the PGA, associated regulations, or the Bylaws, including any of the duties pursuant to this Part, except as required or authorized by law.



8 Audit and Practice Review

8.1 Definitions

(1) For the purpose of this Part, "Registrant" includes a former Registrant where applicable pursuant to section 56(1) of the PGA [*Definition and application*].

8.2 Powers of the Audit and Practice Review Committee

- (1) In addition to functions and powers assigned to it under the PGA and set out elsewhere in the Bylaws, the Audit and Practice Review Committee has the functions and duties delegated to it by the Council in subsections (2) and (3).
- (2) The Council authorizes the Audit and Practice Review Committee to exercise the Council's powers pursuant to the following sections of the PGA:
 - (a) section 32(1) of the PGA [*Officers and committees*], in order to appoint officers for the purpose of
 - (i) carrying out the powers delegated in subsection (3)(a)(ii), and
 - (ii) granting exemptions and deferrals pursuant to sections 7.6.8(1)(a), 8.6(5)(a), and 8.7(6) of the Bylaws;
 - (b) section 63(3) of the PGA [*Audits and practice reviews*] to authorize compliance audits as set out in sections 8.6 and 8.7 of the Bylaws;
 - (c) sections 63(4) and (5) of the PGA [Audits and practice reviews].
- (3) The Council authorizes the Audit and Practice Review Committee to act pursuant to the following sections of the PGA:
 - (a) section 32(5)(b) of the PGA [*Officers and committees*], to delegate the powers granted by the Council to the Audit and Practice Review Committee pursuant to section 63(2)(b) of the PGA [*Audits and practice reviews*] to
 - (i) the Registrar, so that the Registrar may appoint assessors for the purpose of conducting an area of practice audit, and
 - (ii) one or more other officers, so that the officer(s) may appoint assessors for the purposes of conducting a compliance audit or a practice review;
 - (b) section 63(2) of the PGA [Audits and practice reviews].
- (4) The Audit and Practice Review Committee, an assessor appointed by the Audit and Practice Review Committee, or a person acting on behalf of the Audit and Practice Review Committee may only disclose or provide the following to any other person, including



another Committee of EGBC, if the conditions set out in section 110(3)(a) or (b) of the PGA [*Confidentiality – committee matters*] are satisfied:

- (a) records or information provided to the Audit and Practice Review Committee, an assessor appointed by the Audit and Practice Review Committee, or a person acting on behalf of the Audit and Practice Review Committee;
- (b) a self assessment prepared by a Registrant for a practice review.
- (5) The Audit and Practice Review Committee, an assessor appointed by the Audit and Practice Review Committee, or a person acting on behalf of the Audit and Practice Review Committee must notify the Investigation Committee if the conditions set out in section 110(4) of the PGA [Confidentiality – committee matters] are satisfied.

8.3 Powers of the Registrar

(1) The Council authorizes the Registrar to exercise the Council's powers pursuant to section 63(3) of the PGA [*Audits and practice reviews*], to authorize an area of practice audit as set out in section 8.8 of the Bylaws.

8.4 Appointment of Assessors

- (1) An officer may appoint one or more employees of EGBC, contractors retained by EGBC, or subject matter experts as assessors to conduct a compliance audit or a practice review.
- (2) A subject matter expert cannot be appointed as an assessor to conduct a compliance audit or a practice review pursuant to subsection (1) if the subject matter expert has or had a relationship with a Registrant subject to a compliance audit or a Registrant subject to practice review that would reasonably compromise that subject matter expert's objectivity as an assessor.
- (3) The Registrar may appoint one or more employees of EGBC, contractors retained by EGBC, or subject matter experts as assessors to conduct an area of practice audit.

8.5 Commencement of Audit and Practice Review Programs

- (1) The compliance audit program for individual Registrants, as set out in section 8.6 of the Bylaws, commences on July 1, 2022.
- (2) The compliance audit program for Registrant Firms, as set out in section 8.7 of the Bylaws, commences on October 1, 2022.
- (3) The area of practice audit program, as set out in section 8.8 of the Bylaws, commences on July 1, 2021.
- (4) The practice review program for individual Registrants, as set out in section 8.9 of the Bylaws, commences on January 1, 2021.



(5) The practice review program for Registrant Firms, as set out in section 8.10 of the Bylaws, commences on October 1, 2021.

8.6 Compliance Audit Program for Individual Registrants

- (1) The Council must annually determine the percentage of individual Registrants who will be selected for a compliance audit through a random selection process.
- (2) The Audit and Practice Review Committee must annually determine risk-based criteria to inform the random selection of individual Registrants for a compliance audit.
- (3) The following individual Registrants are exempt from a compliance audit:
 - (a) Trainees;
 - (b) individual Registrants who are Sole Practitioners;
 - (c) individual Registrants who have undergone a compliance audit in the previous 5 years;
 - (d) individual Registrants who are employed by a Registrant Firm that has undergone an audit in the previous 12 months and the Registrant Firm has been found to be in compliance.
- (4) An individual Registrant selected for a compliance audit must be provided with written notice of the compliance audit.
- (5) An individual Registrant selected for a compliance audit may be granted an exemption from a compliance audit by
 - (a) an officer appointed by the Audit and Practice Review Committee, if the individual Registrant is unemployed, on parental leave, medical leave, or compassionate care leave, or
 - (b) the Audit and Practice Review Committee, if the individual Registrant has other extenuating circumstances.
- (6) An individual Registrant subject to a compliance audit must co-operate with the compliance audit process, including
 - (a) answering questions posed to the individual Registrant,
 - (b) providing all requested information, files, or records in the individual Registrant's possession or control, including information, files, or records related to the individual Registrant's continuing education, and
 - (c) undergoing an interview with an assessor, either in person or by Electronic Means, if the assessor determines that such an interview is desirable or necessary.


- (7) Through a review of the evidence provided by the individual Registrant subject to a compliance audit in subsection (6), including answers, information, files, or records, the assessor must assess whether the individual Registrant is in compliance with all applicable regulatory requirements, which may include
 - (a) applicable requirements of the continuing education program,
 - (b) applicable quality management standards and professional practice guidelines, and
 - (c) appropriately declaring the individual Registrant's industry of practice and area(s) of practice, if applicable.
- (8) Based on the assessor's assessment pursuant to subsection (7), the assessor must do one of the following:
 - (a) in the case of full compliance, close the compliance audit file, in which case the Audit and Practice Review Committee and the individual Registrant must be provided the assessor's report of the compliance audit;
 - (b) in the case of a Minor Non-Conformance, prescribe corrective action that the individual Registrant must satisfactorily complete within a specified time period;
 - (c) in the case of a Major Non-Conformance, refer the compliance audit file to the Audit and Practice Review Committee, in which case the Audit and Practice Review Committee and the individual Registrant must be provided the assessor's report of the compliance audit.
- (9) If the individual Registrant subject to a compliance audit satisfactorily completes the corrective action prescribed pursuant to subsection (8)(b) within the specified time period,
 - (a) the assessor must close the compliance audit file, and
 - (b) the Audit and Practice Review Committee and the individual Registrant must be provided the assessor's report of the compliance audit.
- (10) If the individual Registrant subject to a compliance audit fails to satisfactorily complete the corrective action prescribed pursuant to subsection (8)(b) within the specified time period, the assessor must do one of the following:
 - (a) extend the time period in which the individual Registrant must satisfactorily complete the corrective action prescribed pursuant to subsection (8)(b);
 - (b) refer the compliance audit file to the Audit and Practice Review Committee, in which case the Audit and Practice Review Committee and the individual Registrant must be provided the assessor's report of the compliance audit, including particulars of the failure to satisfactorily complete the corrective action within the specified time period.



- (11) Before an assessor refers a compliance audit file to the Audit and Practice Review Committee pursuant to subsection (8)(c) or (10)(b), the individual Registrant subject to a compliance audit must be provided with
 - (a) the assessor's report of the compliance audit, and
 - (b) an opportunity to provide a written response to the assessor with respect to the issues considered in the assessor's report of the compliance audit within a specified time period.
- (12) After reviewing the assessor's report of the compliance audit, any written response from the individual Registrant subject to a compliance audit, and any subsequent recommendations from the assessor, the Audit and Practice Review Committee must
 - (a) prescribe corrective action that the individual Registrant must satisfactorily complete within a specified time period, which is not limited to the corrective action originally prescribed by the assessor and which may be followed by a subsequent compliance audit or compliance audits of the individual Registrant,
 - (b) authorize a practice review of the individual Registrant pursuant to section 63(4) of the PGA [*Audits and practice reviews*],
 - (c) disclose or provide records or information from the compliance audit to the Investigation Committee pursuant to section 110(3) of the PGA [*Confidentiality – committee matters*] or notify the Investigation Committee pursuant to section 110(4) of the PGA [*Confidentiality – committee matters*], as applicable, or
 - (d) close the compliance audit file,

and provide written notice to the individual Registrant.

- (13) If the individual Registrant subject to a compliance audit satisfactorily completes the corrective action prescribed pursuant to subsection (12)(a) within the specified time period, the Audit and Practice Review Committee must close the compliance audit file and provide written notice to the individual Registrant.
- (14) If the individual Registrant subject to a compliance audit fails to satisfactorily complete the corrective action prescribed pursuant to subsection (12)(a) within the specified time period, the Audit and Practice Review Committee must
 - (a) extend the time period in which the individual Registrant must satisfactorily complete the corrective action prescribed pursuant to subsection (12)(a),
 - (b) authorize a practice review pursuant to section 63(4) of the PGA [Audits and practice reviews], or



 (c) disclose or provide records or information from the compliance audit to the Investigation Committee pursuant to section 110(3) of the PGA [*Confidentiality – committee matters*] or notify the Investigation Committee pursuant to section 110(4) of the PGA [*Confidentiality – committee matters*], as applicable,

and provide written notice to the individual Registrant.

(15) In addition to any action taken by the assessor under this section of the Bylaws, the assessor may make a recommendation to the Audit and Practice Review Committee that a practice review of a Registrant be commenced on the basis of any information obtained or any assessments made in the course of the compliance audit.

8.7 Compliance Audit Program for Registrant Firms

- (1) All Registrant Firms will become eligible for an initial mandatory compliance audit to commence on or after October 1, 2022.
- (2) Following the completion of the initial mandatory compliance audit pursuant to subsection (1), a Registrant Firm will become eligible for routine compliance audits.
- (3) The Audit and Practice Review Committee must set criteria to inform the selection of routine compliance audits for Registrant Firms and may take risk-based criteria into account in this determination.
- (4) A non-practising Registrant Firm is exempt from undergoing a compliance audit pursuant to this section of the Bylaws while maintaining its non-practising status.
- (5) A Registrant Firm selected for a compliance audit must be provided with written notice of the compliance audit.
- (6) A Registrant Firm selected for a compliance audit may be granted deferral of the compliance audit by the Audit and Practice Review Committee, upon submission of
 - (a) a written request for the deferral setting out the reasons for which the deferral is being requested and the anticipated length of the deferral, and
 - (b) any documents, information, records, declarations, or other information that supports the Registrant Firm's request or that may be requested by the Audit and Practice Review Committee in assessing the Registrant Firm's request for a deferral.
- (7) A deferral of a compliance audit granted to a Registrant Firm pursuant to subsection (6) has a maximum duration of one year from the date that the deferral is granted, upon which the deferral will expire and the compliance audit may proceed, unless a further deferral is granted pursuant to subsection (6).
- (8) A Registrant Firm that has been granted a deferral of a compliance audit pursuant to subsection (6) may apply for a further deferral by the Audit and Practice Review



Committee, upon submission of a further request for a deferral in accordance with the requirements set out in subsection (6).

- (9) A Registrant Firm, the Responsible Officer, and the Responsible Registrant(s) of the Registrant Firm must co-operate with the compliance audit process, including
 - (a) if the Registrant Firm has more than one Responsible Registrant, designating one Responsible Registrant to co-ordinate
 - (i) the Registrant Firm's co-operation with the compliance audit and
 - (ii) communications on behalf of the Registrant Firm,
 - (b) answering all questions posed to the Registrant Firm,
 - (c) providing all requested information, files, or records in the Registrant Firm's possession or control, including information, files, or records related to the Registrant Firm's quality management program, continuing education program, Professional Practice Management Plan, and Code of Conduct,
 - (d) facilitating site visits by the assessor, or any person designated by the assessor, to any requested work locations, including taking reasonable steps to arrange for and provide site access, any necessary personnel, and any information required to comply with applicable health and safety legislation during the site visit, and
 - (e) ensuring compliance with any requests by an assessor to conduct interviews of individuals employed by or under contract with the Registrant Firm.
- (10) A Responsible Registrant designated pursuant to subsection (9)(a) must have sufficient knowledge of the subject matter of the audit, the ability and sufficient authority to facilitate the audit as required, and the authority to make binding decisions on behalf of the Registrant Firm.
- (11) If an assessor determines that the Responsible Registrant designated by a Registrant Firm pursuant to subsection (9)(a) does not meet the requirements set out in subsection (10), then the assessor may direct the Responsible Officer, an Individual With Authority, or any other individual employed by or under contract with the Registrant Firm to be designated for the purpose of coordinating the audit pursuant to subsection (9).
- (12) Through a review of the evidence provided by the Registrant Firm pursuant to subsection (9), including answers, information, files, or records, the assessor must assess whether the Registrant Firm is in compliance with all applicable regulatory requirements, including the Bylaws, guidelines, practice advisories, and policies of EGBC, as well as the quality management, continuing education, and ethics standards.
- (13) Based on the assessor's assessment pursuant to subsection (12), the assessor must do one of the following:



- (a) in the case of full compliance, close the compliance audit file, in which case the Audit and Practice Review Committee and the Registrant Firm must be provided the assessor's report of the compliance audit;
- (b) in the case of a Minor Non-Conformance, prescribe corrective action that the Registrant Firm must satisfactorily complete within a specified time period; or,
- (c) in the case of a Major Non-Conformance, refer the compliance audit file to the Audit and Practice Review Committee, in which case the Audit and Practice Review Committee and the Registrant Firm must be provided the assessor's report of the compliance audit.
- (14) If the Registrant Firm subject to a compliance audit satisfactorily completes the corrective action prescribed pursuant to subsection (13)(b) within the specified time period,
 - (a) the assessor must close the compliance audit file, and
 - (b) the Audit and Practice Review Committee and the Registrant Firm must be provided the assessor's report of the compliance audit.
- (15) If the Registrant Firm subject to a compliance audit fails to satisfactorily complete the corrective action prescribed pursuant to subsection (13)(b) within the specified time period, the assessor must do one of the following:
 - (a) extend the time period in which the Registrant Firm must satisfactorily complete the corrective action prescribed pursuant to subsection (13)(b); or,
 - (b) refer the compliance audit file to the Audit and Practice Review Committee, in which case the Audit and Practice Review Committee and the Registrant Firm must be provided the assessor's report of the compliance audit, including particulars of the failure to satisfactorily complete the corrective action within the specified time period.
- (16) Before an assessor refers a compliance audit file to the Audit and Practice Review Committee pursuant to subsections (13)(c) or (15)(b), the Registrant Firm subject to a compliance audit must be provided with
 - (a) the assessor's report of the compliance audit, and
 - (b) an opportunity to provide a written response to the assessor with respect to the issues considered in the assessor's report of the compliance audit within a specified time period.
- (17) After reviewing the assessor's report of the compliance audit, any written response from the Registrant Firm subject to a compliance audit, and any subsequent recommendations from the assessor, the Audit and Practice Review Committee must do one of the following:
 - (a) prescribe corrective action that the Registrant Firm must satisfactorily complete



within a specified time period, which is not limited to the corrective action originally prescribed by the assessor and which may be followed by a subsequent compliance audit or audits of the Registrant Firm,

- (b) authorize a practice review of the Registrant Firm pursuant to section 63(4) of the PGA [*Audits and practice reviews*],
- (c) disclose or provide records or information from the compliance audit to the Investigation Committee pursuant to section 110(3) of the PGA [*Confidentiality – committee matters*] or notify the Investigation Committee pursuant to section 110(4) of the PGA [*Confidentiality – committee matters*], as applicable, or
- (d) close the compliance audit file,

and provide written notice to the Registrant Firm.

- (18) If the Registrant Firm subject to a compliance audit satisfactorily completes the corrective action prescribed pursuant to subsection (17)(a) within the specified time period, the Audit and Practice Review Committee must close the compliance audit file and provide written notice to the Registrant Firm.
- (19) If the Registrant Firm subject to a compliance audit fails to satisfactorily complete the corrective action prescribed pursuant to subsection (17)(a) within the specified time period, the Audit and Practice Review Committee must do one of the following:
 - (a) extend the time period in which the Registrant Firm must satisfactorily complete the corrective action prescribed pursuant to subsection (17)(a);
 - (b) authorize a practice review pursuant to section 63(4) of the PGA [Audits and practice reviews]; or
 - (c) disclose or provide records or information from the compliance audit to the Investigation Committee pursuant to section 110(3) of the PGA [*Confidentiality – committee matters*] or notify the Investigation Committee pursuant to section 110(4) of the PGA [*Confidentiality – committee matters*], as applicable;

and provide written notice to the Registrant Firm.

(20) In addition to any action taken by the assessor pursuant to this section of the Bylaws, the assessor may make a recommendation to the Audit and Practice Review Committee that a practice review of a Registrant be commenced on the basis of any information obtained or any assessments made in the course of the compliance audit.

8.8 Audit Program for an Area of Practice

(1) The Registrar may authorize an area of practice audit of an identified area of practice to be completed by an assessor appointed by the Registrar for that purpose pursuant to section 8.4(3) of the Bylaws.



- (2) If the Registrar authorizes an area of practice audit pursuant to subsection (1), the Registrar must
 - (a) set out the purpose of the area of practice audit, and
 - (b) determine the percentage of Registrants practising in that area of practice who will be selected for the area of practice audit through a random selection process.
- (3) A Registrant selected for an area of practice audit must be provided with written notice of the area of practice audit.
- (4) A Registrant selected for an area of practice audit may be granted an exemption from the area of practice audit by the Registrar.
- (5) A non-practising Registrant Firm is exempt from undergoing an area of practice audit pursuant to this section of the Bylaws while maintaining its non-practising status.
- (6) A Registrant subject to an area of practice audit must co-operate with the area of practice audit process, including
 - (a) if the Registrant is a Registrant Firm with more than one Responsible Registrant, designating one Responsible Registrant to co-ordinate
 - (i) the Registrant Firm's co-operation with the area of practice audit, and
 - (ii) communications on behalf of the Registrant Firm,
 - (b) answering questions posed to the Registrant,
 - (c) providing all requested information, files, or records in the Registrant's possession or control, and
 - (d) undergoing an interview with the assessor, either in person or by Electronic Means, if the assessor determines that such an interview is desirable or necessary.
- (7) The evidence provided by all Registrants subject to an area of practice audit pursuant to subsection (6), including answers, information, files, or records, must be compiled to produce a report on the findings of the area of practice audit and subsequent recommendations.
- (8) The report on the findings of the area of practice audit and subsequent recommendations produced pursuant to subsection (7) must be provided to the Registrar, and the Registrar may determine what action to take based on the findings of the area of practice audit and subsequent recommendations.



8.9 **Practice Review of Individual Registrants**

- (1) A Trainee will not be subject to practice review.
- (2) A practice review of an individual Registrant, other than a Trainee, may be authorized by the Audit and Practice Review Committee pursuant to section 63(4) of the PGA [*Audits and practice reviews*], or by the Registrar or the Investigation Committee pursuant to section 65(4) of the PGA [*Complaints*], if
 - (a) the individual Registrant consents, or
 - (b) information obtained through an audit, a complaint, a practice review, or an investigation indicates that the individual Registrant might have
 - (i) contravened the PGA, the regulations or the Bylaws,
 - (ii) failed to comply with a standard, limit or condition imposed under the PGA,
 - (iii) acted in a manner that constitutes Professional Misconduct or Conduct Unbecoming a Registrant, or
 - (iv) acted in a manner that constitutes Incompetent performance of duties undertaken while engaged in the Regulated Practice.
- (3) An individual Registrant subject to practice review must be provided with written notice of the practice review.
- (4) Pursuant to section 63(5)(a) of the PGA [*Audits and practice reviews*], an individual Registrant subject to practice review must co-operate with the practice review process, including
 - (a) answering questions posed to the individual Registrant,
 - (b) providing access to all requested information, files, or records in the individual Registrant's possession or control, and
 - (c) undergoing an interview with an assessor, either in person or by Electronic Means.
- (5) Before an assessor provides the assessor's report of the practice review to the Audit and Practice Review Committee, the individual Registrant subject to practice review must be provided with
 - (a) the assessor's report of the practice review, and
 - (b) an opportunity to provide a written response to the assessor with respect to the issues considered in the assessor's report of the practice review within a specified time period.



- (6) After reviewing the assessor's report of the practice review, any written response from the individual Registrant subject to practice review, and any subsequent recommendations from the assessor, the Audit and Practice Review Committee must
 - (a) close the practice review file,
 - (b) pursuant to section 63(5)(c) of the PGA [Audits and practice reviews], impose limits or conditions on the practice of the Regulated Practice by the individual Registrant, including
 - (i) restricting the practice that may be engaged in by the individual Registrant,
 - (ii) requiring that the individual Registrant be overseen by another Registrant when engaged in the Regulated Practice, and
 - (iii) requiring that the individual Registrant undertake additional training, or
 - (c) disclose or provide records or information from the practice review to the Investigation Committee pursuant to section 110(3) of the PGA [*Confidentiality – committee matters*] or notify the Investigation Committee pursuant to section 110(4) of the PGA [*Confidentiality – committee matters*], as applicable,

and provide written notice to the individual Registrant.

- (7) The Audit and Practice Review Committee may remove any limits or conditions imposed on an individual Registrant subject to practice review pursuant to subsection (6)(b) if the individual Registrant
 - (a) applies in writing to the Audit and Practice Review Committee to have the limits or conditions removed, and
 - (b) provides evidence acceptable to the Audit and Practice Review Committee that the limits or conditions are no longer necessary or have been fulfilled, as applicable.
- (8) After the removal of any limits or conditions imposed on an individual Registrant subject to practice review pursuant to subsection (6)(b), the Audit and Practice Review Committee must close the practice review file and provide written notice to the individual Registrant.
- (9) If the individual Registrant subject to practice review fails to abide by any limits or conditions imposed on the individual Registrant pursuant to subsection (6)(b), the Audit and Practice Review Committee must disclose or provide records or information from the practice review to the Investigation Committee pursuant to section 110(3) of the PGA [Confidentiality committee matters] or notify the Investigation Committee pursuant to section 110(4) of the PGA [Confidentiality committee matters], as applicable.



8.10 Practice Review of Registrant Firms

- (1) A practice review of a Registrant Firm may be authorized by the Audit and Practice Review Committee pursuant to section 63(4) of the PGA [Audits and practice reviews], or by the Registrar or the Investigation Committee pursuant to section 65(4) of the PGA [Complaints], if
 - (a) the Registrant Firm consents, or
 - (b) information obtained through an audit, a complaint, a practice review, or an investigation indicates that the Registrant Firm might have
 - (i) contravened the PGA, the regulations or the Bylaws,
 - (ii) failed to comply with a standard, limit, or condition imposed under the PGA,
 - (iii) acted in a manner that constitutes Professional Misconduct or Conduct Unbecoming a Registrant, or
 - (iv) acted in a manner that constitutes Incompetent performance of duties undertaken while engaged in the Regulated Practice.
- (2) A Registrant Firm subject to practice review must be provided with written notice of the practice review.
- (3) Pursuant to section 63(5)(a) of the PGA [Audits and practice reviews], a Registrant Firm, the Responsible Officer, and the Responsible Registrant(s) of the Registrant Firm must co-operate with the practice review process, including
 - (a) if the Registrant Firm has more than one Responsible Registrant, designating one Responsible Registrant to co-ordinate
 - (i) the Registrant Firm's co-operation with the practice review, and
 - (ii) communications on behalf of the Registrant Firm,
 - (b) answering questions posed to the Registrant Firm,
 - (c) providing all requested information, files, or records in the Registrant Firm's possession or control, including information, files, or records related to the Registrant Firm's quality management program, continuing education program, Professional Practice Management Plan, and Code of Conduct,
 - (d) facilitating site visits by the assessor, or anyone designated by the assessor, to any requested work locations, including arranging for and providing site access, all necessary personnel, and any information required to comply with applicable health and safety legislation during the site visit, and



- (e) ensuring compliance with any requests by an assessor to conduct interviews of individuals employed by or under contract with the Registrant Firm, including facilitating interviews with both Registrants and non-Registrants, either in person or by Electronic Means, if the assessor determines that such interviews are desirable or necessary.
- (4) A Responsible Registrant designated pursuant to subsection (3)(a) must have sufficient knowledge of the subject matter of the practice review, the ability and sufficient authority to facilitate the practice review as required, and the authority to make binding decisions on behalf of the Registrant Firm.
- (5) If an assessor determines that the Responsible Registrant designated by a Registrant Firm pursuant to subsection (3)(a) does not meet the requirements set out in subsection (4), then the assessor may direct the Responsible Officer, an Individual With Authority, or any other individual employed by or under contract with the Registrant Firm, to be designated for the purpose of coordinating the practice review pursuant to subsection (3).
- (6) Before an assessor provides the assessor's report of the practice review to the Audit and Practice Review Committee, the Registrant Firm subject to practice review must be provided with:
 - (a) the assessor's report of the practice review, and
 - (b) an opportunity to provide a written response to the assessor with respect to the issues considered in the assessor's report of the practice review within a specified time period.
- (7) After reviewing the assessor's report of the practice review, any written response from the Registrant Firm subject to practice review, and any subsequent recommendations from the assessor, the Audit and Practice Review Committee must do one of the following:
 - (a) close the practice review file,
 - (b) pursuant to section 63(5)(c) of the PGA [Audits and practice reviews], impose limits or conditions on the practice of the Regulated Practice by the Registrant Firm, including:
 - (i) restricting the practice that may be engaged in by the Registrant Firm and on behalf of the Registrant Firm by any individuals employed by or under contract with the Registrant Firm,
 - (ii) requiring that the work of the Registrant Firm and any individuals employed by or under contract with the Registrant Firm be overseen by another Registrant when engaged in the Regulated Practice, and
 - (iii) requiring that any individuals employed by or under contract with the Registrant Firm undertake additional training, or



 (c) disclose or provide records or information from the practice review to the Investigation Committee pursuant to section 110(3) of the PGA [*Confidentiality – committee matters*] or notify the Investigation Committee pursuant to section 110(4) of the PGA [*Confidentiality – committee matters*], as applicable,

and provide written notice to the Registrant Firm.

- (8) The Audit and Practice Review Committee may remove any limits or conditions imposed on a Registrant Firm subject to practice review pursuant to subsection (7)(b) if the Registrant Firm
 - (a) applies in writing to the Audit and Practice Review Committee to have the limits or conditions removed, and
 - (b) provides evidence acceptable to the Audit and Practice Review Committee that the limits or conditions are no longer necessary or have been fulfilled, as applicable.
- (9) After the removal of any limits or conditions imposed on a Registrant Firm subject to practice review pursuant to subsection (7)(b), the Audit and Practice Review Committee must close the practice review file and provide written notice to the Registrant Firm.
- (10) If the Registrant Firm subject to practice review fails to abide by any limits or conditions imposed on the Registrant Firm pursuant to subsection (7)(b), the Audit and Practice Review Committee must disclose or provide records or information from the practice review to the Investigation Committee pursuant to section 110(3) of the PGA [Confidentiality committee matters] or notify the Investigation Committee pursuant to section 110(4) of the PGA [Confidentiality committee matters], as applicable.



9 Complaints and Investigation

9.1 Definitions

(1) For the purpose of this Part, "Registrant" includes a former Registrant where applicable pursuant to section 56(1) of the PGA [*Definition and application*].

9.2 **Powers of the Investigation Committee**

- (1) The Investigation Committee has the functions and duties assigned to it in the PGA and delegated to it by the Council in subsections (2) and (3).
- (2) The Council authorizes the Investigation Committee to exercise the Council's powers pursuant to the following sections of the PGA and Regulations, other than the Council's bylaw-making authority:
 - (a) section 32(1) of the PGA [*Officers and committees*], in order to appoint officers for the purpose of carrying out the powers delegated in subsection (3)(a);
 - (b) section 66(1) of the PGA [*Investigations*];
 - (c) section 66(2)(a)(i) of the PGA [*Investigations*];
 - (d) section 67(1) and (4) of the PGA [Extraordinary action];
 - (e) section 72(3) of the PGA [Reprimand or remedial action by consent];
 - (f) section 1.8 of the Professional Governance General Regulation, B.C. Reg. 107/2019 [Protection of personal privacy – information on website], in order to determine whether information should not be made publicly available despite section 82(2) of the PGA [Information to be publicly available].
- (3) The Council authorizes the Investigation Committee to act pursuant to the following sections of the PGA:
 - (a) section 32(5)(b) of the PGA [Officers and committees], to delegate the powers granted by the Council to the Investigation Committee pursuant to sections 66(1)(b) and (c) of the PGA [Investigations] to one or more officers;
 - (b) section 65(4) of the PGA [Complaints] to
 - (i) authorize a practice review pursuant to section 63 of the PGA [*Audits and practice reviews*], or
 - (ii) take action pursuant to section 66 of the PGA [Investigations].



9.3 Officers

(1) All members of the Investigation Committee are appointed as officers pursuant to section 32(1) of the PGA [*Officers and committees*].

9.4 Powers of the Registrar

(1) The Council authorizes the Registrar to act pursuant to section 65(4) of the PGA [Complaints] to authorize a practice review pursuant to section 63 of the PGA [Audits and practice reviews].

9.5 Avoiding the Appearance of Bias

- (1) A member of the Investigation Committee must not participate in the consideration or investigation of a matter in which the member of the Investigation Committee
 - (a) had involvement prior to the decision of the Investigation Committee to authorize an investigation pursuant to section 66(1)(a) of the PGA [*Investigations*], or
 - (b) had or has a relationship with either the Complainant, a witness, or the Registrant subject to investigation

that would reasonably compromise the member's objectivity.

9.6 Disposition of Complaints by the Registrar

- (1) After receipt of a complaint, the Registrar may do any of the following:
 - (a) close all or part of the complaint without an investigation if the Registrar reasonably believes that any of the following apply:
 - (i) the complaint concerns a matter over which EGBC does not have jurisdiction;
 - the complaint does not, on its face, relate to an allegation that a Registrant is guilty of Professional Misconduct, Conduct Unbecoming a Registrant, or Incompetent performance of duties undertaken while engaged in the Regulated Practice;
 - (iii) the complaint is Trivial, Frivolous, Vexatious, or made in Bad Faith;
 - (b) close the complaint without an investigation and authorize a practice review of the Registrant subject to the complaint pursuant to section 65(4) of the PGA [*Complaints*], to be conducted by the Audit and Practice Review Committee, except where the Registrant subject to the complaint is a Trainee, who may not be referred to the Audit and Practice Review Committee for a practice review;



- (c) bring the complaint and any available evidence to the Investigation Committee in form of a written report for the Investigation Committee to consider authorizing an investigation pursuant to section 66(1)(a) of the PGA [*Investigations*].
- (2) If the Registrar closes a complaint pursuant to subsection (1)(a), the Registrar must provide the Complainant, the Registrant subject to the complaint, and the Investigation Committee with a written report stating the nature of the complaint and the reasons for closure.
- (3) If the Registrar closes a complaint file and refers the Registrant subject to the complaint to the Audit and Practice Review Committee pursuant to subsection (1)(b), the Registrar must provide the Complainant, the Registrant subject to the complaint, and the Investigation Committee with a written report stating the nature of the complaint and the reasons for the referral.

9.7 Investigation

9.7.1 Authorizing an Investigation

- (1) If EGBC receives information from any source that indicates a Registrant may have been guilty of
 - (a) Professional Misconduct,
 - (b) Conduct Unbecoming a Registrant, or
 - (c) Incompetent performance of duties undertaken while engaged in the Regulated Practice,

the Registrar may bring such information and any available evidence to the Investigation Committee in the form of a written report for the Investigation Committee to consider authorizing an investigation pursuant to section 66(1)(a) of the PGA [*Investigations*].

- (2) Upon receipt of a written report pursuant to subsection (1) or section 9.6(1)(c) of the Bylaws, the Investigation Committee may do one of the following:
 - (a) decline to authorize an investigation, if the Investigation Committee reasonably believes that any of the following apply with respect to the allegations in the written report:
 - (i) the allegations concern a matter over which EGBC does not have jurisdiction;
 - the report does not, on its face, relate to an allegation that a Registrant is guilty of Professional Misconduct, Conduct Unbecoming a Registrant, or Incompetent performance of duties undertaken while engaged in the Regulated Practice;



- (iii) the substance of the allegations has been or could be appropriately dealt with in another process or proceeding;
- (iv) there is no reasonable prospect that the allegations will be substantiated;
- (v) the allegations are Trivial, Frivolous, Vexatious, or made in Bad Faith;
- (vi) the allegations give rise to an Abuse of Process;
- (vii) the allegations were raised for an improper purpose or motive;
- (viii) the allegations relate to a contractual dispute between the Registrant and a third party and there is no public interest in authorizing an investigation;
- (b) authorize an investigation pursuant to section 66(1)(a) of the PGA [*Investigations*] and
 - (i) order further investigation to be conducted pursuant to sections 9.7.4 to 9.7.6 of the Bylaws, or
 - (ii) deem the investigation to be complete based on the written report provided pursuant to subsection (1) or section 9.6(1)(c) of the Bylaws and make a decision pursuant to section 9.7.7 of the Bylaws.
- (3) If the Investigation Committee declines to authorize an investigation pursuant to subsection (2)(a), the Investigation Committee must provide the Complainant and the Registrant subject to the complaint with a written report stating the nature of the complaint and the reasons for closure of the file.
- (4) If the written report brought to the Investigation Committee pursuant to subsection (1) or section 9.6(1)(c) of the Bylaws contains evidence that a Registrant has been convicted of an indictable offence, the Investigation Committee may authorize an investigation pursuant to section 66(1)(a) of the PGA [*Investigations*], deem the investigation to be complete based on the written report, and take action pursuant to section 9.7.2 of the Bylaws.
- (5) If the Investigation Committee authorizes an investigation pursuant to section 66(1)(a) of the PGA in relation to a public sector Firm, EGBC must notify the Office of the Superintendent of Professional Governance within 30 days of the decision to authorize the investigation.

9.7.2 Suspension or Cancellation on the Basis of an Indictable Offence

(1) If the Investigation Committee is satisfied that a Registrant has been convicted of an indictable offence, the Investigation Committee may summarily suspend or cancel the registration of the Registrant, and if the Registrant is a Registrant Firm, suspend or cancel the Registrant Firm's Permit to Practice, pursuant to section 66(2)(a)(i) of the PGA [*Investigations*].



- (2) Before proceeding pursuant to subsection (1), the Investigation Committee must be satisfied that the nature of the indictable offence or the circumstances under which the offence was committed give rise to concerns that the Registrant has engaged in
 - (a) Professional Misconduct,
 - (b) Conduct Unbecoming a Registrant, or
 - (c) Incompetent performance of duties undertaken while engaged in the Regulated Practice.
- (3) The Investigation Committee may determine the process and procedure for making a determination pursuant to this section of the Bylaws, including determining whether Proceedings are to be conducted
 - (a) in writing,
 - (b) in person,
 - (c) by Electronic Means, or
 - (d) in any combination of (a), (b), or (c).
- (4) The Investigation Committee must, before initiating Proceedings held pursuant to this section of the Bylaws, provide written notice to the Registrant subject to investigation that
 - (a) action may be undertaken pursuant to section 66(2)(a)(i) of the PGA [*Investigations*], and
 - (b) the Registrant may, by a specified date, make written submissions to the Investigation Committee.
- (5) The Investigation Committee may hear oral submissions from the Registrant, in the place of or in addition to the written submissions referred to in subsection (4)(b).
- (6) Despite subsections (4) and (5) if the Investigation Committee considers it necessary to protect the public interest, the Investigation Committee may initiate Proceedings pursuant to this section of the Bylaws or make an order pursuant to 66(2)(a)(i) of the PGA [*Investigations*] without
 - (a) providing notice to the Registrant, or
 - (b) providing the Registrant with an opportunity to make written or oral submissions to the Investigation Committee.
- (7) If the Investigation Committee makes an order to suspend or cancel the registration of the Registrant and, if the Registrant is a Registrant Firm, the Permit to Practice of the



Registrant Firm, pursuant to section 66(2)(a)(i) of the PGA [*Investigations*], the Investigation Committee must deliver the order to the Registrant.

- (8) If the Investigation Committee suspends the registration of the Registrant and, if the Registrant is a Registrant Firm, the Permit to Practice of the Registrant Firm, pursuant to section 66(2)(a)(i) of the PGA [*Investigations*], the Investigation Committee
 - (a) must determine the length and any conditions of the suspension in its order, and
 - (b) may amend or rescind an order made pursuant to section 66(2)(a)(i) of the PGA [*Investigations*].

9.7.3 Extraordinary Action to Protect the Public

- (1) At any time after authorizing an investigation pursuant to section 66(1)(a) of the PGA [*Investigations*], the Investigation Committee may, if it considers that it is necessary to protect the public interest,
 - (a) take action pursuant to section 67 of the PGA [Extraordinary action], or
 - (b) refer the file to the Discipline Committee, without the issuance of a citation, for the Discipline Committee to consider taking action pursuant to section 67 of the PGA [*Extraordinary action*].
- (2) The members of any Investigation Subcommittee carrying out an investigation or overseeing and taking responsibility for an investigation carried out by an Investigator and the members of any Resolution Subcommittee must not, for the same matter, participate in any Proceedings related to section 67 of the PGA [*Extraordinary action*].
- (3) If the Investigation Committee decides to proceed pursuant to subsection (1)(a), the Investigation Committee may determine the process and procedure for making a determination pursuant to this section of the Bylaws, including determining whether Proceedings are to be conducted
 - (a) in writing,
 - (b) in person,
 - (c) by Electronic Means, or
 - (d) in any combination of (a), (b), or (c).
- (4) The Investigation Committee may, before initiating Proceedings held pursuant to this section of the Bylaws, provide written notice to the Registrant subject to investigation that
 - (a) action may be undertaken pursuant to section 67(1)(a) or (b) of the PGA [*Extraordinary action*], and



- (b) the Registrant subject to investigation may, by a specified date, make written submissions to the Investigation Committee.
- (5) The Investigation Committee may hear oral submissions from the Registrant subject to investigation in the place of or in addition to the written submissions referred to in subsection (4)(b).
- (6) Despite subsections (4) and (5), if the Investigation Committee considers that it is necessary to protect the public interest, the Investigation Committee may initiate Proceedings held pursuant to this section of the Bylaws or make an order pursuant to section 67(1)(a) or (b) of the PGA [*Extraordinary action*] without
 - (a) providing notice to the Registrant subject to investigation, or
 - (b) providing the Registrant subject to investigation with an opportunity to make written or oral submissions to the Investigation Committee.
- (7) An order made by the Investigation Committee pursuant to section 67(1)(a) or (b) of the PGA [*Extraordinary action*] must comply with sections 67(2) and (3) of the PGA [*Extraordinary action*].
- (8) Pursuant to section 67(4) of the PGA [*Extraordinary action*], if the Investigation Committee determines that its order pursuant to section 67(1)(a) or (b) of the PGA [*Extraordinary action*] is no longer necessary to protect the public interest, it must, in writing, cancel any limits, conditions, or suspension ordered pursuant to section 67(1)(a) or (b) of the PGA [*Extraordinary action*] and notify the Registrant subject to investigation.
- (9) An order made by the Investigation Committee pursuant to section 67(1)(a) or (b) of the PGA [*Extraordinary action*] is effective until the final disposition of the matter by the Investigation Committee or the Discipline Committee, as applicable.

9.7.4 Carrying out of an Investigation

(1) The Investigation Committee may appoint Investigators as officers and delegate to those Investigators the Investigation Committee's powers pursuant to sections 66(1)(b) and (c) of the PGA [*Investigations*].

9.7.5 Necessary Co-operation During an Investigation

- (1) An Investigator may, pursuant to section 66(1)(b) and (c) of the PGA [*Investigations*], issue a written notice to the Registrant subject to investigation requiring the Registrant subject to investigation to
 - (a) co-operate with the investigation,
 - (b) provide evidence of education, training or experience in the area(s) of practice relevant to the investigation,



- (c) answer questions in the manner specified by the Investigator(s),
- (d) produce files, records or other evidence in the Registrant's possession or control,
- (e) provide explanations on request,
- (f) appear, either in person or by Electronic Means, before the Investigator(s) to discuss the conduct and competence of the Registrant subject to investigation,
- (g) if the Registrant is a Registrant Firm,
 - (i) produce any documentation or records requested by the Investigator, including but not limited to the Registrant Firm's corporate records, constating documents, project files, and quality management documents and records,
 - (ii) require any director, officer, individual employed by or under contract with, or any other individual authorized to act on behalf of a Registrant Firm, including the Responsible Officer, any Individual With Authority, or any Responsible Registrant of a Registrant Firm subject to investigation, to appear, either in person or by Electronic Means, before the Investigator(s) to discuss the conduct and competence of the Registrant Firm subject to investigation, and
 - (iii) if the Registrant Firm has more than one Responsible Registrant, designate one Responsible Registrant to co-ordinate
 - (A) the Registrant Firm's co-operation with the investigation, and
 - (B) communications on behalf of the Registrant Firm.
- (2) The Registrant subject to investigation may have legal counsel present at an appearance described in subsection (1)(f), or if the Registrant is a Registrant Firm, legal counsel may be present at any appearance pursuant to subsection (1)(g)(ii).
- (3) An appearance described in subsections (1)(f) and (1)(g)(ii)
 - (a) is an examination under oath or affirmation,
 - (b) may be recorded by EGBC by
 - (i) audio, or
 - (ii) audio and video, and
 - (c) may be transcribed by a court reporter for the purpose of preparing a certified transcript.
- (4) A Responsible Registrant designated to co-ordinate an investigation and communicate on behalf of a Registrant Firm pursuant to subsection (1)(g)(iii) must, at a minimum:



- (a) have sufficient knowledge of the subject matter at issue in the investigation,
- (b) have the authority and ability to facilitate the investigation as required by the Investigator, and
- (c) be an Individual With Authority at the Registrant Firm.
- (5) If the Investigation Committee determines that the Responsible Registrant designated by a Registrant Firm pursuant to subsection (1)(g)(iii) fails to meet any of the requirements set out in subsection (4) then the Investigation Committee may direct the Responsible Officer, an Individual With Authority, or any other individual employed by or under contract with the Registrant Firm to be designated for the purpose of coordinating the investigation and communicating on behalf of the Registrant Firm.
- (6) In addition to complying with any written notice issued pursuant to subsection (1), a Registrant subject to investigation must facilitate all requests and actions by an Inspector pursuant to section 69 of the PGA [*Powers and duties of inspectors*], including taking reasonable steps to arrange for and provide access to
 - (a) premises or project sites where the Registrant engages or has engaged in the Regulated Practice, including providing any information or assistance required to comply with applicable health and safety legislation during the Inspector's examination of the premises,
 - (b) any employees, contractors, or personnel who engage in the Regulated Practice under the supervision of or on behalf of the Registrant,
 - (c) all files, documents, and records, electronic or otherwise, relating to the Registrant's Regulated Practice, and
 - (d) any equipment, or materials used by a Registrant to engage in the Regulated Practice.

9.7.6 Conclusion of an Investigation

(1) At the conclusion of an investigation, the Investigator(s) must provide a written report to the Investigation Committee detailing the evidence gathered during the investigation, an assessment of the evidence gathered during the investigation, and the recommendations of the Investigator(s).

9.7.7 Decision by the Investigation Committee

(1) After deeming an investigation to be complete pursuant to section 9.7.1(2)(b)(ii) of the Bylaws, or after receipt of a written report prepared pursuant to section 9.7.6(1) of the Bylaws, the Investigation Committee may do any of the following:



- (a) close the investigation file, with the option to write a letter of recommendation to the Registrant subject to investigation suggesting how the Registrant can improve their practice or conduct;
- (b) close the investigation file and, pursuant to section 65(4) of the PGA [*Complaints*], authorize a practice review of the Registrant subject to investigation to be conducted by the Audit and Practice Review Committee, except where the Registrant subject to investigation is a Trainee who may not be referred to the Audit and Practice Review Committee for a practice review;
- (c) attempt to resolve one or more of the matters subject to investigation by means other than a discipline hearing, pursuant to section 9.9 of the Bylaws;
- (d) pursuant to section 66(1)(d) of the PGA [*Investigations*] issue a citation ordering a discipline hearing pursuant to section 75 of the PGA [*Discipline hearings*] to inquire into the conduct or competence of the Registrant subject to investigation.
- (2) When deciding to issue a citation pursuant to subsection (1)(d), the Investigation Committee may also make a recommendation to the Discipline Committee that the Discipline Committee consider taking action pursuant to section 67 of the PGA [*Extraordinary action*].
- (3) The Investigation Committee must inform and provide written reasons for its decision made pursuant to subsection (1) to
 - (a) the Registrant subject to investigation, and
 - (b) the Complainant, if the investigation is based on a complaint.
- (4) The members of any Investigation Subcommittee or Resolution Subcommittee must not vote on the disposition of the investigation pursuant to subsection (1).

9.8 Issuance and Rescission of a Citation

- (1) Pursuant to section 66(1)(d) of the PGA [*Investigations*], if the Investigation Committee determines that it is in the public interest, and if the Investigation Committee has reasonable and probable grounds to believe that the Registrant subject to investigation may be guilty of
 - (a) Professional Misconduct,
 - (b) Conduct Unbecoming a Registrant, or
 - (c) Incompetent performance of duties undertaken while engaged in the Regulated Practice,



the Investigation Committee may issue a citation ordering a discipline hearing pursuant to section 75 of the PGA [*Discipline hearings*] to inquire into the conduct or competence of the Registrant subject to investigation.

(2) The Investigation Committee may amend or rescind, in whole or in part, a citation issued pursuant to subsection (1).

9.9 Resolution by the Investigation Committee

- (1) If the Investigation Committee makes a determination pursuant to section 9.7.7(1)(c) of the Bylaws, the Investigation Committee may appoint a Resolution Subcommittee to oversee and take responsibility for attempting to resolve one or more of the matters subject to investigation by one or more of the following methods:
 - (a) make a request in writing for an undertaking or reprimand by consent to the Registrant subject to investigation pursuant to section 72 of the PGA [*Reprimand or remedial action by consent*];
 - (b) propose a consent order in writing to the Registrant subject to investigation pursuant to section 73 of the PGA [*Consent orders*];
 - (c) enter into the Alternative Complaint Resolution process with the Registrant subject to investigation pursuant to section 74 of the PGA [*Alternative complaint resolution*].
- (2) If the Registrant subject to investigation is a Registrant Firm, any undertaking or reprimand by consent, consent order, or agreement entered into following an Alternative Complaint Resolution Process pursuant to subsection (1) must be agreed to and endorsed by an Individual With Authority at the Registrant Firm.

9.9.1 Reprimand or Remedial Action by Consent

- (1) In relation to one or more of the matters investigated pursuant to section 66(1) of the PGA [*Investigations*], the Investigation Committee or the Resolution Subcommittee may make a request pursuant to section 72(1) of the PGA [*Reprimand or remedial action by consent*].
- (2) In case of an undertaking pursuant to section 72(1)(b) or (d) of the PGA [*Reprimand or remedial action by consent*], the record of the undertaking must specify
 - (a) the period of time during which the educational courses or any other action specified by the Audit and Practice Review Committee is to be completed or is binding on the Registrant subject to investigation, and
 - (b) the procedure, if any, that the Registrant subject to investigation may follow to be released from the undertaking.
- (3) If the Registrant subject to investigation agrees to an undertaking or reprimand by consent requested pursuant to section 72(1) of the PGA [*Reprimand or remedial action by consent*], the agreement must be approved by the Investigation Committee.



- (4) If the Registrant subject to investigation rejects an undertaking or reprimand by consent requested pursuant to section 72(1) of the PGA [*Reprimand or remedial action by consent*], the Investigation Committee may
 - (a) direct the Registrar to issue a citation for a hearing by the Discipline Committee pursuant to section 72(3) of the PGA [*Reprimand or remedial action by consent*], or
 - (b) continue with the investigation process as though the offer to resolve one or more matters by means of an undertaking or reprimand by consent pursuant to section 72(1) of the PGA [*Reprimand or remedial action by consent*] had not been made.
- (5) The members of a Resolution Subcommittee must not, for the same matter, vote on a decision by the Investigation Committee pursuant to subsection (3) or (4).

9.9.2 Consent Orders

- (1) In relation to one or more of the matters investigated pursuant to section 66(1) of the PGA [*Investigations*], the Investigation Committee or the Resolution Subcommittee may, pursuant to section 73 of the PGA [*Consent orders*], propose a consent order in writing to the Registrant subject to investigation.
- (2) If the Registrant subject to investigation agrees to a consent order proposed pursuant to section 73(1) of the PGA [*Consent orders*], the agreement must be approved by the Investigation Committee.
- (3) A consent order made between the Investigation Committee and the Registrant subject to investigation must meet the requirements set out in section 73 of the PGA [*Consent orders*].
- (4) The members of a Resolution Subcommittee must not, for the same matter, vote on a decision by the Investigation Committee pursuant to subsection (2).

9.9.3 Alternative Complaint Resolution by the Investigation Committee

- (1) In relation to one or more of the matters investigated pursuant to section 66(1) of the PGA [*Investigations*], the following parties may agree to engage in Alternative Complaint Resolution pursuant to section 74 of the PGA [*Alternative complaint resolution*]:
 - (a) the Investigation Committee;
 - (b) the Registrant subject to investigation;
 - (c) the Registrar.
- (2) Any party may withdraw from the Alternative Complaint Resolution process at any time by providing written notice to the other parties.



(3) The apportionment of costs incurred through Alternative Complaint Resolution, other than any respective legal costs of the parties, must be agreed upon by the parties prior to the commencement of the Alternative Complaint Resolution process, unless the parties agree otherwise.



10 Discipline

10.1 Definitions

(1) For the purpose of this Part, "Registrant" includes a former Registrant where applicable pursuant to section 56(1) of the PGA [*Definition and application*].

10.2 Powers of the Discipline Committee

- (1) The Discipline Committee has the functions and duties assigned to it in the PGA and delegated to it by the Council pursuant to subsections (2) and (3).
- (2) The Council authorizes the Discipline Committee to exercise the Council's powers pursuant to the following sections of the PGA and Regulations:
 - section 32(1) of the PGA [Officers and committees], in order to appoint officers for the purpose of carrying out powers of the Discipline Committee as delegated in this Part of the Bylaws;
 - (b) section 67(1) and (4) of the PGA [*Extraordinary action*];
 - (c) section 1.8 of the Professional Governance General Regulation, B.C. Reg. 107/2019 [Protection of personal privacy – information on website] in order to determine whether information should not be made publicly available despite section 82(2) of the PGA [Information to be publicly available].
- (3) The Council authorizes the Discipline Committee to act pursuant to section 32(5)(b) of the PGA [*Officers and committees*], to delegate to one or more officers the powers granted to the Discipline Committee by the Council pursuant to sections 67(1) and (4) of the PGA [*Extraordinary action*].

10.3 Officers and Discipline Committee Panels

- (1) All members of the Discipline Committee are appointed as officers pursuant to section 32(1) of the PGA [*Officers and committees*].
- (2) The chair or vice chair of the Discipline Committee may do one or more of the following:
 - (a) appoint members of the Discipline Committee to serve on a Panel;
 - (b) terminate an appointment to a Panel;
 - (c) refer a matter that is before the Discipline Committee to the following Panels:
 - (i) an Extraordinary Action Panel, to take action pursuant to section 67 of the PGA [*Extraordinary action*];



- (ii) a Discipline Resolution Panel, to take action pursuant to sections 72 to 74 of the PGA;
- (iii) a Discipline Hearing Panel, to take action pursuant to section 75 or 76 of the PGA.
- (3) On the appointment of members of the Discipline Committee to an Extraordinary Action Panel pursuant to subsection (2)(a), the Discipline Committee is deemed to have delegated to the members of the Extraordinary Action Panel the powers granted to the Discipline Committee by the Council pursuant to sections 67(1) and (4) of the PGA [*Extraordinary action*].
- (4) On the appointment of members of the Discipline Committee to a Discipline Resolution Panel pursuant to subsection (2)(a), the Discipline Committee is deemed to have delegated to the members of the Discipline Resolution Panel the powers of the Discipline Committee pursuant to sections 72 to 74 of the PGA.
- (5) A member of the Discipline Committee must not sit on more than one Panel concerning the same matter.

10.4 Avoiding the Appearance of Bias

- (1) A member of the Discipline Committee must not sit on a Panel concerning a matter in which the member of the Discipline Committee
 - (a) had involvement prior to the matter being referred to the Panel pursuant to section 10.3(2)(c) of the Bylaws, or
 - (b) had or has a relationship with either the Complainant, a witness, or the Registrant subject to discipline

that would reasonably compromise the member's objectivity.

10.5 Extraordinary Action to Protect the Public

- (1) An Extraordinary Action Panel may, if it considers that it is necessary to protect the public interest, take action pursuant to section 67 of the PGA [*Extraordinary action*]
 - (a) during the course of an investigation pursuant to section 66 of the PGA [*Investigations*], upon recommendation by the Investigation Committee pursuant to section 9.7.3(1)(b) of the Bylaws, or
 - (b) pending a hearing pursuant to section 75 of the PGA [*Discipline Hearings*], on recommendation by the Investigation Committee pursuant to section 9.7.7(2) of the Bylaws, or on application by EGBC.



- (2) An Extraordinary Action Panel may determine the process and procedure for making a determination pursuant to this section of the Bylaws, including determining whether Proceedings are to be conducted
 - (a) in writing,
 - (b) in person,
 - (c) by Electronic Means, or
 - (d) in any combination of (a), (b), or (c).
- (3) An Extraordinary Action Panel may, before initiating Proceedings held pursuant to this section of the Bylaws, provide written notice to the subject Registrant that
 - (a) action may be undertaken pursuant to section 67(1)(a) or (b) of the PGA [*Extraordinary action*], and
 - (b) the subject Registrant may, by a specified date, make written submissions to the Extraordinary Action Panel.
- (4) An Extraordinary Action Panel may hear oral submissions from the subject Registrant in the place of or in addition to the written submissions referred to in subsection (3)(b).
- (5) Despite subsection (3) and (4) if an Extraordinary Action Panel considers that it is necessary to protect the public interest, the Extraordinary Action Panel may initiate Proceedings held pursuant to this section of the Bylaws or make an order pursuant to section 67(1)(a) or (b) of the PGA [*Extraordinary Action*] without
 - (a) providing notice to the subject Registrant, or
 - (b) providing the subject Registrant with an opportunity to make written or oral submissions to the Investigation Committee.
- (6) An order made by an Extraordinary Action Panel pursuant to section 67(1)(a) or (b) of the PGA [*Extraordinary action*] must comply with sections 67(2) and (3) of the PGA [*Extraordinary action*].
- (7) Pursuant to section 67(4) of the PGA [*Extraordinary action*], if the Discipline Committee or an Extraordinary Action Panel determines that the order made pursuant to section 67(1)(a) or (b) of the PGA [*Extraordinary action*] is no longer necessary to protect the public interest, it must, in writing, cancel any limits, conditions, or suspension ordered pursuant to section 67(1)(a) or (b) of the PGA [*Extraordinary action*] and notify the subject Registrant as soon as possible.
- (8) An order made by an Extraordinary Action Panel pursuant to section 67(1)(a) or (b) of the PGA [*Extraordinary action*] is effective until the final disposition of the matter by the Discipline Committee.



10.6 Resolution by the Discipline Committee

- (1) Following the issuance of a citation by the Investigation Committee pursuant to section 66(1)(d) of the PGA [*Investigations*] or the Registrar pursuant to section 72(3) of the PGA [*Reprimand or remedial action by consent*], the chair or vice chair of the Discipline Committee may appoint a Discipline Resolution Panel to attempt to resolve one or more of the matters set out in the citation by one or more of the following methods:
 - (a) make a request in writing for an undertaking or reprimand by consent to the Registrant subject to discipline pursuant to section 72 of the PGA [*Reprimand or remedial action by consent*];
 - (b) propose a consent order in writing to the Registrant subject to discipline pursuant to section 73 of the PGA [*Consent orders*];
 - (c) enter into the Alternative Complaint Resolution process with the Registrant subject to discipline pursuant to section 74 of the PGA [*Alternative complaint resolution*].
- (2) If the Registrant subject to discipline is a Registrant Firm, any undertaking or reprimand by consent, consent order, or agreement entered into following an Alternative Complaint Resolution Process pursuant to subsection (1) must be agreed to and endorsed by an Individual With Authority at the Registrant Firm.

10.6.1 Reprimand or Remedial Action by Consent

- (1) In relation to one or more of the matters set out in the citation, the Discipline Resolution Panel may make a request pursuant to section 72(1) of the PGA [*Reprimand or remedial action by consent*].
- (2) In case of an undertaking pursuant to section 72(1)(b) or (d) of the PGA [*Reprimand or remedial action by consent*], the record of the undertaking must specify
 - (a) the period of time during which the educational courses or any other action specified by the Audit and Practice Review Committee is to be completed or is binding on the Registrant subject to discipline, and
 - (b) the procedure, if any, that the Registrant subject to discipline may follow to be released from the undertaking.
- (3) If the Registrant subject to discipline rejects an undertaking or reprimand by consent requested pursuant to section 72(1) of the PGA [*Reprimand or remedial action by consent*],
 - (a) the disciplinary processes may continue as though the offer to resolve one or more matters to be dealt with at the discipline hearing had not been made, and



(b) the offer to resolve one or more matters to be dealt with at the discipline hearing must not be considered in determining the matters or in taking an action or imposing a penalty in respect of the matters during a discipline hearing.

10.6.2 Consent Orders

- (1) In relation to one or more of the matters to be dealt with at the discipline hearing, the Discipline Resolution Panel may, pursuant to section 73 of the PGA [*Consent orders*], propose a consent order in writing to the Registrant subject to discipline.
- (2) A consent order made between the Discipline Resolution Panel and the Registrant subject to discipline must meet the requirements set out in section 73 of the PGA [*Consent orders*].

10.6.3 Alternative Complaint Resolution by the Discipline Committee

- (1) In relation to one or more of the matters to be dealt with at the discipline hearing, the following parties may agree to engage in Alternative Complaint Resolution pursuant to section 74 of the PGA [*Alternative complaint resolution*]:
 - (a) the Discipline Resolution Panel;
 - (b) the Registrant subject to discipline;
 - (c) the Registrar.
- (2) Any party may withdraw from the Alternative Complaint Resolution process at any time by providing written notice to the other parties.
- (3) The apportionment of costs incurred through Alternative Complaint Resolution, other than any respective legal costs of the parties, must be agreed upon by the parties prior to the commencement of the Alternative Complaint Resolution process, unless the parties agree otherwise.

10.7 Discipline Hearings

- (1) Following the issuance of a citation by the Investigation Committee pursuant to section 66(1)(d) of the PGA [*Investigations*] or the Registrar pursuant to 72(3) of the PGA [*Reprimand or remedial action by consent*], the chair or vice chair of the Discipline Committee must appoint a Discipline Hearing Panel to conduct the hearing pursuant to section 75 of the PGA [*Discipline hearings*].
- (2) A discipline hearing must be conducted in accordance with the procedure set out in Schedule B of the Bylaws, unless otherwise directed by the Discipline Hearing Panel.



10.8 Conduct in Another Jurisdiction

- (1) If the Discipline Committee learns that a Different Governing Body has found, or a Registrant has admitted to a Different Governing Body, that the Registrant committed an act that, in the opinion of the Discipline Committee, would constitute Conduct of Concern, the chair or vice chair of the Discipline Committee must appoint a Discipline Hearing Panel to take action pursuant to section 76 of the PGA [*Conduct in another jurisdiction*].
- (2) The Discipline Hearing Panel must provide the Registrant with the following before taking any action pursuant to section 76(2) of the PGA [*Conduct in another jurisdiction*]:
 - (a) at least 14 days' written notice of the proposed action;
 - (b) an opportunity to be heard, which must be limited to a hearing in writing unless otherwise ordered by the Discipline Hearing Panel.

10.9 Assessment of Costs After a Discipline Hearing

- (1) If an adverse determination is made against a Respondent after a discipline hearing held pursuant to section 75 of the PGA [*Discipline hearings*] the Discipline Hearing Panel must require, through an order in writing, that the Respondent pay EGBC's costs, which may be up to the actual costs incurred by EGBC as a result of an investigation and a discipline hearing, provided that those actual costs are within the limits set out in section 81(2)(a) of the PGA [*Costs*].
- (2) For the purpose of calculating costs with respect to an investigation, recoverable costs are all costs incurred from the time the investigation is authorized pursuant to section 66(1)(a) of the PGA [*Investigations*] until the time that a citation is issued pursuant to section 66(1)(d) of the PGA [*Investigations*] or 72(3) of the PGA [*Reprimand or remedial action by consent*].
- (3) For the purpose of calculating costs with respect to a discipline hearing, recoverable costs are all costs incurred from the time that the citation is issued pursuant to section 66(1)(d) of the PGA [*Investigations*] or 72(3) of the PGA [*Reprimand or remedial action by consent*] until the conclusion of a hearing regarding the amount of costs to be assessed pursuant to section 81 of the PGA [*Costs*].
- (4) For the purposes of subsections (2) and (3), recoverable costs must include
 - (a) salary costs for employees or officers engaged in the investigation and the discipline hearing, and
 - (b) the actual costs incurred by EGBC during the course of the investigation and the discipline hearing, including any motions, applications or pre-hearing conferences, or any other applications associated with a discipline matter, which may include some or all of the following:



- (i) costs incurred to retain contractors who are engaged in the investigation and the discipline hearing, including contractors who are appointed as officers;
- (ii) expenses incurred by persons appointed as Inspectors for EGBC pursuant to section 68 of the PGA [*Inspectors*];
- (iii) fees charged and expenses incurred by legal counsel retained by EGBC;
- (iv) fees charged and expenses incurred by expert witnesses retained by EGBC or EGBC's legal counsel;
- (v) expenses incurred by witnesses called to testify by EGBC;
- (vi) the cost of recording interviews, pre-hearing conferences, and hearings;
- (vii) the cost of a court reporter for interviews, pre-hearing conferences, and hearings;
- (viii) the cost of preparing a transcript of interviews, pre-hearing conferences, and hearings;
- (ix) the cost of a translator for interviews, pre-hearing conferences, and hearings;
- (x) costs incurred to rent facilities at which interviews, pre-hearing conferences, and hearings are held;
- (xi) costs incurred to conduct interviews, pre-hearing conferences, and hearings, whether conducted in person, by Electronic Means, in writing or by any combination thereof;
- (xii) any other reasonable costs, fees, or expenses paid or payable by EGBC as a result of the investigation or the hearing pursuant to section 75 of the PGA [*Discipline hearings*].
- (5) In determining the costs to require the Respondent to pay, the Discipline Hearing Panel
 - (a) must consider whether EGBC did not prove all the allegations made against the Respondent set out in the citation to the requisite standard, and if so, the seriousness of the allegations which were not proven relative to those which were proven, and
 - (b) may consider evidence that the Respondent previously rejected
 - (i) an undertaking or a consent requested by the Investigation Committee or the Discipline Committee, as applicable, pursuant to section 72(1) of the PGA [*Reprimand or remedial action by consent*], or



(ii) a consent order proposed by the Investigation Committee or the Discipline Committee, as applicable, pursuant to section 73(1) of the PGA [*Consent orders*].

10.10 Payment of Costs

(1) A Respondent must pay the full amount of any costs imposed on the Respondent pursuant to section 10.9 of the Bylaws within 30 days of the date of the order for costs, unless an extension for payment of costs is obtained pursuant to section 10.10.1(1).

10.10.1 Extension of Time for Payment of Costs

(1) Upon receipt of a written request from a Respondent stating that the Respondent will suffer financial hardship if the Respondent is required to pay costs within 30 days of the date of the order for costs, the Registrant must be granted a one-time, 30-day extension for payment of costs imposed on the Respondent pursuant to section 10.9 of Bylaws.



11 Public Disclosure of Disciplinary Orders

11.1 Definitions

(1) For the purpose of this Part, "Registrant" includes a former Registrant where applicable pursuant to section 56(1) of the PGA [*Definition and application*].

11.2 Publication of Citations

- (1) If a citation is issued pursuant to section 66(1)(d) of the PGA [*Investigations*] or 72(3) of the PGA [*Reprimand or remedial action by consent*], EGBC must publish the full text of the citation on a public website maintained by EGBC at least 30 days in advance of the date of the discipline hearing.
- (2) Despite subsection (1), prior to publishing the citation, the Investigation Committee may anonymize, redact, or otherwise not make publicly available any identifying, personal, or sensitive information if the Investigation Committee determines that the public interest in the information being made publicly available is outweighed by the privacy interest of
 - (a) a person other than the Registrant subject to discipline, or
 - (b) the subject Registrant if the Registrant suffers from a physical or mental ailment, an emotional disturbance or an addiction to alcohol or drugs.
- (3) If the Investigation Committee makes a determination pursuant to subsection (2), the publication of the citation must include a note that information has been withheld.

11.3 Public Attendance at a Discipline Hearing

- (1) A discipline hearing must be public.
- (2) At least 30 days in advance of the date of the discipline hearing, EGBC must publish the anticipated date and time of the discipline hearing, including, if determined by the Discipline Hearing Panel, whether the hearing is anticipated to proceed in person, by Electronic Means, in writing, or by any combination thereof.
- (3) Despite subsection (1), in extraordinary circumstances, the Discipline Hearing Panel may make an order excluding the public from all or part of a discipline hearing if the Discipline Hearing Panel determines that
 - (a) there are reasons for confidentiality that may be disclosed at the hearing that outweigh the public interest in having an open hearing, or
 - (b) the safety of a person may be jeopardized.
- (4) The Discipline Hearing Panel may limit the number of people who may attend a discipline hearing given the capacity of the facility in which the discipline hearing is being held or the capabilities of the Electronic Means.



(5) No person may make a visual or audio recording of a discipline hearing unless granted permission by the Discipline Hearing Panel prior to the discipline hearing commencing.

11.4 Publication of Disciplinary Orders

- (1) EGBC must publish the full text of a Disciplinary Order on a public website maintained by EGBC within 30 days of the date of the Disciplinary Order.
- (2) In addition to subsection (1), EGBC may publish a summary or the full text of a Disciplinary Order by other methods, including by one or more of the following means:
 - (a) in any of EGBC's electronic or paper communications;
 - (b) in a press release;
 - (c) in a local newspaper;
 - (d) in a legal research or decision database.
- (3) Despite subsection (1) and (2), prior to publishing the full text or a summary of a Disciplinary Order, the Investigation Committee or a Panel of the Discipline Committee, as applicable, may anonymize, redact, or otherwise not make publicly available any identifying, personal, or sensitive information if the Investigation Committee or a Panel of the Discipline Committee, as applicable, determines that the public interest in the information being made publicly available is outweighed by the privacy interest of
 - (a) a person other than the Registrant subject to investigation or discipline, or
 - (b) the subject Registrant if the Registrant suffers from a physical or mental ailment, an emotional disturbance or an addiction to alcohol or drugs.
- (4) If the Investigation Committee or a Panel of the Discipline Committee, as applicable, makes a determination pursuant to subsection (3), the publication of the Disciplinary Order must include a note that information has been withheld.
- (5) Despite subsection (1) and (2), prior to publishing the full text or a summary of a Disciplinary Order that is a consent or undertaking given pursuant to section 72(1) of the PGA [*Reprimand or remedial action by consent*], the Investigation Committee or Discipline Resolution Panel, as applicable, may anonymize, redact, or otherwise not make publicly available any identifying, personal, or sensitive information of the Registrant subject to investigation or discipline, if the following conditions are met:
 - (a) the consent or undertaking given pursuant to section 72(1) of the PGA does not impose limitations or conditions on the Regulated Practice by the Registrant subject to investigation or discipline; and



(b) the Investigation Committee or Discipline Resolution Panel, as applicable, determines that non-publication is in the public interest.

11.5 Retention and Archiving of Disciplinary Order

- (1) A Disciplinary Order setting out a restriction or suspension of a Registrant's registration or, if the Registrant is a Registrant Firm, a restriction or suspension of a Registrant Firm's registration and Permit to Practice, must remain posted on a public website maintained by EGBC for the course of the restriction or suspension, and then must be moved to an archive section of a public website maintained by EGBC.
- (2) A Disciplinary Order setting out the cancellation of an individual Registrant's registration will remain permanently posted on a public website maintained by EGBC.
- (3) Despite subsection (2), upon receiving notice of the death of a former individual Registrant subject to a Disciplinary Order setting out the cancellation of the individual Registrant's registration, EGBC must move the Disciplinary Order to a permanent archive section of a public website maintained by EGBC.
- (4) A Disciplinary Order setting out a cancellation of a Registrant Firm's registration and Permit to Practice must remain permanently posted on a public website maintained by EGBC.

11.6 Publication of Dismissed Citations

- (1) If the Discipline Hearing Panel dismisses all elements of a citation pursuant to section 75(5)(a) of the PGA, EGBC must publish the reasons for the decision on a public website maintained by EGBC within 30 days of the date of the decision.
- (2) Despite subsection (1), prior to publishing the reasons for a decision dismissing all elements of a citation pursuant to section 75(5)(a) of the PGA, the Discipline Hearing Panel may anonymize, redact, or otherwise not make publicly available any identifying, personal, or sensitive information of
 - (a) a person other than the Registrant subject to discipline, or
 - (b) the subject Registrant, unless the Registrant makes a request that the information be published.


12 Transitional Provisions

12.1 Repeal of Bylaws Previously in Force

(1) All of the bylaws of EGBC previously in force are repealed when these Bylaws come into force.



Schedule A – Code of Ethics

(1) A registrant must adhere to the following Code of Ethics:

Registrants must act at all times with fairness, courtesy and good faith toward all persons with whom the registrant has professional dealings, and in accordance with the public interest. Registrants must uphold the values of truth, honesty and trustworthiness and safeguard human life and welfare and the environment. In keeping with these basic tenets, registrants must:

- 1. hold paramount the safety, health, and welfare of the public, including the protection of the environment and the promotion of health and safety in the workplace;
- 2. practice only in those fields where training and ability make the registrant professionally competent;
- 3. have regard for the common law and any applicable enactments, federal enactments or enactments of another province;
- 4. have regard for applicable standards, policies, plans and practices established by the government or EGBC;
- 5. maintain competence in relevant specializations, including advances in the regulated practice and relevant science;
- 6. provide accurate information in respect of qualifications and experience;
- 7. provide professional opinions that distinguish between facts, assumptions and opinions;
- 8. avoid situations and circumstances in which there is a real or perceived conflict of interest and ensure conflicts of interest, including perceived conflicts of interest, are properly disclosed and necessary measures are taken so a conflict of interest does not bias decisions or recommendations;
- 9. report to EGBC and, if applicable, any other appropriate authority, if the registrant, on reasonable and probable grounds, believes that:
 - a. the continued practice of a regulated practice by another registrant or other person, including firms and employers, might pose a risk of significant harm to the environment or to the health or safety of the public or a group of people; or
 - b. a registrant or another individual has made decisions or engaged in practices which may be illegal or unethical;



- 10. present clearly to employers and clients the possible consequences if professional decisions or judgments are overruled or disregarded;
- 11. clearly identify each registrant who has contributed professional work, including recommendations, reports, statements or opinions;
- 12. undertake work and documentation with due diligence and in accordance with any guidance developed to standardize professional documentation for the applicable profession; and
- 13. 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.



Schedule B – Credentials and Discipline Hearing Procedure

1.1 Definitions

(1) In this Schedule,

"**Applicant**" means the same as set out in section 1(1) of the PGA [*Definitions and interpretation*].

"Decision Maker" means

- (a) the Registrar in the case of a credentials hearing pursuant to section 5.19 of the Bylaws, and
- (b) the Discipline Hearing Panel in the case of a discipline hearing pursuant to section 10.7 of the Bylaws.

"**Discipline Committee**" means the discipline committee established pursuant to section 75(1) of the PGA [*Discipline hearings*].

"**Discipline Hearing Panel**" means a panel of at least 3 members of the Discipline Committee, one of whom must be a Lay Committee Member, that is established by the chair or vice chair of the Discipline Committee pursuant to section 77(1) of the PGA [*Discipline committee to conduct hearings*] for the purpose of conducting a discipline hearing pursuant to section 75 of the PGA [*Discipline hearings*], or for the purpose of taking action pursuant to section 76 of the PGA [*Conduct in another jurisdiction*].

"EGBC" means the Association of Professional Engineers and Geoscientists of the Province of British Columbia, also operating as Engineers and Geoscientists BC.

"Electronic Means" includes videoconference, telephone conference, and webcasting.

"Lay Committee Member" means the same as defined in section 21 of the PGA [*Definition*].

"PGA" means the Professional Governance Act, S.B.C. 2018, c. 47.

"Proceeding" means a motion, application, pre-hearing conference, or hearing.

"**Registrar**" means the individual appointed by the Council as registrar pursuant to section 31(1) of the PGA [*Registrar and register for regulatory body*], who may also be the Executive Director.

"**Respondent**" means the same as defined in section 1(1) of the PGA [Definitions and interpretation].



1.2 Application of this Schedule

- (1) The procedural rules in this Schedule apply only to
 - (a) a credentials hearing held by the Registrar pursuant to section 5.19 of the Bylaws, and
 - (b) a discipline hearing held by a Discipline Hearing Panel pursuant to section 10.7 of the Bylaws,

unless otherwise ordered by the respective Decision Maker.

1.3 Parties and Representation

- (1) The parties to a hearing are
 - (a) the Applicant/Respondent, and
 - (b) EGBC.
- (2) A Registrant Firm must be represented in a Proceeding by an Individual With Authority or other individual who is duly authorized to make submissions and legally binding decisions on behalf of the Registrant Firm, and must provide notice to EGBC with the name and contact information for the representative, except where represented by legal counsel pursuant to subsections (4) and (5).
- (3) After receiving written notice including the contact information of a representative designated pursuant to subsection (2), any information or documents that EGBC is required to deliver to the Applicant/Respondent must be delivered to the individual designated to represent the Registrant Firm pursuant to subsection (2), except where the Registrant Firm is represented by legal counsel pursuant to subsections (4) and (5).
- (4) The Applicant/Respondent and EGBC may be represented by legal counsel in a Proceeding.
- (5) If the Applicant/Respondent is represented by legal counsel in a Proceeding,
 - (a) the Applicant/Respondent must provide EGBC with written notice of the name and contact information of the Applicant's/Respondent's legal counsel, and
 - (b) after receiving written notice of the name and contact information of the Applicant's/Respondent's legal counsel, any information or documents that EGBC is required to deliver to the Applicant/Respondent must be delivered to the Applicant's/Respondent's legal counsel which will constitute delivery to the Applicant/Respondent.
- (6) If the legal counsel for the Applicant/Respondent withdraws as legal counsel, EGBC is entitled to use the personal and unique email address of the Applicant/Respondent, or if



the Applicant/Respondent is a Registrant Firm, the contact information for the individual designated to represent the Registrant Firm pursuant to subsection (2), as the address for delivery for any information or documents to the Applicant/Respondent, unless the withdrawing legal counsel or the Applicant/Respondent specify a different email address for delivery.

(7) The Decision Maker may retain legal counsel or other assistance in conducting a Proceeding.

1.4 Combining Proceedings

- (1) If two or more Proceedings before the Discipline Committee involve
 - (a) the same Registrant, or
 - (b) the same or similar questions of fact, law, or policy,

the Discipline Committee may, without the consent of the parties, combine the Proceedings or any part of them or hear the Proceedings at the same time.

1.5 Disclosure and Evidence

- (1) Unless otherwise agreed by the parties or ordered by the Decision Maker, EGBC must make disclosure to the Applicant/Respondent in the following manner:
 - (a) expert reports, or a summary of the anticipated evidence of an expert if no report is produced, at least 60 days prior to the commencement of a hearing;
 - (b) all relevant written or documentary evidence at least 30 days prior to the commencement of a hearing;
 - (c) a list of the witnesses that EGBC expects to call at least 30 days prior to the commencement of the hearing;
 - (d) will-say statements of the witnesses that EGBC expects to call at least 15 days prior to the commencement of a hearing.
- (2) Unless otherwise agreed by the parties or ordered by the Decision Maker, the Applicant/Respondent must provide the following to EGBC:
 - (a) expert reports, or a summary of the anticipated evidence of an expert if no report is produced, at least 30 days prior to the commencement of a hearing;
 - (b) all written or documentary evidence on which the Applicant/Respondent intends to introduce at the hearing that has not already been disclosed by EGBC, at least 15 days prior to the commencement of a hearing;



- (c) a list of the witnesses that the Applicant/Respondent expects to call at least 15 days prior to the commencement of a hearing;
- (d) will-say statements of the witnesses that the Applicant/Respondent expects to call at least 7 days prior to the commencement of a hearing.
- (3) A failure to comply with a timeline in subsection (1) or (2) does not make the document or evidence inadmissible, subject to the Decision Maker's obligation to ensure procedural fairness.

1.6 **Pre-Hearing Conference**

- (1) The Decision Maker may convene a pre-hearing conference, either on its own motion or on the motion of a party made with written notice to the other party.
- (2) The Decision Maker must, in consultation with the parties, identify and provide written notice of the date, time, and location of the pre-hearing conference, including whether the pre-hearing conference will be conducted
 - (a) in writing,
 - (b) in person,
 - (c) by Electronic Means, or
 - (d) in any combination of (a), (b) and (c).
- (3) The Decision Maker may determine any procedural matter at a pre-hearing conference that will foster the fair, just, and timely disposition of the hearing.
- (4) The purposes of a pre-hearing conference include the following:
 - (a) identifying, simplifying, or narrowing the issues in dispute;
 - (b) resolving matters of procedure or evidence that can fairly be addressed prior to a hearing, either on the motion of a party or on the Decision Maker's own motion;
 - (c) scheduling the time and place of the hearing, including determining whether the hearing will be conducted in person, by Electronic Means, in writing, or by any combination thereof;
 - (d) identifying admissions or facts agreed upon by the parties;
 - (e) deciding upon applications made to vary any of the timelines set out in section 1.5(1) and (2) of this Schedule;
 - (f) determining the matters set out in section 1.10(6) and (7) of this Schedule;



- (g) otherwise setting timelines for the orderly conduct of the Proceeding, including prehearing steps;
- (h) setting time limits, if appropriate, on
 - (i) the presentation of evidence,
 - (ii) the examination and cross-examination of witnesses, and
 - (iii) the presentation of opening and closing submissions;
- (i) taking any steps necessary to ensure the best interests of witnesses are protected;
- (j) determining the estimated duration of the hearing;
- (k) resolving any other matter that may assist in the fair, just, and timely disposition of the hearing.
- A Decision Maker may direct that a hearing be conducted in writing pursuant to subsection (4)(c) if the Decision Maker is satisfied that:
 - (a) the Decision Maker can find the necessary facts to come to its decision based on the written record, despite any potential conflicts in the evidence; and,
 - (b) the Decision Maker making a decision on the basis of written submissions would not result in unfairness to any party.
- (6) Submissions made by the parties at a pre-hearing conference are not admissible as evidence in a hearing.

1.7 Motions

- (1) A motion is an application to the Decision Maker for an interlocutory order.
- (2) All motions must be heard at a scheduled pre-hearing conference, unless otherwise ordered by the Decision Maker.
- (3) A motion must
 - (a) be made in writing,
 - (b) set out the grounds for the motion,
 - (c) set out the relief requested, and
 - (d) be accompanied by any evidence to be relied upon.



- (4) The party bringing the motion must deliver the motion and any accompanying evidence to the Decision Maker and the other party at least 7 business days prior to the date set for the hearing of the motion.
- (5) The party responding to the motion may prepare a reply to the motion, which must be
 - (a) made in writing,
 - (b) set out the position of the party responding to the motion and the grounds for that position, and
 - (c) be accompanied by any evidence to be relied upon.
- (6) The party responding to the motion must deliver the reply to the motion and any accompanying evidence to the Decision Maker and the other party at least 2 business days prior to the date set for the hearing of the motion.
- (7) The Decision Maker may allow or require oral submissions from the parties in respect of the motion.

1.8 Adjournments

- (1) A party may apply in writing to the Decision Maker for an adjournment of a hearing.
- (2) An application for an adjournment must comply with the rules in section 1.7 of this Schedule, unless the Decision Maker is satisfied that special circumstances exist.
- (3) In considering an application for an adjournment, the Decision Maker may consider one or more of the following:
 - (a) the reason for the adjournment;
 - (b) whether the adjournment would cause unreasonable delay;
 - (c) the impact on the parties that would result from granting or refusing the adjournment;
 - (d) the public interest.
- (4) The Decision Maker may
 - (a) grant an adjournment,
 - (b) grant an adjournment on terms or with conditions, or
 - (c) refuse to grant an adjournment.



1.9 Hearing

- (1) As directed by the Decision Maker, a hearing will be conducted
 - (a) in writing,
 - (b) in person,
 - (c) by Electronic Means, or
 - (d) in any combination of (a), (b) and (c).
- (2) If a hearing has not yet been scheduled, the Decision Maker must schedule a hearing and provide written notice to the parties of the date(s), time(s), and location(s) or method(s) of the hearing.
- (3) A hearing must be open to the public, unless the Decision Maker determines it would be appropriate to hold some or all of the hearing in private.
- (4) A court reporter must keep a record of the hearing.
- (5) A person attending a hearing must not record any part of the hearing without the consent of the Decision Maker.
- (6) The Decision Maker may determine the procedures to be followed at a hearing, consistent with the principles of procedural fairness.
- (7) In a discipline hearing, both EGBC and the Respondent may
 - (a) present evidence,
 - (b) reply to evidence,
 - (c) call witnesses,
 - (d) cross-examine the opposing party's witnesses,
 - (e) re-examine witnesses,
 - (f) make submissions, and
 - (g) reply to the opposing party's submissions.
- (8) A party to a Proceeding must not put a document to a witness in cross-examination without having provided reasonable disclosure of the document to the opposing party in advance.



- (9) The rules of evidence must not be strictly applied, subject to the Decision Maker's obligation to ensure procedural fairness.
- (10) Nothing is admissible as evidence in a Proceeding that would be inadmissible in a court of law by reason of any privilege.
- (11) The Decision Maker may place reasonable limits on the length of a party's submissions in a hearing.
- (12) A party must not present new evidence in the party's closing submissions.
- (13) In a discipline hearing, the Discipline Hearing Panel must not consider the questions of penalty or costs until the Discipline Hearing Panel has rendered a decision on the allegations in the citation.
- (14) In a credentials hearing, the Registrar must not impose conditions on the ability of the Applicant to re-apply for registration without giving the Applicant the opportunity to respond to any proposed conditions.

1.10 Witnesses

- (1) Parties are responsible for arranging the attendance of their own witnesses.
- (2) Any witnesses testifying at a hearing must give an oath or affirmation before testifying, if competent to do so.
- (3) The Decision Maker may ask questions of any witnesses.
- (4) A Witness must not see or hear the testimony of other witnesses prior to giving testimony at a hearing, unless the witness is also a party to the hearing or is an expert whom the Decision Maker has ruled may be present for the testimony of an opposing party's expert.
- (5) In a Proceeding involving a Registrant Firm, for the purpose of subsection (4), a witness who is an Individual With Authority or individual employed by or under contract with the Registrant Firm, other than the individual designated to represent the Registrant Firm in the Proceeding pursuant to section 1.3(2) of this Schedule, is not considered to be a party to the hearing and is subject to the restrictions on attending during witness testimony as set out in subsection (4).
- (6) If the Decision Maker makes an order pursuant to section 34(3)(a) of the Administrative Tribunals Act, S.B.C. 2003, c. 45, at the request of EGBC or otherwise, to require the Respondent, or in the case of a Registrant Firm Respondent, any Individual With Authority or individual employed by or under contract with the Registrant Firm, to attend a discipline hearing for the purpose of giving evidence, EGBC must be permitted to cross-examine the Respondent, or in the case of a Registrant Firm Respondent, the Individual With Authority or individual employed by or under contract with the Registrant Firm, unless the Decision Maker rules otherwise.



(7) If the Supreme Court makes an order pursuant to section 80(2) of the PGA [*Witnesses*], on the motion of EGBC or otherwise, that a subpoena be issued to compel the attendance of the Respondent, or in the case of a Registrant Firm Respondent, an Individual With Authority or individual employed by or under contract with the Registrant Firm, at a discipline hearing, EGBC must be permitted to cross-examine the Respondent, or in the case of a Registrant Firm Respondent, the Individual With Authority or individual employed by or under contract with the Registrant Firm, at a discipline hearing, EGBC must be permitted to cross-examine the Respondent, or in the case of a Registrant Firm Respondent, the Individual With Authority or individual employed by or under contract with the Registrant Firm, unless the Decision Maker rules otherwise.

1.11 Decisions

- (1) A Decision Maker is not bound by previous decisions of EGBC.
- (2) A Decision Maker must give written reasons for their decision.



Schedule C – Fees

[amended 2021-06-25]

1.1 Fees for Individual Registrants

Fee Description	Amount
APPLICATION FEES	
Application fee for Trainee (EIT/ GIT) Applicant	
a. who is an academically qualified EIT, GIT, MIT, ing jr, géo jr, or CPI in other Canadian province/territory and is applying for the same designation as they hold in the other province or territory	\$0.00
 who applies within 12 months of graduation from an engineering or geoscience post-secondary program 	\$0.00
 who applies more than 12 months after graduation from an engineering or geoscience post-secondary program 	\$475.00
Application fee for professional licensee engineering/ professional licensee geoscience Applicant	
 First time Applicant not licensed or registered in another Canadian province/territory 	\$475.00
 Who holds an equivalent licence or registration in another Canadian province/territory 	\$250.00
c. Application for Minor Change to authorized area of Reserved Practice	\$200.00
d. Application for Major Change to authorized area of Reserved Practice	\$400.00
Application fee for professional engineer/ professional geoscience Applicant	
 First time Applicant not registered or licensed as a P.Eng., P.Geo., ing. or géo in other Canadian province/territory 	\$475.00
 Applicant who is registered with another registered or licensed as a P.Eng., P.Geo., ing. or géo in other Canadian province/territory 	\$250.00
 Applicant who is currently an EIT or GIT with Engineers and Geoscientists BC and whose EIT/GIT application fee was waived 	\$325.00
 Applicant who is currently an EIT or GIT with Engineers and Geoscientists BC and who paid an application fee for EIT/GIT application 	\$0.00
Application fee for designated structural engineer Applicant	\$500.00
Application fee for reinstatement as a Professional Registrant	
 a. within 6 months of resignation, removal or conversion to non-practising registration 	\$50.00



Fee Description	Amount
 after 6 months and within 18 months of resignation, removal or conversion to non-practising registration 	\$100.00
 over 18 months after resignation, removal or conversion to non- practising registration 	\$300.00
Application fee for reinstatement as a Trainee, non-practising Registrant, life member or life limited licensee Registrant	\$50.00
EXAMINATION FEES	
Examination fee for Trainee (EIT/ GIT) Applicant	
a. Per Examination	\$360.00
b. Defer Examination to a subsequent session	\$220.00
c. Request Examination Re-read per Examination	\$200.00
Examination fees for designated structural engineer Applicant	
a. BC Codes and Practices Examination	\$500.00
b. Institution of Structural Engineers Chartered Membership Examination	\$1,000.00
Examination fee for professional licensee engineering/ professional licensee geoscience Applicant	
a. Per Examination	\$360.00
b. Defer Examination to a subsequent session	\$220.00
c. Request Examination Re-read per Examination	\$200.00
Professional Practice Examination fee for all applicable Applicants or Registrants	
a. Multiple Choice and Essay sections	\$260.00
b. [Repealed 2021-04-23]	
INTERVEW FEES	
Interview fee for all applicable Applicants	
a. In-person interview at EGBC office	\$0.00
 Rescheduling (For applicant-initiated postponement or cancellation of a confirmed interview) 	\$ 200.00
c. Remote Interview by Videoconference	\$200.00
Interview fee for reinstatement as a Professional Registrant	
a. In-person interview at EGBC office	\$0.00
 Rescheduling (For applicant-initiated postponement or cancellation of a confirmed interview) 	\$200.00



Fee Description	Amount
c. Remote Interview by Videoconference	\$200.00
COURSE FEES	
Course fee for Professional Engineering and Geoscience in BC Seminar for all applicable Applicants or Registrants	\$275.00
 Course fee for Working in Canada Seminar Per unit Four-unit Seminar 	\$50.00 \$200.00
REGISTRATION & DESIGNATION FEES	
Registration fee for registration as an individual Registrant (other than a Trainee)	\$270.00
Designation fee for designation as a designated structural engineer	\$200.00
ANNUAL FEES	
Annual fee 2021	
Trainee (EIT/GIT)	
a. Full Fee	\$276.00
b. Reduced Fee for Hardship	\$138.00
c. Medically unable to work	\$0.00
Professional Registrant	
a. Professional Engineer/Professional Geoscientist Full Fee	\$450.00
 b. Professional Engineer/Professional Geoscientist Reduced Fee for Hardship 	\$225.00
c. Professional Licensee Engineering/Professional Licensee Geoscience Full Fee	\$418.62
d. Professional Licensee Engineering/Professional Licensee Geoscience Reduced Fee for Hardship	\$209.31
Non-practising Registrant	
a. Professional Engineer/Professional Geoscientist	\$225.00
b. Professional Licensee Engineering/Professional Licensee Geoscience	\$209.31
c. Registrant medically unable to work (non-practising)	\$0.00
Annual fee for a Registrant granted enrolment/ registration at some time other than beginning of annual renewal cycle	Prorated annual fee
Annual Fee 2022	
Trainee (EIT/GIT)	
a. Full Fee	\$276.00



Fee Description	Amount
b. Reduced Fee for Hardship	\$138.00
c. Medically unable to work	\$0.00
Professional Registrant	
a. Professional Engineer/Professional Geoscientist Full Fee	\$460.00
 b. Professional Engineer/Professional Geoscientist Reduced Fee for Hardship 	\$230.00
c. Professional Licensee Engineering/Professional Licensee Geoscience Full Fee	\$418.00
d. Professional Licensee Engineering/Professional Licensee Geoscience Reduced Fee for Hardship	\$209.00
Non-practising Registrant	_
a. Professional Engineer/Professional Geoscientist	\$115.00
b. Professional Licensee Engineering/Professional Licensee Geoscience	\$104.50
c. Registrant medically unable to work (non-practising)	\$0.00
Annual fee for a Registrant granted enrolment/ registration at some time other than beginning of annual renewal cycle	Prorated annual fee
REPLACEMENT / ADDITIONAL FEES	
Additional Manual Seal	
a. 30 mm Rubber Stamp	\$30.00
b. 30 mm Self Inking Stamp (black ink unless specified)	\$50.00
c. 50 mm Rubber Stamp	\$35.00
d. 50 mm Self Inking Stamp (black ink unless specified)	\$55.00
e. Long Reach Seal	\$85.00
f. Professional Licensee Rubber Stamp	\$40.00
g. Professional Licensee Self Inking Stamp	\$50.00
Rush Order Fee for Stamp Order	\$20.00
Additional certificate of registration	\$25.00
Rush Order Fee for Certificate Order	\$20.00
LATE FEES	
Late fee for failure to pay annual fee	15% of Annual fee for Registration category



Fee Description	Amount
Late fee for failure to pay a special assessment	15% of Special assessment fee
 Late reporting fee for: a. Failure to provide certain information published on the register or personal and unique email address b. Failure to submit a completed CEP Declaration 	2021 only: \$0 2022 onwards: \$100.00
Late exemption fee for failure to request an exemption to any CEP requirements prior to April 30	\$50.00
Late completion fee for failure to complete CE plan, CE hours, require ethical learning, required regulatory learning, required technical learn (in the case of a designated structural engineer)	ed \$200.00 ning
RECONSIDERATION AND REVIEW ON THE RECORD FEES	
Reconsideration fee	\$150.00
Review on the record fee	\$500.00



1.2 Fees for Registrant Firms

Fee Descript	ion	Amount				
APPLICATION FEE						
Application f	ee for Registration as a Registrant Firm	\$350.00				
ANNUAL FEE	ES					
Annual fee fo	or Registrant Firm					
а.	Registrant Firms with only one Professional Registrant employed by or under contract with the Registrant Firm:	\$250.00				
b.	Registrant Firms with more than one Professional Registrant employed by or under contract with the Registrant Firm, or Registrant Firms that are sole practitioners with more than 2 Trainees employed by or under contract with the Registrant Firm:	\$500*SQRT(n), where n = # of Professional Registrants and Trainees, but does not include non-practising individual Registrants employed by or under contract with the Registrant Firm.				
Annual fee fo at some time	or a Registrant Firm granted enrolment/ registration other than beginning of annual renewal cycle	Prorated, based on annual fee formula.				
[Repealed 20	21-06-25]					
SPECIAL AS	SESSMENTS					
Special asse	ssments (if any)					
LATE FEES						
Late fee for f	ailure to pay annual fee	15% of Annual Fee of each category above				
Late fee for f	ailure to pay a special assessment	15% of special assessment				
Late reportin a. Certain b. Person Officer	g fee for failure to provide: n information published on the register nal and unique email addresses for all Responsible rs and Responsible Registrants	\$100.00				
Late complet (for each Res late)	Late completion fee for Regulation of Firms Training Program \$200.00 (for each Responsible Registrant who completes the Program late)					



Fee Description

REVIEW ON THE RECORD FEE

Review on the record fee

\$500.00

Amount



Schedule D – Responsible Registrant Declaration

I, <Full Legal Name>, <Job Title>, make the following statements in support of my application to act as a Responsible Registrant of <Name of Applicant Firm or Registrant Firm> (the "Registrant Firm"), and declare that the following statements are true:

- 1. I understand that for the purpose of this declaration, defined terms are capitalized and have the same meaning as set out in the Bylaws.
- 2. I understand and acknowledge that all Registrant Firms are regulated pursuant to the PGA and regulations, as well as the Bylaws, guidelines, standards, practice advisories, and policies of EGBC. I confirm that I have reviewed those documents and understand the obligations of Registrant Firms and Responsible Registrants set out therein.
- 3. I confirm that I am submitting this declaration for the purpose of registering as a Responsible Registrant for the Registrant Firm or proposed Registrant Firm indicated on this declaration (the "Registrant Firm"). I agree to act as Responsible Registrant for the Registrant Firm, including undertaking the responsibilities of a Responsible Registrant as set out in the Bylaws, guidelines, standards, and policies of EGBC.
- 4. IF A CONTRACTOR OR CONTRACT EMPLOYEE ONLY: I have express authority and access to act on behalf of the Registrant Firm, granted through a written contract or other documentation sufficient to satisfy paragraph (3) above, and can provide a copy of such contract or documentation upon request from EGBC.
- 5. I am registered with EGBC as a Professional Registrant In Good Standing.
- 6. I will notify EGBC if I am currently, or become the subject in the future, of an investigation, inquiry, review, or other disciplinary proceeding in British Columbia or another jurisdiction that could result in my entitlement to practice a profession being cancelled, suspended, restricted, or made subject to limits or conditions.
- 7. I will ensure that the Regulated Practice carried out by the Registrant Firm, including the Regulated Practice carried out on behalf of the Registrant Firm by individuals employed by or under contract with the Registrant Firm, is appropriately reviewed and Authenticated in accordance with the PGA and regulations, as well as the Bylaws, guidelines, standards, practice advisories, and policies of EGBC.
- 8. I understand and acknowledge that I remain fully accountable on behalf of the Registrant Firm for ensuring that the Regulated Practice carried out by the Registrant Firm, including the Regulated Practice carried out on behalf of the Registrant Firm by individuals employed by or under contract with the Registrant Firm, conforms to the PGA



and regulations, as well as the Bylaws, Code of Ethics, guidelines, standards, practice advisories, and policies of EGBC.

- 9. I understand and acknowledge that the Registrant Firm must develop and enforce a Professional Practice Management Plan ("PPMP") that conforms with the requirements of section 7.7.3 of the Bylaws and any additional requirements set out in the PGA and regulations, as well as the Bylaws, guidelines, standards, practice advisories, and policies of EGBC. I further understand and acknowledge that the PPMP must be in place no later than 12 months after the date that the Permit to Practice is issued to the Registrant Firm. I will take all reasonable steps on behalf of the Registrant Firm to ensure that the PPMP is developed, implemented, and adhered to by all individuals employed by or under contract with the Registrant Firm. I will document my approval of the PPMP, ensure that it is updated as required, and ensure that past versions are retained in accordance with section 7.7.3(8) of the Bylaws.
- 10. I understand and acknowledge that the Registrant Firm must develop and enforce quality management policies and procedures applicable to the Regulated Practice carried out by Professional Registrants employed by or under contract with the Registrant Firm. I confirm that I have the necessary authority and will take reasonable steps on behalf of the Registrant Firm to ensure that the quality management policies and procedures related to the Regulated Practice at the Registrant Firm conform to the PGA and regulations, as well as the Bylaws, guidelines, standards, practice advisories, and policies of EGBC, and are implemented and adhered to by all Registrants employed by or under contract with the Registrant Firm. I will ensure that the details of the quality management policies and procedures are documented in the PPMP.
- 11. I understand and acknowledge that, in accordance with the PGA and the Bylaws, EGBC may conduct audits, practice reviews, investigations, and disciplinary proceedings in relation to a Registrant Firm and all work related to related to the Regulated Practice carried out by the Registrant Firm, including the Regulated Practice carried out on behalf of the Registrant Firm by individuals employed by or under contract with the Registrant Firm. I further understand and acknowledge that as Responsible Registrant, it is my responsibility to: facilitate requests for documents, information, site visits, and interviews; respond to communications; and assist with any other items or arrangements required or requested by EGBC in relation to an audit, practice review, investigation, or disciplinary proceeding conducted in relation to the Registrant Firm.
- 12. I confirm that any communications that I receive from EGBC on behalf of the Registrant Firm will be replied to in a prompt and responsive manner by myself or another authorized individual.
- 13. I confirm that I will provide EGBC with accurate information in the course of all correspondence or communications with EGBC on behalf of the Registrant Firm, including providing accurate information at the time of application and in relation to any



subsequent updates or additional information provided to EGBC pursuant to the PGA or Bylaws, as applicable.

- 14. I confirm that I will provide EGBC with up-to-date and accurate contact information for myself and for the Registrant Firm, and will take all reasonable steps to ensure that the information is updated as needed and in accordance with the requirements set out in the PGA or Bylaws.
- 15. I confirm that I will participate in the mandatory Regulation of Firms Training Program provided by EGBC, either:
 - a. If the Registrant Firm does not yet have a Permit to Practice, within 12 months of the Registrant Firm being issued a Permit to Practice by EGBC; or
 - b. If the Registrant Firm has already been issued a Permit to Practice by EGBC at any time, within 3 months of submitting this declaration to EGBC;

AND, in either case, at minimum every 5 years thereafter.

- 16. I confirm that I will contact EGBC immediately should I no longer be willing, able, or authorized to act as a Responsible Registrant in association with the Registrant Firm's Permit to Practice with EGBC.
- 17. I understand that I may authorize other individuals employed by or under contract with the Registrant Firm to apply the Permit to Practice Number to documents on behalf of the Registrant Firm. I understand and acknowledge that I am responsible for ensuring that each application of the Permit to Practice Number on behalf of the Registrant Firm (whether by myself or any other individual who I have authorized to apply the Permit to Practice Number) is in compliance with the PGA and regulations, as well as the Bylaws, guidelines, standards, practice advisories, and policies of EGBC with respect to the use of the Permit to Practice Number.



Schedule E – Responsible Officer Declaration

I, <Full Legal Name>, <Job Title>, make the following statements in support of my application to act as the Responsible Officer of <Name of Applicant Firm or Registrant Firm> (the "Registrant Firm"), and declare that the following statements are true:

- 1. I understand that for the purpose of this declaration, defined terms are capitalized and have the same meaning as set out in the Bylaws.
- 2. I understand and acknowledge that all Registrant Firms are regulated pursuant to the PGA and regulations, as well as the Bylaws, guidelines, standards, practice advisories, and policies of EGBC. I confirm that I have reviewed those documents and understand the obligations of Registrant Firms and Responsible Officers set out therein.
- 3. I confirm that I am submitting this declaration for the purpose of registering as the Responsible Officer of the Registrant Firm or proposed Registrant Firm indicated on this declaration (the "Registrant Firm"). I further confirm that I possess the necessary authority to legally bind the Registrant Firm in relation to all matters falling under the PGA and Bylaws of EGBC, and I agree to undertake the responsibilities of a Responsible Officer set out in the Bylaws, guidelines, standards, and policies of EGBC.
- 4. IF A CONTRACTOR OR CONTRACT EMPLOYEE ONLY: I have express authority and access to act on behalf of the Registrant Firm, granted through a written contract or other documentation sufficient to satisfy paragraph (3) above, and can provide a copy of such contract or documentation upon request from EGBC.
- 5. IF A PROFESSIONAL REGISTRANT OF EGBC: I am registered with EGBC as a Professional Registrant In Good Standing. I will notify EGBC if I am currently, or become the subject in the future, of an investigation, inquiry, review, or other disciplinary proceeding in British Columbia or another jurisdiction that could result in my entitlement to practice a profession being cancelled, suspended, restricted, or made subject to limits or conditions.
- 6. I will notify EGBC if the Registrant Firm is currently, or becomes subject in the future, of an investigation, inquiry, review, or other disciplinary proceeding in British Columbia or another jurisdiction which could result in the Registrant Firm's entitlement to practice a profession being cancelled, suspended, restricted, or made subject to limits or conditions.
- 7. I understand and acknowledge that if the Registrant Firm employs at least one Professional Registrant and engages in the Regulated Practice in British Columbia, the Registrant Firm must be registered with EGBC and a Permit to Practice must be obtained from EGBC and renewed in accordance with the Bylaws, unless the Registrant Firm is expressly exempt from registration pursuant to the Bylaws.



- 8. I understand and acknowledge that in order to engage in the Reserved Practice in British Columbia, the Registrant Firm must be registered with EGBC and have at least one Professional Registrant designated to act as the Responsible Registrant for each area of practice engaged in by the Registrant Firm. The Registrant Firm must ensure that the Responsible Registrant has the necessary authority to oversee the Regulated Practice carried out by all Registrants employed by our under contract with the Registrant Firm, and to take the steps necessary to ensure compliance with the requirements in the PGA and regulations, as well as the Bylaws, guidelines, standards, practice advisories, and policies of EGBC.
- 9. I understand and acknowledge that the Registrant Firm and its Responsible Registrant must ensure that the Regulated Practice carried out by the Registrant Firm, including the Regulated Practice carried out on behalf of the Registrant Firm by individuals employed by or under contract with the Registrant Firm, is appropriately reviewed and Authenticated in accordance with the PGA and regulations, as well as the Bylaws, guidelines, standards, practice advisories, and policies of EGBC.
- 10. I understand and acknowledge that the Registrant Firm and its Responsible Registrant remain fully accountable for ensuring that the Regulated Practice carried out by the Registrant Firm, including the Regulated Practice carried out on behalf of the Registrant Firm by individuals employed by or under contract with the Registrant Firm, conforms to the PGA and regulations, as well as the Bylaws, Code of Ethics, guidelines, standards, practice advisories, and policies of EGBC.
- 11. I understand and acknowledge that the Registrant Firm must develop and enforce a Professional Practice Management Plan ("PPMP") that conforms with the requirements of section 7.7.3 of the Bylaws and any additional requirements set out in the PGA and regulations, as well as the Bylaws, guidelines, standards, practice advisories, and policies of EGBC. I further understand and acknowledge that the PPMP must be in place no later than 12 months after the date that the Permit to Practice is issued to the Registrant Firm.
- 12. I understand and acknowledge that the Registrant Firm must develop and enforce quality management policies and procedures applicable to the Regulated Practice carried out by Professional Registrants employed or under contract with the Registrant Firm. I further understand and acknowledge that the quality management policies and procedures must conform to the PGA and regulations, as well as the Bylaws, guidelines, standards, practice advisories, and policies of EGBC, and must be implemented and adhered to by all Registrants employed by or under contract with the Registrant Firm. Finally, I understand and acknowledge that the details of the quality management policies and procedures must be documented in the PPMP, and that I must document my approval of the PPMP on behalf of the Registrant Firm.



- 13. I understand and acknowledge that, in accordance with the PGA and the Bylaws, EGBC may conduct audits, practice reviews, investigations, and disciplinary proceedings in relation to a Registrant Firm and the Regulated Practice carried out by a Registrant Firm, including the Regulated Practice carried out on behalf of the Registrant Firm by individuals employed by or under contract with the Registrant Firm. I further understand and acknowledge the obligation of a Registrant Firm to co-operate completely with the audit, practice review, investigation, and discipline processes, including providing all requested documents and information, facilitating site visits and interviews, and managing communications with EGBC in a timely manner.
- 14. I confirm that any communications that I receive from EGBC on behalf of the Registrant Firm will be replied to in a prompt and responsive manner by myself or another authorized individual.
- 15. I confirm that I will provide EGBC with accurate information in the course of all correspondence or communications with EGBC on behalf of the Registrant Firm, including providing accurate information at the time of application and in relation to any subsequent updates or additional information provided to EGBC pursuant to the PGA or Bylaws, as applicable.
- 16. I confirm that I will provide EGBC with up-to-date and accurate contact information for myself and for the Registrant Firm, and will take all reasonable steps to ensure that upto-date and accurate contact information has been provided to EGBC for the Registrant Firm and all Responsible Registrants of the Registrant Firm, and that this information is updated as needed, in accordance with the requirements set out in the Bylaws. In addition, I will provide (or will designate and supervise an individual within the Registrant Firm who will provide) up-to-date information regarding all Professional Registrants employed by or under contract with the Registrant Firm, and will update that information as needed, in accordance with the requirements set out in the Bylaws.
- 17. I will contact EGBC immediately should I no longer be willing, able, or authorized to act as the Registrant Firm's Responsible Officer in association with the Registrant Firm's Permit to Practice.
- 18. I will contact EGBC should the Registrant Firm wish to cancel its Permit to Practice and will ensure that the Registrant Firm abides by any conditions or requirements as may be directed by EGBC at that time.

Table of Proposed Amendments to Bylaws

Page #	Location	Туре	Description of Proposed Amendment	Explanation
12, 13, 14	1.1 [Definitions of Practice of Professional Engineering / Geoscience, Regulated Practice, and Reserved Practice]	Add Citation	Add citation for the Engineers and Geoscientists Regulation B.C. Reg. 14/2021.	The citation for the not available at th the regulation had citation should be properly in the By
46	5.12(7) [Registrant Firm – provision requires RR to be "In Good Standing"]	Minor amendment	 Amend the basic eligibility requirement for a Registrant to be appointed as Responsible Registrant role at a Registrant Firm, from to be "In Good Standing" to "has the ability to engage in the Reserved practice": (7) An individual designated as a Responsible Registrant of a Registrant Firm pursuant to subsection (5) must be a Professional Registrant In Good Standing who is employed by or under contract with the Registrant Firm and who has the ability to engage in the Reserved Practice. 	This proposed am Registrant from be by a Registrant Fi This amendment responsibility assi Bylaws, it is not a serve in the role o
51	5.15(1) [Life Member or Life Limited Licensee]	Minor amendment	Amend in order to allow for Registrants currently in the "life member prior to 1998" or "honorary life member" categories (with practice rights) to be moved into the category of "life member or life limited licensee" (without practice rights) upon their request:(1) The category of Registrant called "life member or life limited licensee" is established only for:(a) life members or life limited licensees whose status had vested pursuant to the prior bylaw 10(c.1) [Life Membership or Licensure], pursuant to section 42(2) of the PGA [Categories of registrants and bylaws for categories of registrants].(b) Registrants previously in the registration categories of "life member prior to 1998" or "honorary life member" who elect to change their registration categories.	There are current member prior to 1 who have indicate necessary CE in c options are theref non-practising sta prior to 1998" and over to non-practi waiver by moving category, which is life limited license closed.

6.1 - APPENDIX C

the Engineers and Geoscientists Regulation was the time that the bylaws were put into force, as d just been passed at that time. The formal e added to ensure the legislation is referenced vlaws.

nendment will prevent a non-practising being designated as the Responsible Registrant irm, which is allowed under the current wording. is proposed because, given the level of igned to the Responsible Registrant under the appropriate for a non-practising Registrant to of Responsible Registrant.

tly a number of Registrants in the existing "life 1998" and "honorary life member" categories ed that they do not want to complete the order to retain their practice rights. Their fore to either cancel their registration or move to atus. This amendment will allow "life members d "honorary life members" who want to switch ising status to retain their lifetime annual fee g into the "life member or life limited licensee" s a non-practising category. The "life member or ee" Registrant category will otherwise remain

58	5.22(5)(a) [Review on the Record]	Amend for clarity	Amendment for clarity – does not change the meaning of the provision. (a) the evidence is such that the applicant, through the exercise of reasonable due diligence, could not have discovered and submitted it before the decision was made by the evidence was not discoverable by reasonable due diligence before the Credentials Committee, the Audit and Practice Review Committee, or the officer appointed by the Audit and Practice Review	The wording of this clear to the reader meaning of the pro
61-63	5.24(1), (2) [Reinstatement of status as a Registrant Firm]	Correction	Add missing word "practising" in front of "Registrant Firm": section title, (1), (1)(a), (2), (2)(a)(i), (2)(a)(ii), (2)(b)(i), (3). Replace "Applicant" with "non-practising Registrant Firm": (1) (c), (d), (e), (f), (g), (h)	These revisions ar section is clear. Th practising Registra practising status. If Firms that are application adding "practising" defined term "Appl where appropriate
65	5.27(4)(d) and (g) [Register of Individual Registrants]	Minor amendment	Remove the requirement for a non-practising Registrant to provide their industry and areas of practice and their business contact information: (4) For a currently registered individual Registrant, in addition to the information set out in section 31(3) of the PGA [Registrar and register for regulatory body], the Registrar must include the following information on the Register: [] (d) for all Registrants with the ability to engage in the Reserved Practice, the individual Registrant's self-declared industry or industries of practice and area(s) of practice; (g) for all Registrants with the ability to engage in the Reserved Practice, business contact information for the individual Registrant, which may be provided by way of the individual Registrant's	A non-practising R not have any "area information", and th requirement to pro- concern that there public if we publish who are non-practi [engineering or geo contact information only removes the r contact" informatio
65	5.27(4)(d) [Information Published on the Register]	Correction – typographical	(d) the individual Registrant's self-declared industry or industries of practice and area(s) of practice; []	Makes clear that a of practice.
70, 71	5.30(1)(b) and 5.30(3)(d) [Information Collected Annually and not Published on the Register]	Amendment	Add two new subsections, to set out the requirement that Registrants and Registrant Firms must make an annual declaration confirming whether they have been convicted of an offence or subject to investigation or disciplinary action by another regulator.	This proposed and Firm to complete a whether they have subject to investiga

s provision was revised to ensure that it was The new wording does not change the vision.

re proposed to ensure that the meaning of the he section is intended to apply to nonant Firms that are applying to move back to it is not intended to apply to former Registrant olying to register again (this is done through the process). The section can be made clear by " in front of "Registrant Firm", and replacing the licant" with "non-practising Registrant Firm" e throughout the section.

Registrant who is retired or unemployed may as of practice" or "business contact thus may not be in a position to satisfy the ovide this information. In addition, there is a could be some confusion on the part of the n "business contact information" for Registrants ising and are prohibited from engaging in oscience] business. EGBC will still collect the n of non-practising Registrants; this revision requirement for <u>public-facing</u> "business on.

Registrant may have more than one industry

endment will require a Registrant or Registrant a declaration on an annual basis confirming been convicted of an offence or have been ation or disciplinary action by another

			[see full draft text in attached draft hylaws at pages 70 and	regulator. This and
			71]	information reporting serve to bring the l reporting requirem
				Note that under the required to <u>immed</u> disciplinary action. not add any new o but instead serves investigation, or dia nevertheless be re
77	7.3.1 (3)(a)(ii) [Standard for Use of Professional Practice Guidelines]	Correction – typographical	Add missing word "to": [] (ii) inform the Professional Registrants employed by or under contract with the Registrant Firm in a timely and effective manner of professional practice guidelines published pursuant to subsection (1) that are relevant to carried out by the Registrant Firm and Professional Registrants employed by or under contract with the Registrant Firm; []	Typographical erro
77	7.3.2 [Standard for Retention and Preservation of Documentation]	Correction - clarity	Minor revision to ensure the meaning of the subsection is clear: (1) A Professional Registrant must establish, maintain, and follow documented procedures for the retention and preservation of complete project documentation related to the Regulated Practice engaged in by the Professional Registrant, which documentation is not limited to, but must include if they existed, including copies of physical and or electronic versions of []	The previous word have erroneously s preserve every phy document they pro subsection. The pr clear the original in required to ensure regardless of the fo
80	7.3.3 [Standard for Field Reviews] - Title	Correction – typographical	Add missing "s" in section title: <i>"Standard for Field Review<mark>s</mark>"</i>	Typographical erro
81	7.3.4(2)(d) [Standard for Checks]	Correction	Add new subsection (v) under (2)(d): (v) <i>"correction(s) and corrective action(s), if any, in response to</i> <i>issues identified by the checker</i> "	This subsection wa element should ha documentation of o
83, 85, 86	7.3.5(3)(a); 7.3.6(1); 7.3.6(2)(b) [Standard for Independent Review(s) of Structural Design]	Correction – typographical	Remove the hyphen from "risk <mark>-</mark> assessment" in each of these provisions. There should be no hyphen.	Typographical erro

nual declaration <u>is already required</u> as an agineers and Geoscientists BC's annual ing process, so this proposed amendment will Bylaws into line with that existing annual nent.

he existing Bylaw section 5.32, Registrants are diately report convictions, investigations, or b. This annual reporting requirement thus does obligations on Registrants in terms of reporting, is as a back-up to ensure that any conviction, iscipline that was not reported immediately will eported at the time of the annual declaration. or.

ding of this provision was unclear and may suggested that Registrants were required to hysical <u>and</u> electronic version of every oduce. That was not the intention of the proposed amendments are intended to make ntended meaning: that Registrants are only that a copy of each document is preserved format of the original document.

or.

as inadvertently left out in the prior draft. This ave been included as a requirement for checks.

or.

	7.6.6(3)(a) [Standard for Independent Review(s) of High-Risk Professional Activities or Work]			
86	7.3.6(3)(b) [Standard for Independent Review of High-Risk Professional Activities and Work]	Correction – typographical	 Add reference to paragraphs (iii) and (iv) (b) record their rationale for the determinations made pursuant to paragraphs (a)(i) and (ii), (iii) and (iv) 	This section was in important to includ elements are includ associated with the
87	7.3.6(8)(a)(i) [Standard for Independent Review of High-Risk Professional Activities and Work]	Correction – typographical	Delete extra "initial": (i) an initial documented <mark>initial</mark> risk assessment and documented independent review, []	Typographical erro
111	8.7(9)(e) [Compliance Audit Program for Registrant Firms]	Correction – typographical	 Delete word "including": (e) "ensuring compliance with any requests by an assessor to conduct interviews of individuals employed by or under contract with the Registrant Firm, including". 	Typographical erro
117	8.10(3)(a)(i) [Practice Review of Registrant Firms]	Correction – typographical	Replace "compliance audit" with "practice review":(i) The Registrant Firm's co-operation with the complianceaudit practice review[]	Typographical erro
154	Schedule B - 1.10 (5) [Credentials and Discipline Hearing Procedure - Witnesses]	Correction – typographical	 Add missing word "be": (5) In a Proceeding involving a Registrant Firm, for the purpose of subsection (4), a witness who is an Individual With Authority [] is not considered to be a party to the hearing and is subject to the restrictions on attending during witness testimony as set out in subsection (4). 	Typographical erro
160	Schedule C – 1.1 – [Fees – Fees for Individual Registrants - Late Reporting Fee]	Minor amendment	 Waive the late reporting fee (for information reporting) for 2021 only: Late reporting fee for: a. Failure to provide certain information published on the register or personal and unique email address b. Failure to submit a completed CEP Declaration 2021 only: \$0 2022 onwards: \$100.00 	The annual reportin Registrants are stil up to speed with th propose to waive th Registrants becom
161	Schedule C – 1.2 – [Registrant Firms Fees – Non-practising Registrant Firm]	Correction – Repeal	Repeal fee for non-practising firms that have held non-practising status for more than 2 years.	The bylaws do not their non-practising Registrant Firm reg elapsed. Therefore

advertently left out of the prior draft. It is e these paragraphs to ensure that these ded in the written rationale for determinations e risk assessment.
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ng requirements are new for 2021 and I in the process of understanding and getting ie new reporting requirements. We therefore ne late reporting fee for 2021 only, while e familiar with the system.
allow non-practising Registrant Firms to retain y status for more than 2 years. Non-practising gistrations are cancelled after 2 years have e, this fee is obsolete and should be repealed.

			Annual Fee for non-practising Registrant Firm (that has held non-practising status for more than 2 years): 50% of full fee [Repealed 2021-06-25]	
166	Schedule E – s. 5 [Responsible Officer Declaration]	Correction – typographical	 Revise to correct awkward wording: 5. IF A PROFESSIONAL REGISTRANT OF EGBC: I am registered with EGBC as a Professional Registrant, confirm that I am currently. In Good Standing. I will notify EGBC if I am currently, or become the subject in the future, of an investigation, inquiry, review, or other disciplinary proceeding in British Columbia or another jurisdiction that could result in my entitlement to practice a profession being cancelled, suspended, restricted, or made subject to limits or conditions. 	Typographical erro
168	Schedule E – s. 13 [Responsible Officer Declaration]	Correction – typographical	Add missing word "to": 13. I understand and acknowledge that, in accordance with the PGA and the Bylaws, EGBC may conduct audits, practice reviews, investigations, and disciplinary proceedings in relation to a Registrant Firm and the Regulated Practice []	Typographical erro

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Policy on Council Meetings

[DRAFT]

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Engineers and Geoscientists BC Policy on Council Meetings

1. Introduction

Council meetings serve as the primary forum for Council discussions and decision-making, where Council convenes to conduct business and focus on fulfilling the mandate of Engineers and Geoscientists BC, as set out in the *Professional Governance Act* (the Act).

The Council seek to foster meetings that are effective and inclusive, where Councillors are supported to meaningfully engage in their work and make well informed decisions. This policy sets out rules, practices and guidelines for how Council meetings are structured and planned and how decisions are made. It also provides guidance on practices to support effective and inclusive meetings, to support the Council in fulfilling the mandate of Engineers and Geoscientists BC.

This policy supplements and should be read in conjunction with the Bylaws of Engineers and Geoscientists BC (Bylaws) and other Council Governance policies.¹

The policy reflects leading practices in governance with particular consideration for regulatory governance.

The policy does not apply to committee meetings, or to general meetings such as the annual general meeting. Separate policies and procedural rules govern those types of meetings.

2. Council Meetings

2.1 Annual Schedule of Council Meetings

Over the course of a year, the Council normally holds a series of regularly scheduled meetings and may hold special meetings and other sessions, such as Council forums and education sessions.

Typically, six regular Council meetings are scheduled in a year – an inaugural meeting and five full day meetings. The meetings are scheduled one year in advance, and the schedule (including the date, time and location, as applicable) is provided to Councillors and published on the Engineers and Geoscientists BC website.²

2.2 Types of Meetings

Council meetings are normally comprised of:³

- An open session
- A closed session
- An *in camera* session

¹ Council Governance policies include, for example, CG-3 Council Terms of Reference; CG-4 Position Description and Role Profiles; CG-6 Code of Conduct for Council Members.

² See: <u>https://www.egbc.ca/About/About-Us/Council/Council-Schedule-and-Agendas</u>

³ Bylaws sections 2.4(4) and (5)

The meeting agenda will indicate the type of meeting or session and, depending on the nature of the discussion, items can be moved between open and closed agendas.

2.3 Open Sessions

Staff and registrants of Engineers and Geoscientists BC, and members of the public are welcome to attend open sessions as observers. Engineers and Geoscientists BC's representatives to Engineers Canada and Geoscientists Canada boards and the Pacific NorthWest Economic Region are considered standing observers. The list of standing observers may be modified from time to time by Council. Open session meeting dates and materials are posted on the Engineers and Geoscientists BC website.

Interested individuals are required to register in advance, although space may be limited. Requests to attend open sessions should be directed to the Executive Assistant to Council and to the CEO at least three business days prior to the meeting.

a. Participation, Requests to Present, and Decorum in Open Sessions

Individuals may request to present at an upcoming Council meeting. All requests are required to be submitted at least six weeks prior to the Council meeting date and will be considered by the Executive Sub-committee for approval, prior to going before the Council.⁴ Requests to present should be relevant to registrants, the public, and to the mandate of Engineers and Geoscientists BC and consideration is given to the currency of requests as they relate to matters before the Council.

Standing observers may be permitted to speak at the discretion of the President/Chair.

All persons attending the open session of a Council meeting are expected to behave in a respectful and civil manner. The President/Chair may remove any person in attendance for improper conduct.

Minutes of open sessions are published on the website after they have been approved by Council.

Council meeting summaries are also available in *Innovation* magazine under the Council Report section following each Council meeting for the information of registrants.

2.4 Closed Sessions

Closed sessions of Council meetings are attended by Councillors, the CEO, management and Engineers and Geoscientists BC's representatives to Engineers Canada and Geoscientists Canada boards and the Pacific NorthWest Economic Region but are closed to registrants and the public. Minutes are recorded for these meetings but are not published.

Policy CO-21-27 – Transparency of Council Meetings provides guidelines for matters that are typically considered in closed sessions.⁵

⁴ Interested individuals must submit a formal request to present at Council meeting: <u>https://www.egbc.ca/getmedia/18a494b2-7afa-4496-a4aa-42a03f3beff6/Request-to-Present-at-Council-updated-</u> <u>2021.pdf.aspx</u>

⁵ Policy CO-21-27 – Transparency of Council Meetings: <u>https://www.egbc.ca/getmedia/8eebb274-057c-4121-9014-93176236a09f/CO-21-27-Policy-Transparency-of-EGBC-Council-Meetings.pdf.aspx</u>

2.5 In camera Sessions

In addition to open and closed sessions, the Council may hold *in camera* sessions. *In camera* sessions are a subset of a closed session. The Council has established a policy to provide additional guidelines for *in camera* sessions, Policy CO-15-51.⁶

In camera sessions are attended by Councillors only, except that the CEO attends the initial portion of the meeting to participate in discussions pertaining to staff and/or to follow up on requests for information from Councillors. *In camera* sessions may be attended by staff or others, such as advisors, when specifically invited by the President/Chair.

Without limiting the full scope of matters that are typically considered *in camera*, a primary purpose of *in camera* sessions is for Council reflection. For example, the Council may wish to use this time to evaluate its own effectiveness or the effectiveness of meetings, to foster Council culture by having an open discussion about behaviours, examine its relationship with management, or reinforce good practices and to carry out a self-assessment of the Council's effectiveness.

Business is not generally conducted during *in camera* sessions and minutes are not taken of the *in camera* portion of meetings. However, follow up requests are noted by the President/Chair and subsequently conveyed to the CEO.

2.6 Confidentiality of Closed and In camera Sessions

Deliberations and materials considered in closed and *in camera* sessions are confidential. All participants and attendees must respect this confidentiality.

2.7 Strategy Sessions

Strategy sessions, also known as Council Forums, are Closed Sessions typically held the day before a Council meeting. These sessions provide an opportunity for the Council to have more focused discussions on strategic or future-facing issues that may affect or guide the organization's business. Any decisions coming out of a strategy session must be brought forward to the subsequent meeting of Council. No formal minutes are kept for these types of meetings.

2.8 Education Sessions

The purpose of an education session is to ensure that Councillors have the knowledge, information, and tools to be most effective in their roles. No minutes are recorded for this type of meeting, but educational support materials are kept for future reference.

⁶ Policy CO-15-51 – Guidelines for Council In Camera Sessions after the Regular Closed and Open Council Meeting: <u>https://www.egbc.ca/getmedia/7df9a81c-42f6-4ee4-b9c2-222858cb0940/CO-15-51-CG-8-Guidelines-for-Council-In-Camera-Sessions-after-the-Regular-Closed-and-Open-Council-Meeting.pdf.aspx</u>

3. Meeting Logistics

How and where a meeting takes place are important considerations. Technology provides greater flexibility than ever, so multiple channels can be made available to Councillors wherever possible to help manage time, availability, cost, and quorum.

Council meetings may be held in person or by electronic means.

3.1 In person Meetings

In person meetings have been a preferred type of meeting, predominantly because Council meetings involve significant discussion, planning, problem solving and decision-making. In person meetings help to foster shared understanding, collegiality and trust.

3.2 Meetings by Electronic Means

Council meetings may be held by electronic means which includes teleconferencing and/or videoconferencing. This form of meeting has become the norm for Council during the Covid-19 pandemic.

4. Annual Workplan/Calendar, Agendas and Meeting Materials

4.1 Annual Calendar/Workplan and Agendas

An annual calendar/work plan is drawn up at the beginning of the Council year, setting out the various decisions the Council must make at its meetings throughout the year (for example, approval of the budget or financial statements).

Agendas are prepared by staff and reviewed by the President/Chair, based upon the annual work plan for the Council and emerging issues.

A videoconference is typically held the week of a Council meeting and usually on a Wednesday. The purpose of this session is to provide an opportunity for Councillors to receive clarification on any material or content on the agenda for the upcoming Council meeting. By allowing Councillors to raise questions for clarification ahead of a meeting, this practice helps to ensure that Council meeting time can be focused on discussion and decisions. Councillors are strongly encouraged to attend this pre-meeting session.

Any Councillor may propose an agenda item for consideration in advance of the meeting by completing the Agenda Item Request Form. The Executive Sub-Committee considers requests and may decide to either add the item to the agenda or to address the item in another way, in which case the President will typically follow up with the Councillor to discuss options. Councillors are strongly encouraged to propose agenda items in advance using the established process, in order to ensure that items are supported with appropriate background information and that informed discussion can occur. In special cases where an emerging issue may warrant a new agenda item to be considered at the meeting, the President/Chair, in consultation with Council and management, will determine whether the item will be added.

Agendas follow a standard format, which includes the use of a consent agenda (see also below). The agenda will typically list each matter that will be brought forward to the Council, the time estimated for each discussion, whether the Council is receiving the item for information, discussion, or decision, and the material
that will be provided to the Council to support its consideration of a matter. The President/Chair, at their discretion, may modify the agenda order if needed to accommodate certain circumstances such as a guest or speaker being late or if a member of Council must leave early.

At the commencement of each meeting, there is a formal acknowledgment of the unceded First Nations territory on which the meeting is taking place.

When developing agendas, staff and the President/Chair need to be confident that:

- The Council is spending the most amount of time on the most important issues
- The Council will have the information and time to have an appropriate discussion for each agenda item
- The agenda is not too ambitious for the time allocated
- The right people will be in the room for each discussion
- Staff are making the best use of the time they have with the Council when face-to-face
- Staff are sure the topics under discussion during a closed or *in camera* meeting are appropriately flagged as confidential
- Staff ensure the design of the meeting aligns with Councillors' level of engagement and capacity (e.g., deep discussion is not happening at a time when the Councillors might be tired or distracted)

Note that from time to time there may be items brought forward in an open or closed session where, due to the nature of the matter, the President/Chair may request that certain participants (for example staff or standing observers) be excused for that portion of the meeting.

4.2 Consent Agenda

A consent agenda is used to address multiple decision requests as a single agenda item so the Council can manage its meeting time. Items that are routine or non-controversial in nature will appear on a consent agenda, or an item that requires perfunctory approval because the Council has already reached a decision in previous discussions. The consent agenda may also include reports that are for the information of Council (see also discussion above – some items/reports may be presented for information only).

Councillors are expected to have carefully reviewed the items on a consent agenda prior to the meeting. The President/Chair will ask at the outset of the meeting if any items from the consent agenda need to be moved to the regular agenda for further discussion. If a Councillor has a question for clarification, Councillors are encouraged to raise that in advance of the meeting, for example with the author of the report. However, if a Councillor feels the items warrants discussion or will vote against it, then they may request for the item to be removed from the consent agenda.

If an item is moved but other matters remain on the consent agenda, the President/Chair will ask for a motion for the consent agenda to be approved as amended. The President/Chair will subsequently ask for a motion for the regular agenda to be approved as amended (as it will include the new matter for discussion). If no items are moved from the consent agenda, the President/Chair will ask for a motion for the consent agenda as a whole to be approved. Whenever the consent agenda is approved, each item appearing on it will have its resolution recorded separately in the minutes.

4.3 Meeting Package

Briefing notes, with supplemental documents, form the basis of the meeting package. Along with the agenda, the meeting package provides Councillors with the information they need to understand the goal of each discussion, as well as background information, context, and analysis. Management will also be present during the meeting or on call to address any questions that arise.

The agenda and meeting package are posted on the secure document management system at least seven days prior to the meeting, or as soon as practicable. The agenda and meeting packages for open meetings are posted on the website for any registrants and members of the public that wish to attend.

Any changes made to the agenda or meeting package will be communicated to Councillors either by email in advance of the meeting, or in person by the President/Chair at the beginning of the meeting.

Upon notification that the meeting package has been posted, and prior to the actual meeting, Councillors should:

- Check they can access the meeting package
- Review the agenda and notify the President/Chair if a conflict of interest is identified (the President/Chair will also ask Councillors to declare potential conflicts at the outset of each meeting)
- Come prepared, having read the material carefully in order to allow greater time for discussion at the meeting itself
- Submit significant concerns or questions to the President/Chair ahead of the meeting so that a response can be formulated in time for the meeting

5. Meeting Expectations

Meetings are the time that Council comes together for formal deliberations and decision-making. Effective meetings are underpinned by a shared commitment to positive and constructive dynamics, respect for all perspectives, openness, active engagement and a willingness to engage in robust dialogue.

5.1 Meeting Expectations

Key expectations of Councillors in relation to Council activity and Council meetings include that each Councillor:⁷

- Be prepared and well-informed on relevant issues (through pre-read materials or otherwise)
- Contribute their own experience, wisdom, judgment on issues
- Interact with fellow Councillors and management in a respectful and constructive manner
- Express independent opinions in a clear and respectful manner
- Express points of view for the Council's consideration even if they may seem contrary to other opinions previously expressed
- Listen to, and exercise tolerance for, others' perspectives

⁷ See Council Governance Policy CG-4, Position Descriptions and Role Profiles for President, Vice President and Councillors: <u>https://www.egbc.ca/getmedia/4a0dcf3f-b003-4cd5-9057-05d7647dcb5c/CO-20-67-CG-4-Position-Descriptions-and-Role-Profiles.pdf.aspx</u>.

- Understand the difference between governing and managing, focusing inquiries on issues related to strategy, policy, implementation, and results rather than issues relating to the day-to-day management
- Devote the necessary time and attention to be able to make informed decisions on issues that come before the Council

In addition, and in the spirit of supporting meeting effectiveness, Councillors are advised to:

- Notify staff in advance if they are unable to attend a meeting or, if the meeting is being held inperson, plan to attend remotely
- Inform the Executive Assistant to Council in advance if they plan to join the meeting late or leave early
- Test equipment ahead of time to make sure internet access is available and working and, if possible, to have a contingency in place in the event of system glitches
- Arrive on time, with materials and notes ready to participate in the meeting
- Turn off any notifications and put away any devices not in use or explain at the outset to the group that an interruption might occur during the meeting

When attending by electronic means (video- or teleconference), Councillors are further advised to:

- Consider how they might appear on camera, for example, avoiding stripes or bold patterns which can be visually distracting, adjusting lighting to minimize shadows, and reducing background noise
- Have the dial-in number, access codes, or log-in details ready and join the meeting at least 10
 minutes early to resolve technical issues
- Give full attention to the meeting as they would if in the same room
- Identify themselves if they wish to be placed on the speaker's list
- Wait to be acknowledged by the President/Chair before speaking
- Speak clearly and address Councillors by name if asking clarifying questions
- Ask for clarity if any part of the discussion is unclear
- Be patient if there is a slight delay in transmission
- Mute the line when not speaking and not place the call on hold to avoid silence fillers (i.e., news or music) being broadcast to the room

When the meeting concludes, Councillors must remember to end the call or connection and ensure that any copies of meeting material that may have been printed by a Councillor is disposed of securely and in accordance with records management practices, as applicable.

If there have been any logistical problems with the meeting, Councillors should provide feedback to staff as soon as possible so these can be addressed.

6. Procedure at Council Meetings and Decision-Making

6.1 President/Chair

The President presides at Council meetings and in the event that the President is unable to attend a specific meeting, the Vice President will act as chair for that meeting. If neither the President nor Vice President are present, the Council will choose one of the Councillors to act as chair for that meeting.

The President/Chair is responsible for the meeting, including to make sure that it runs on time. The Vice-President supports the President in this role, including managing the speaker's list.

The President/Chair and Vice-President actively participate in Council meetings. They facilitate discussion by supporting Councillors to express views, ensuring those who wish to share their perspective have an opportunity to be heard, by asking for alternative or contrasting perspectives, and asking questions to help ensure there are no gaps in understanding that may need to be addressed.

6.2 Quorum

A majority of voting Councillors constitutes quorum for Council meetings and, subject to the requirement that at least one lay Councillor must be present (unless there is no lay Councillor appointed).⁸

6.3 Staff/Committee Recommendations

Depending on the nature of the decision, staff or committees may include a recommendation in the briefing note. Sometimes a draft resolution will also be provided to support the Council's deliberations. However, at times, staff may lay out the various options without a recommendation or draft resolution if they feel this is more appropriately left to the Council.

Briefing notes will typically provide a sufficient level of background to support decision-making, including references to previous discussions, analysis of strategic priorities, consideration of external factors, consultation with stakeholders, and previous Council discussions. Where a review of the issues may have already been completed by committees, sub-committees or advisory groups, the Council will get a summary of the process the group engaged in and a recommendation.

6.4 Types of Decisions

Councillors can expect to see four types of decision in their work, each triggering a different decision-making process intended to support strong outcomes and meet the public interest mandate. These types of decision are:

- Standard Decisions
 - Where information is static, the context is well understood, less background information is required, and minimal discussion is necessary
- New Decisions

⁸ PGA section 29(1).

- Where an issue has never been addressed, more information may be necessary, and greater discussion and context is required in order for the Council to understand why it is being asked to make a decision at all
- Significant Decisions
 - Where issues involve major transactions or commitment to a long-term plan or an action with far-reaching effects that may require longer timeframes for deliberation
- Crisis Decisions
 - Where an emergency or significant issue arises, which has a very short timeframe in which to act or respond, and often requires concise information to support efficient decision-making

6.5 Decision-Making Process

The standard process for moving through discussion to decision includes the following:

- Each item on the agenda will be introduced by an identified member of staff, a chair of a Council sub-committee, statutory committee or advisory group, or anyone else invited by the President/Chair to introduce the topic
- The President/Chair will open the floor for any questions and discussion arising from the briefing note and background materials
- The President/Chair will ensure that every Councillor has had an opportunity to share their perspective; generally every Councillor will have the opportunity to speak once before speaking a second time and Councillors are expected to limit comments/questions to about 3 minutes
- For the sake of efficiency and effectiveness, the President/Chair will ensure that discussion is confined to issues that fall within the Council's authority and are relevant to the issue being discussed
- Throughout the discussion, the President/Chair will highlight important points, clarify misunderstandings, and keep the discussion focused on the matters at hand
- When Councillors believe they have received the information necessary to consider the issue fully and are ready to move to a decision on the matter, the President/Chair will request a motion for resolution on which the Council will vote (see also below)

6.6 Voting

The Council strives to ensure that meetings are inclusive and that Councillors are meaningfully engaged in decision making. Prior to taking a vote, the Council seeks to ensure Councillors have had an opportunity to share their perspective, that there has been robust dialogue and an opportunity to work towards consensus. After due deliberation, all decisions and motions are decided by simple majority of votes cast by Councillors present and entitled to vote. When the meeting technology permits, the votes of individual Councillors may be made visible at the meeting but only the decision of Council will be recorded.

6.7 Key Considerations

For a regulatory council, a key consideration for any decision will be whether the outcome serves and protects the public. Councillors should keep the mandate and objects of Engineers and Geoscientists BC foremost in mind, and may wish to ask themselves the following questions:

Why are we having this discussion/making this decision?

- Is it in our mandate?
- Is it tied to our strategic priorities?
- Do we trust the decision-making process in light of the importance of the decision (risk implications, strategic importance, budget implications, and impact on stakeholders)? If not, what needs to change?
- Are the right people with the right experience and knowledge in the room to support a good decision?
- Have we understood all the necessary facts and information?
- Is there additional information we need to make a good decision?
- Are the assumptions made reasonable?
- Is there more than one possible course of action?
- Do we have agreement on the outcome?
- Would it be better to defer making a decision now, until we have further information or additional time to continue the discussion?

When possible, staff will bring items to the Council incrementally, with information, education sessions and smaller decisions leading up to the final request for a decision. This ensures the Council is fully informed and comfortable with the subject matter before a decision is required. Therefore, when the Council decides to defer a decision, it is best practice to think about what the unintended consequences of that deferment might be.

6.8 Resolutions

A resolution is a written statement of an action approved by the Council. It usually deals only with single or directly related issues.

Once a decision has been reached, the President/Chair will call for a motion for resolution. If a draft resolution has been set out in the briefing note, the President/Chair or member of staff will read it to the Council, making any adjustments, as necessary. Following any further discussion, the President/Chair will ask the Council to indicate, either by electronic means, a show of hands, or verbal acknowledgment for Councillors attending remotely, acceptance of the resolution. For the sake of clarity, the President/Chair will then restate the decision that has been approved, so it can be captured correctly for the minutes.

Resolutions proposed at a Council meeting do not need to be seconded.

However, any resolution proposed by a Councillor that (i) has not been considered by staff, (ii) is not supported with a briefing note, and (iii) is not placed on the written agenda, must be supported by a seconder. Under such circumstances, the President/ Chair will determine how best to deal with the proposed resolution, by:

- Allocating time at the meeting for the discussion
- Deferring the discussion to a future meeting and directing staff to prepare a briefing note with respect to the issue
- Deferring the discussion to a committee, with a recommendation for decision to come to the Council as appropriate

6.9 Consent Resolutions

The Council may pass consent resolutions outside of a formal meeting. A consent resolution is a resolution in writing (on paper, electronically or via email) consented to by all Councillors entitled to vote on that resolution – which is as effective as if it had been passed at a Council meeting. If a Councillor wishes to discuss a proposed consent resolution, they should inform the President/Chair. The results of consent resolutions will be communicated to Council and included in the subsequent meeting for information.

6.10 Recording Decisions and Minutes

Minutes of the proceedings of Council and of decisions made outside of a meeting serve as the official record of the Council meeting and of decisions made.

All minutes set out the date, time and location of the Council meeting, the attendance of participants, and a record of the formal actions, recommendations, and resolutions of the Council taken. Individual votes are not recorded unless a Councillor specifically requests to have their dissent recorded. Abstentions are recorded. Opinions or views expressed by participants at Council meetings are not recorded in the minutes.

The draft minutes are added to the next meeting agenda for review and approval by the Council. The minutes do not need to be signed once approved. Minutes of open sessions are published; minutes of closed are not published and are distributed only to those authorized to attend such sessions.

A log of all resolutions is kept by staff and is a resource to the Council if required.

7. Amendments and Review

These rules, practices and guidelines have been adopted by the Council⁹ and will be reviewed regularly by the Governance Sub-Committee to ensure they are kept current and remain relevant to the work of the Council.

The rules, practices and guidelines may be amended by the Council.

[Approved: Approved by the Council on [x]]

⁹ Bylaw section 2.4(2) provides that the Council may adopt or establish policies, procedures or rules of order, consistent with the PGA, applicable regulations, and the Bylaws, for the purpose of conducting a meeting of the Council.