

COUNCIL MEETING

DATE	September 7 th , 2018
LOCATION	Dan Lambert Boardroom, 2 nd Floor (Large Room, Upstairs) Engineers and Geoscientists BC Offices, 200 – 4010 Regent Street, Burnaby, BC

Meeting Schedule

08:30 - 09:00	Engineers and Geoscientists BC Benevolent Fund AGM
09:00 - 09:30	Engineers and Geoscientists BC Foundation AGM
09:30 – 10:40	Closed Session
10:40 – 10:55	Morning Break
10:55 – 11:25	Closed Session (continued)
11:25 – 12:50	Open Session
12:50 – 13:50	Lunch Break
13:50 – 15:15	Open Session (continued)
15:15 – 15:30	Break Before In-Camera Session
15:30 – 16:30	In-Camera Session
16:30	Adjournment

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



OPEN AGENDA

DATE	September 7, 2018
TIME	11:25 – 15:15
LOCATION	Dan Lambert Boardroom, 2 nd Floor (Large Room, Upstairs) Engineers and Geoscientists BC Offices, 200 – 4010 Regent Street, Burnaby, BC

11:25	4.	OPEN SESSION CALL TO ORDER	
		Chair: Caroline Andrewes, P.Eng., CPA, CMA, President	
11:25 (5 min)		4.1 Declaration of Conflict of Interest	
11:30 (5 min)		4.2 Safety Moment	
11:35	5.	OPEN CONSENT AGENDA	
(15 min)		MOTION: That Council approve all items (5.1 to 5.10) on the Open Consent Agenda.	
		5.1 June 15, 2018 Open Minutes	June 15, 2018 Open Minutes
		MOTION: That Council approve the June 15, 2018 Open Meeting minutes as circulated.	
		5.2 Appointments Approval	
		MOTION 1: That Council approve the recommended appointment and re-appointments to the Practice Review Committee as applicable.	
		MOTION 2: That Council approve the recommended appointment to serve as Alternate Scrutineer for the 2018/19 Council Election as applicable.	

	MOTION 3: That Council approve the recommended re- appointment to the Branch Representatives Chair as applicable.	
	MOTION 4: That Council approve the recommended appointments to the Building and Space Planning Task Force as applicable.	
	MOTION 5: That Council approve the recommended re- appointments to the CPD Committee as applicable.	
	MOTION 6: That Council approve the recommended re- appointment to the City of Richmond Advisory Panel as applicable.	
	MOTION 7: That Council approve the recommended re- appointments to the Board of Examiners as applicable.	
	MOTION 8: That Council approve the recommended re- appointment to the Editorial Advisory Committee as applicable.	
	MOTION 9: That Council approve the recommended re- appointment to the Standing Awards Committee as applicable.	
	MOTION 10: That Council approve the recommended re- appointment to the Geoscience Committee as applicable.	
5.3	Professional Practice Guidelines - Electrical Engineering Services for Building Projects (revision)	Electrical Engineering Services for
	MOTION: That Council approves the Professional Practice Guidelines – Electrical Engineering Services for Building Projects, Version 2.0 for final legal and editorial review prior to publication.	Building Projects Guidelines
	Peter Mitchell, P.Eng., Director of Professional Practice, Standards and Development	
5.4	Professional Practice Guidelines - Designing Guards for Buildings (revision)	Designing Guards for Buildings Guidelines
	MOTION: That Council approves the Professional Practice Guidelines – Designing Guards for Buildings, Version 2.0 for final legal and editorial review prior to publication.	
	Peter Mitchell, P.Eng., Director of Professional Practice, Standards and Development	
5.5	Professional Practice Guidelines - Professional Structural Engineering Services for Part 3 Building Projects (revision)	Professional Structural Engineering
	MOTION: That Council approves the Professional Practice Guidelines – Professional Structural Engineering Services, Version 2.0 for final legal and editorial review prior to publication.	Services for Part 3 Building Projects Guidelines
	Peter Mitchell, P.Eng., Director of Professional Practice, Standards and Development	

5.6	Endorsement of the City of Abbotsford Letters of Assurance MOTION: That Council endorses the City of Abbotsford Letters of Assurance, pending final legal and editorial review. Peter Mitchell, P.Eng., Director of Professional Practice, Standards	City of Abbotsford Letters of Assurance
	and Development	
5.7	AGM Motion # 6 - Creating a task force to prepare a guidance document for the provincial government to establish tolerable levels of landslide risk with respect to residential development within BC.	Response to 2017 AGM Motion #6 Regarding Landslide Risk
	MOTION: That the Engineers and Geoscientists BC Council approves to renew its request to the British Columbia provincial government that was made in 2013, and propose that the association work with the provincial government to establish a level of acceptable natural hazard risk, as well as work on addressing the three recommendations made in the report dated April 8, 2013, which are as follows:	
	1. Establish a high level government advisory body on natural hazard issues with multi-ministry involvement and broad representation from industry and the professions. The mandate of this advisory body should include reviewing relevant government legislation, regulation and precedents, and advising government on development of natural hazard policy and regulations.	
	2. Develop a more robust inventory of land subject to natural hazards. This should extend to standardizing approaches for natural hazard and risk mapping.	
	3. Develop additional tools to assist in the implementation of a risk-based approach in dealing with natural hazards and establish thresholds for natural hazard risk tolerance and acceptability.	
	Professional Practice Committee	
	Peter Mitchell, P.Eng., Director of Professional Practice, Standards and Development	
5.8	AGM Motion # 5 - Action Plan for Implementing Recommendations from the "Truth and Reconciliation - Options for Inclusion Recommendation Report" prepared by Nalaine Morin	Truth and Reconciliation – Action for Engineers and Geoscientists BC
	MOTION: That Council approves the conceptual pilot program and budget of \$50,000 in order to address the recommendations in Nalaine Morin's report "Truth and Reconciliation Calls to Action – Actions for EGBC"	
	Professional Practice Committee	
	Peter Mitchell, P.Eng., Director of Professional Practice, Standards and Development	

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5.9 New and Updated Registration Policies					
5.9.1	Revisions to Registration Policy re: Assignment of Confirmatory Examinations	Policy for Assignment of Confirmatory			
	MOTION: That Council approve the modified Policy for Assignment of Confirmatory Examinations.	Examinations			
	Registration Committee				
	Mark Rigolo, P.Eng., Associate Director, Engineering Admissions on behalf of Philippe Kruchten, PhD, P.Eng., FEC, Chair				
5.9.2	Policy on Academic Qualification of Graduates of the BCIT Bachelor of Technology in Electronics Part-Time Program	BCIT BTech Electronics Policy Report			
	MOTION 1: That Council approve the revisions to the Policy on Academic Qualification of Graduates of the BCIT Bachelor of Technology in Electronics Part- Time Program.				
	MOTION 2: That the policy revisions and proposed transition provisions be communicated to the Dean, the appropriate Associate Dean and Program Head at BCIT as soon as possible after the September 7, 2018 Council meeting so that as much advanced notice as possible is provided to the program administrators.				
	MOTION 3: That the Program Head be encouraged to pursue accreditation with CEAB for this program.				
	Registration Committee				
	Gillian Pichler, P.Eng., Director, Registration on behalf of Phillipe Kruchten, PhD, P.Eng., FEC, Chair				
5.10 Info	rmation Reports				
5.1	0.1 CEO & Registrar Report	CEO & Registrar			
	Ann English, P.Eng., Chief Executive Officer & Registrar	Report			
5.1	0.2 Engineers Canada Directors' Report	EC Directors'			
	Russ Kinghorn, P.Eng., FEC, FGC (Hon.), Engineers and Geoscientists BC Director to Engineers Canada	Report			
	Jeff Holm, P.Eng., FEC, FGC (Hon.), Engineers and Geoscientists BC Director to Engineers Canada				
5.1	0.3 Geoscientists Canada Director's Report	GC Director's			
	Garth Kirkham, P.Geo., FGC, Engineers and Geoscientists BC Director to Geoscientists Canada				
5.1	0.4 Canadian Engineering Qualifications Board Report	CEQB Report			
	Dr. Mahmoud Mahmoud,P.Eng., FEC, Canadian Engineering Qualifications Board Appointee				

				Karen Savage, P.Eng., FEC, Canadian Engineering Qualifications Board Appointee			
			5.10.5	2018 Enforcement and Engagement Report	Enforcement & Engagement Report		
				Rohan Hill, Staff Lawyer Regulatory Affairs			
			5.10.6	Year End Report on Investigation and Discipline	Investigation & Discipline Report		
				Neil Nyberg, P.Eng., FEC, Chair, Investigation Committee			
				Paul Adams, P.Eng., FEC, Chair, Discipline Committee			
			5.10.7	Division Engagement Report	Division Engagement		
				Deesh Olychick, Director of Member Services	Report		
			5.10.8	Branch Engagement Report	Branch Engagement		
				Deesh Olychick, Director of Member Services	Report		
			5.10.9	Registration Admissions and Membership Report for Fiscal 2018	Registration Admissions & Membership		
				Gillian Pichler, P.Eng., Director, Registration	Report		
			5.10.10	Update on Geoscientists Canada's Admissions Support Tools Project - Phase II Competency Assessment	Geoscience AST Phase II Report		
				Jason Ong, Manager Examinations, Geoscience Registration & MIT Program			
			5.10.11	Engineers and Geoscientists BC Road Map for 2017- 2018	Road Map		
				Ann English, P.Eng., Chief Executive Officer & Registrar			
			5.10.12	Committee Attendance Summary	Committee		
				Ann English, P.Eng., Chief Executive Officer & Registrar	Summary		
11:50	6.0	OF	PEN R	EGULAR AGENDA			
		MO fror	TION: Th n the Cor	at Council approve the Open Regular Agenda (with any nsent Agenda).	additions		
11:50		6.1	Audited	Financial Statements/Year End Review	Audited Financial Statements/Year		
(30 min)			MOTION Commit	l 1: That Council accept the report of the Audit tee.	End Review		
			MOTION \$250,000 General Systems	2: That Council approve an appropriation of 0, effective June 30, 2018, from the unrestricted Operating Fund to the Property, Equipment and Replacement Fund.			
			MOTION Geoscie ended J	l 3: That Council approve the audited Engineers and ntists BC Financial Statements for the fiscal year une 30, 2018.			

		MOTION 4: That the President and the Chief Executive Officer and Registrar be authorized to sign the fiscal 2018 Financial Statements on behalf of Council.	
		MOTION 5: That the appointment of PricewaterhouseCoopers LLP, CPAs as the Association's external auditors for the fiscal year ending June 30, 2019 be recommended for final approval at the Annual General Meeting in October 2018.	
		Audit Committee	
		Chair, Suky Cheema, CPA, CA	
12:20	6.2	Budget Webinar	Budget Webinar Report
(15 min)		MOTION: That Council approve discontinuing the budget webinar program as of this fiscal year.	
		Jennifer Cho, CPA, CGA, Chief Financial and Administration Officer	
12:35	6.3	Requests for Funding Building Security Renovation	Security Access & Renovation Report
(15 min)		MOTION: That Council approve the recommended security enhancement and office renovation with a budget of \$170K to be funded from Capital budget and General Operating Fund.	
		Jennifer Cho, CPA, CGA, Chief Financial and Administration Officer	
12:50 (60 min)	BRE	AK FOR LUNCH	
12:50 (60 min) 13:50	BRE 6.4	AK FOR LUNCH Visiting Dean Presentation	Presentation
12:50 (60 min) 13:50 (30 min)	BRE 6.4	AK FOR LUNCH Visiting Dean Presentation Forrest Tittle, PhD, Dean, School of Energy at British Columbia Institute of Technology	Presentation
12:50 (60 min) 13:50 (30 min) 14:20	BRE 6.4	AK FOR LUNCH Visiting Dean Presentation Forrest Tittle, PhD, Dean, School of Energy at British Columbia Institute of Technology Update on Key Performance Indicator Results	Presentation KPI Report
12:50 (60 min) 13:50 (30 min) 14:20 (15 min)	BRE 6.4	AK FOR LUNCH Visiting Dean Presentation Forrest Tittle, PhD, Dean, School of Energy at British Columbia Institute of Technology Update on Key Performance Indicator Results MOTION: That Council confirm the Key Progress Indicators for another year and direct staff to monitor and assess the two identified KPIs and report to Council in February 2019 with a recommendation on whether amendments are required.	Presentation KPI Report
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12:50 (60 min) 13:50 (30 min) 14:20 (15 min) 14:35	BRE 6.4 6.5 6.5	AK FOR LUNCH Visiting Dean Presentation Forrest Tittle, PhD, Dean, School of Energy at British Columbia Institute of Technology Update on Key Performance Indicator Results MOTION: That Council confirm the Key Progress Indicators for another year and direct staff to monitor and assess the two identified KPIs and report to Council in February 2019 with a recommendation on whether amendments are required. <i>Max Logan, Chief of Strategic Operations</i> 30 x 30 Action Plan Framework	Presentation KPI Report
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MINUTES OF THE OPEN SESSION OF THE FIFTH MEETING OF THE 2017/2018 COUNCIL of Engineers and Geoscientists BC, <u>held on JUNE 15, 2018 in the DAN LAMBERT BOARDROOM, ENGINEERS AND GEOSCIENTISTS BC OFFICES, BURNABY, BC</u>

Present

Council	
Caroline Andrewes, P.Eng., CPA, CMA	President (Chair)
Kathy Tarnai-Lokhorst, P.Eng., FEC Bob Stewart, P.Eng. John Turner, P.Ag. (ret.)	Vice President Immediate Past President Councillor
Suky Cheema, CPA, CA	Councillor
Larry Spence, P.Eng.	Councillor
Ross Rettie, P.Eng., FEC	Councillor
Brock Nanson, P.Eng.	Councillor
Doug Barry, P.Eng.	Councillor
Tim Watson, P.Eng.	Councillor
Dr. Catherine Hickson, P.Geo., FGC	Councillor
Lianna Mah, P.Eng., FEC	Councillor
David Wells, JD	Councillor
Guests	
Russ Kinghorn, P.Eng., FEC, FGC (Hon.)	Engineers and Geoscientists BC Director to Engineers Canada
Jeff Holm, P.Eng., FEC, FGC (Hon.)	Engineers and Geoscientists BC Director to Engineers Canada
Garth Kirkham, P.Geo., FGC	Engineers and Geoscientists BC Director to Geoscientists Canada
Julius Pataky, P.Eng.	Canadian Engineering Accreditation Board Appointee
Staff	Canadian Engineering Quanications Board Appointee
Ann English P Eng	Chief Executive Officer & Registrar
Tony Chong P Eng	Chief Regulatory Officer & Deputy Registrar
Jennifer Cho, CPA, CGA	Chief Financial and Administration Officer
Max Logan	Chief of Strategic Operations
Gillian Pichler, P.Eng.	Director - Registration
Efrem Swartz, LLB	Director - Legislation, Ethics & Compliance
Peter Mitchell, P.Eng.	Director – Professional Practice, Standards & Development
Megan Archibald	Director – Communications & Stakeholder Engagement
Deesh Olychick	Director – Member Services
Tracy Richards	Acting Executive Assistant to Council and to the Chief Executive Officer & Registrar
Amber Hart	Executive Administrative Assistant
Regrets	
Susan MacDougall, P.Eng.	Councillor
Dr. Nimal Rajapakse, P.Eng.	Councillor
Jeremy Vincent, P.Geo. Ken Laloge, CPA, CA, TEP	Councillor

OPEN SESSION – CALL TO ORDER

Caroline Andrewes, President and Chair, called the meeting to order at 08:46 am. Tony Chong, Chief Regulatory Officer and Deputy Registrar, acted as the Parliamentarian, Councillor Doug Barry acted as the Membership Engagement Champion, and Councillor Lianna Mah acted as the 30 by 30 Champion in lieu of Susan MacDougall's absence.

Guests: The Chair advised that Russ Kinghorn, P.Eng., FEC, FGC (Hon.), of Engineers Canada, Jeff Holm, P.Eng., FEC, FGC (Hon.), of Engineers Canada, Garth Kirkham, P.Geo., FGC of Geoscientists Canada, Julius Pataky, P.Eng. our appointee to the Canadian Engineering Accreditation Board and Dr. Mahmoud Mahmoud our appointee to the Canadian Engineering Qualifications Board would be joining for the Open Session. Ken Zeleschuk, AScT, RTMgr, MBA, Council Director would also be joining the meeting as an ASTTBC Representative and Mike Currie, P.Eng., FEC will be attending for item 5.9 as well as Nalaine Morin, EP for item 5.11. Councillors Susan MacDougall, Jeremy Vincent, Nimal Rajapkase and Ken Laloge send their regrets.

DECLARATION OF CONFLICT OF INTEREST

President Caroline Andrewes and Vice President Kathy Tarnai-Lokhorst declared that they would be deemed to be in conflict of interest regarding item 5.14 Motion 1 on the agenda and would recuse themselves and abstain from voting on the motion.

SAFETY MOMENT

President Andrewes provided a safety briefing advising Council of the Engineers and Geoscientists BC office emergency protocols and location of the emergency exits. Immediate Past President Bob Stewart provided the Safety Moment for the meeting.

CO-18-44 OPEN CONSENT AGENDA

MOTION It was moved and seconded that Council approve all items (4.1 to 4.10) on the Open Consent Agenda.

CARRIED

Motions carried by approval of the Consent Agenda:

- 4.1 **MOTION** that Council approve the April 27, 2018 Open Meeting minutes as circulated.
- 4.2 **MOTION 1:** That Council approve the recommended re-appointment to the Canadian Engineering Accreditation Board, as applicable.

MOTION 2: That Council approve the recommended appointments to the Board of Examiners, as applicable.

MOTION 3: That Council approve the recommended appointments and reappointments to the Discipline Committee, as applicable. **MOTION 4:** That Council approve the recommended appointments to serve as Scrutineers for the 2018/19 Council Election, as applicable.

MOTION 5: That Council approve the recommended appointments to the Standing Awards Committee, as applicable.

MOTION 6: That Council approve the recommended appointment to the Geoscience Committee, as applicable.

MOTION 7: That Council approve the recommended 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 Appointr	nents and Re-Appoi	ntments (ov	er six ye	ars)	
Dr. Rishi Gupta Ph.D., P.Eng., FEC, 152121	Member	Board of Examiners	Mark Rigolo	June 15, 2018	June 15, 2020	New
Renata Kay Wood, P.Eng., 131734	Member	Board of Examiners	Mark Rigolo	June 15, 2018	June 15, 2020	New
Dr. Monica Varga, P.Eng., 191600	Member	Board of Examiners	Mark Rigolo	April 27, 2018	April 26, 2020	New
Neil Cumming, P.Eng., 106071	Vice Chair	Discipline Committee	Efrem Swartz	June 15, 2018	June 15, 2020	New
Oliver J. H. Bonham, P.Geo., FGC, 147751	Member	Discipline Committee	Efrem Swartz	June 26, 2018	June 26, 2020	Returning
John Watson P.Eng. FEC FGC (Hon), 114390	Chief Scrutineer	Scrutineer for Council Election 2018/19	Deesh Olychick	June 15, 2018	October 20, 2018	New
John Clague P.Geo., FEC (Hon), FGC, 109369	Scrutineer	Scrutineer for Council Election 2018/19	Deesh Olychick	June 15, 2018	October 20, 2018	New
Ken Williams, P.Eng. FEC, 115987	Scrutineer	Scrutineer for Council Election 2018/19	Deesh Olychick	June 15, 2018	October 20, 2018	New
Dr. Brian Guy, P.Geo., 110010	Member	Standing Awards Committee	Megan Archibald	June 15, 2018	June 15, 2020	New
Tomer Curiel, P.Eng., 148466	Member	Standing Awards Committee	Megan Archibald	June 15, 2018	June 15, 2020	New
Rebecca Fan, P.Eng., 150451	Member	Standing Awards Committee	Megan Archibald	June 15, 2018	June 15, 2020	New
Dr. Yaming Chen, P.Geo, 159501	Member	Geoscience Committee	Jason Ong	June 15, 2018	June 15, 2020	New
Peter Helland, P.Eng.,159501	Vice-Chair	Investigation Committee	Efrem Swartz	June 15, 2018	June 15, 2020	New

J. Douglas Joorisity, P.Eng., 105232	Member	Investigation Committee	Efrem Swartz	June 15, 2018	June 15, 2020	New
	Re	e-appointments (und	der six years)		
Emily Cheung, P.Eng., FEC. 109610	Member	Canadian Engineering Accreditation Board	Ann English	June 30, 2018	June 30, 2021	Returning
Thomas Leung, P.Eng., Struct.Eng., FEC, 118747	Member	Discipline Committee	Efrem Swartz	June 20, 2018	June 20, 2020	Returning

- 4.3 **MOTION** that Council approves the Fraser Valley Regional District/Engineers and Geoscientists BC *Guide to Geo-Hazard Assurance Statement for Development Approvals,* and *Geo-Hazard Assurance Statement for Development Approvals* pending final editorial and legal review prior to publication.
- 4.4 **MOTION** that Council approve the 2018 BC Building Code Letters of Assurance.
- 4.5 **MOTION** that Council approve the MOU between Engineers and Geoscientists BC and the International Building Performance Simulation Association BC Chapter.
- 4.6 Governance Committee
 - 4.6.1 **MOTION** that Council approve the proposed policy on the Professional Development of Council, as recommended by the Governance Committee.
 - 4.6.2 **MOTION** that Council approve the updated Privacy Policy as recommended by the Governance Committee.
 - 4.6.3 **MOTION** that having reviewed the revised Terms of Reference, it is hereby resolved that Council approve the revisions to the Discipline Committee Terms of Reference.
 - 4.6.4 **MOTION** that having reviewed the revised Terms of Reference, it is hereby resolved that Council approve the revisions to the Investigation Committee Terms of Reference.
 - 4.6.5 **MOTION** that Council approve the proposed revisions to the Editorial Committee Terms of Reference.
- 4.7 No motion required.

- 4.8 **MOTION** that the Policy on the Assessment of Canadian Environment Experience using Canadian Environment Experience Competencies and the Policy on the Application of the Working in Canada Seminar Towards the Fulfillment of the Canadian Environment Experience Requirement be approved by Council for piloting through to March 2019.
- 4.9 **MOTION** that Council receive the annual update on the Enhanced Member-in-Training Program.
- 4.10 **MOTION** that the following information reports were received by Council:
 - CEO & Registrar Report
 - Engineers Canada Directors' Report
 - Canadian Engineering Qualifications Board Report
 - Engineers and Geoscientists BC Road Map for 2017-2018
 - Committee Attendance Summary
- CO-18-45 OPEN REGULAR AGENDA
- MOTION It was moved and seconded that Council approve the Open Regular Agenda.

CO-18-46 CANADIAN ENGINEERING ACCREDITATION BOARD UPDATE

Julius Pataky, P.Eng. reported on updates from the Canadian Engineering Accreditation Board and addressed Council's questions. There was no motion.

CO-18-47 <u>GEOSCIENTISTS CANADA DIRECTOR'S UPDATE</u> Garth Kirkham, P.Geo., FGC reported on updates from Geoscientists Canada and addressed Council's questions. There was no motion.

- CO-18-48 BUILDING & SPACE PLANNING TASK FORCE TERMS OF REFERENCE
- MOTION It was moved and seconded that Council approve the Building & Space Planning Task Force Terms of Reference as presented. CARRIED.
- CO-18-49 <u>30 X 30 CHAMPION GROUP TERMS OF REFERENCE</u>
- MOTION It was moved and seconded that Council approve the Terms of Reference for the 30 x 30 Champion Group.

- CO-18-50 <u>AGM MOTIONS OPTIONS FOR APPROVAL OF SPECIAL RULES AND</u> <u>OTHER ISSUES</u>
- MOTION 1 It was moved and seconded that the proposed AGM Special Rule be put to a general vote of the entire Engineers and Geoscientists BC membership concurrent with the 2019 Election.

CARRIED.

MOTION 2 It was moved and seconded that the proposed Timeline and Process (Attachment A) for member motions received 30 days ahead of the AGM be approved.

CARRIED.

MOTION 3 It was moved and seconded that the proposed Guidelines (Attachment B) for the evaluation of member approved AGM motions be approved.

CARRIED.

- CO-18-51 REVISIONS TO POLICY & GUIDELINES ON APPOINTMENTS
- MOTION It was moved and seconded that Council approve the proposed revisions to the policy and guidelines on Engineers and Geoscientists BC appointments, as recommended by the Governance Committee.

- CO-18-52 COMPENSATION POLICY FOR THE DISCIPLINE COMMITTEE
- MOTION It was moved and seconded that Council replace the current policy regarding payment of honoraria to the Discipline Committee with the revised version of the policy as presented.

- CO-18-53 NOMINATION AND ELECTION REVIEW TASK FORCE RECOMMENDATIONS
- MOTION 1 It was moved and seconded that Council receives the report of the Nomination and Election Review Task Force, approves publishing a summary of the report and thanks the Task Force for its work.

CARRIED.

MOTION 2 It was moved and seconded that Council direct further review by the Governance Committee of the recommendations related to Governance and Nomination Processes in concert with the Professional Standards Authority Report and the results of the Professional Reliance Review.

CARRIED.

MOTION 3 It was moved and seconded that Council direct staff to develop a work plan in support of the recommendations related to Cultivating Leaders for Board Governance, providing voting rights for Members in Training, and Election Processes for review by the Governance Committee.

CARRIED.

- MOTION 4 It was moved and seconded that Council endorse the following recommendations which affirm existing practices, subject to Motion 2 review by the Governance Committee:
 - #9 Continue with the Faculty Member requirement on Council
 - #11 Do not adopt mandatory geographical representation on Council
 - #12 Do not adopt a mandatory licensee position on Council
 - #13 Retain current practice of 25 signatures for Nomination by Members
 - #14 Retain two different dates for candidates endorsed by the Nominating Committee and those supported by 25 members of the Association
 - #24 Retain current ballot format
 - #27 Retain current voting window

CARRIED.

MOTION 5 It was moved and seconded that Council recommends that branches review the branch rotations to the Nominating Committee with the purpose of ensuring continuity (Recommendation # 18).

CO-18-54 RECOMMENDATIONS AND NEXT STEPS: CORPORATE PRACTICE

MOTION 1 It was moved and seconded that Council approve Recommendations 1-7 in the Advisory Task Force on Corporate Practice Phase 2 Report to Council – Recommended Model for the Regulation of Engineering and Geoscience Organizations.

CARRIED.

MOTION 2 It was moved and seconded that Council direct staff to publish the Advisory Task Force on Corporate Practice Phase 2 Report to Council– Recommended Model for the Regulation of Engineering and Geoscience Organizations.

CARRIED.

MOTION 3 It was moved and seconded that Council inform the provincial government of their response to the Phase 2 recommendations made by the Advisory Task Force on Corporate Practice and request that government initiate legislative amendments that are consistent with the regulatory model recommended in the Phase 2 report.

CARRIED.

MOTION 4 It was moved and seconded that Council directs staff to work with the Advisory Task Force on Corporate Practice to review its Terms of Reference as the first step in proceeding with Phase 3 (Business Plan Development).

CARRIED.

MOTION 5 It was moved and seconded that a business plan be developed which is consistent with the regulatory model identified in Recommendations 1-7 in the Phase 2 Report of the Advisory Task Force on Corporate Practice – Recommended Model for the Regulation of Engineering and Geoscience Organizations.

CARRIED.

CO-18-55 FEE INCREASE STRATEGY

*President Andrewes spoke to this item and passed the Chair position over to Vice President Kathy Tarnai-Lokhorst.

- MOTION It was moved and seconded that Council direct staff to update the future Budget Guidelines so that budgets (and resulting fee increases) will be based on the following:
 - the cost of living increase, plus
 - any necessary replenishments to meet reserve levels specified by Council, plus
 - any funding necessary for approved special initiatives or new programs.

- CO-18-56 AGM MOTION #5 ESTABLISHING A TASK FORCE TO REVIEW THE RECOMMENDATIONS CONTAINED WITHIN THE TRUTH AND RECONCILIATION COMMITTEE REPORT
- MOTION 1 It was moved and seconded that Council approves the report prepared by Nalaine Morin entitled "Truth and Reconciliation Options for Inclusion Recommendation Report".

MOTION 2 It was moved and seconded that Council refer the report "Truth and Reconciliation – Options for Inclusion Recommendation Report" to the Professional Practice Committee so they can develop an action plan for Council's consideration which identifies budgetary and other resources required to implement the recommendations in the report.

CARRIED.

CO-18-57 AGM MOTION #9 – RECOGNITION OF DECEASED MEMBERS AT AGM

- MOTION It was moved and seconded that Council approve recognizing deceased members at AGMs by observing a moment of silence, scrolling through the list of names on the screen and producing a printed In Memoriam booklet. CARRIED.
- CO-18-58 RISK MANAGEMENT UPDATE
- MOTION It was moved and seconded that Council approve the FY2018/19 Risk Register and Risk Management Plan as presented. CARRIED.

CO-18-59 <u>LIFE MEMBERSHIP OR LICENSURE AND ASSOCIATED NON-PRACTICING</u> BYLAW CHANGES FOR APPROVAL

* President Caroline Andrewes and Vice President Kathy Tarnai-Lokhorst left the room and abstained from voting on Motion 1 of this item due to perceived conflicts of interest. Immediate Past President Bob Stewart assumed the Chair position for Motion 1 of this item.

MOTION 1 It was moved and seconded that staff be directed to implement the option selected by Council for recognition of service for acting as President: Option 1.

CARRIED.

MOTION 2 It was moved and seconded that staff be directed to examine a milestonebased program for volunteer recognition and bring forward a proposal for implementation for Council's consideration in November 2018.

CARRIED.

MOTION 3 It was moved and seconded that Bylaws 10(c.2) Honorary Life Membership and 10(d) Honorary Membership be repealed and replaced with the wording set out in Appendix A.

MOTION 4 It was moved and seconded that the proposed final bylaw wording set out in Appendix A for the September 2018 bylaw ballot be approved. CARRIED.

MOTION 5 It was moved and seconded that Council approve <u>in principle</u> the proposed Guideline & FAQ for Non-Practicing Status.

CARRIED.

MOTION 6 It was moved and seconded that, if the Bylaws referenced in Motion 4 pass, then the Non-Practicing member/licensee fee for 2019 be set at 50% of the full member annual fee; and that this fee be reconsidered for 2020, taking into account the results of the bylaw vote and uptake of non-practicing status.

CARRIED.

MOTION 7 It was moved and seconded that any material revenue deficit due to significant changes to forecasted member uptake of non-practicing membership be taken from the General Operating Fund.

CARRIED.

MOTION 8 It was moved and seconded that the removal of a limit on consecutive years that a member can be on reduced fees be approved.

CARRIED.

MOTION 9 It was moved and seconded that the reduced fee schedule for 2019 set out in Appendix C be approved.

WITHDRAWN (as Motion 6 was amended).

MOTION 10 It was moved and seconded that the revised Return to Practice Policy set out in Appendix D be approved.

CARRIED.

MOTION 11 It was moved and seconded that the Resumption of Practice application fee be set at \$50 plus GST (1/6 of the full fee) for members who have been on non-practicing status for six months or less, \$100 plus GST (1/3 of the full fee) for members who have been on non-practicing status for six to eighteen months and \$300 for all other members resuming practice rights.

CARRIED.

END OF OPEN SESSION

The Open Session ended at 4:30 pm.



ITEM 5.3

DATE	August 22, 2018
REPORT TO	Council for Decision
FROM	Peter Mitchell, P.Eng., Director, Professional Practice
SUBJECT	Professional Practice Guidelines – Electrical Engineering Services for Building Projects, Version 2.0
LINKAGE TO STRATEGIC PLAN	Enhance members' awareness and use of professional practice resources.

Purpose	For Council's review and decision to approve the Professional Practice Guidelines
	– Electrical Engineering Services for Building Projects, Version 2.0 for final legal
	and editorial review prior to publication.
Motion	That Council approves the Professional Practice Guidelines – Electrical
	Engineering Services for Building Projects, Version 2.0 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 standard of practice that engineering/geoscience professionals are expected to provide when carrying out 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 a particular professional activity. These stakeholders include engineering/geoscience professionals, statutory decision makers, clients, the public and a variety of other groups.

DISCUSSION

In the fall of 2017, a revision to the *Professional Practice Guideline* – Electrical Engineering Services for Building Projects was initiated. These guideline revisions were developed to reflect current industry standards and practices. Some of the topics that are addressed in this revision include,

- Firestops, location of exit signs, use of alternative energy such as PV Panels, Communication systems/Building management Systems, modification of elevating devices.
- The roles/responsibilities of the electrical inspector (Technical Safety BC) as compared to those of the electrical engineer of record.
- The BCBC Letters of Assurance such as Schedule B, S and Part 10 (Energy) Aspects of the Building Code.

In addition, this guideline has been put into a new standard template developed by the Department to provide consistency and alignment between guidelines. The document was also put into the association's new brand.

The revisions were completed through a collaborative approach between George Melo, P.Eng., WSP and Dejan Curcin, P.Eng., Stantec and PPSD staff. Once the document was ready for review, it was sent to the following individuals and groups for comment:

- Ivan Lee, P.Eng., Integral Group
- Gruja Blagojevic, P.Eng. ,City of Vancouver
- Michael James Phillips, P.Eng., Integral Group
- Ulrich Janisch, Safety Manager, Electrical, Technical Safety BC
- Alex Riftin, M.Eng., P.Eng., P.E., LEED, OMICRON
- Louis De Lange, P.Eng, Associated Engineering
- Matthys (Thys) Johannes Fourie, P.Eng., Stantec
- Consulting Practice Committee
- Building Codes Committee
- Energy Efficiency and Renewable Energy Division
- International Building Performance Simulation Association

The final document was submitted to the Professional Practice Committee, who approved the following motion:

"The Professional Practice Committee recommends that Council approve the revisions to the Professional Practice Guidelines – Electrical Engineering Services for Building Projects, Version 2.0 for final editorial and legal review prior to publication."

RECOMMENDATIONS

That Council approves the Professional Practice Guidelines – Electrical Engineering Services for Building Projects, Version 2.0 for final legal and editorial review prior to publication.

MOTION

That Council approves the Professional Practice Guidelines – Electrical Engineering Services for Building Projects, Version 2.0 for final legal and editorial review prior to publication.

APPENDIX A – Professional Practice Guidelines – Electrical Engineering Services for Building Projects, Version 2.0

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DATE	August 22, 2018
REPORT TO	Council for Decision
FROM	Peter Mitchell, P.Eng., Director, Professional Practice, Standards and Development
SUBJECT	Professional Practice Guidelines – Designing Guards for Buildings, Version 2.0
LINKAGE TO STRATEGIC PLAN	Enhance members' awareness and use of professional practice resources.

Purpose	For Council's review and decision to approve the Professional Practice Guidelines
	 Designing Guards for Buildings, Version 2.0 for final legal and editorial review
	prior to publication.
Motion	That Council approves the Professional Practice Guidelines – Designing Guards
	for Buildings, Version 2.0 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 standard of practice that engineering/geoscience professionals are expected to provide when carrying out 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 a particular professional activity. These stakeholders include engineering/geoscience professionals, statutory decision makers, clients, the public and a variety of other groups.

DISCUSSION

In the summer of 2017, a revision to the *Professional Practice Guideline – Designing Guards for Buildings* was initiated. One of the authors, Leonard Pianalto, P.Eng., from the initial group that authored the guideline in 2013 was engaged to write the revision. These revisions were undertaken to bring the guideline into alignment with the new *Canadian Standards Association (CSA) A500 – Building Guards* standard. This standard is a comprehensive document written to help reduce the risk of building guard failure for improved public safety, to reduce uncertainty and improve clarity for designers, and to help make building guard design more consistent and reliable. In addition, the guideline has been put into a new standard template developed by the Department to provide consistency and alignment between guidelines, requiring some additional sections to be added such as the section on "Roles and Responsibilities." The document was also put into the association's new brand.

The revisions were completed through a collaborative approach between the Mr. Pianalto and PPSD staff. Once the document was ready for review, it was sent to the following individuals and groups for comment:

- o Gary Berkeley, P.Eng., RDH Building Science Inc. (original author)
- Jim Mutrie, P.Eng., JG Mutrie & Associates Ltd. (original author)
- Kevin Riederer, P.Eng., Reed Jones Christoffersen liaison with Structural Engineering Association of BC
- o David Vadocz, P.Eng., RDH Building Science Inc.
- Cam Robinson, P.Eng., Latera Engineering Inc.
- Christopher Chang, P.Eng., Intertek
- Building Codes Committee
- Building Enclosure Committee
- Consulting Practice Committee
- Municipal Engineers Division
- Structural Engineering Association of BC
- Architectural Institute of BC

Finally, the revised document was submitted to the Professional Practice Committee for review. The following motion was passed:

"The Professional Practice Committee recommends that Council approve the revisions to the Professional Practice Guidelines – Designing Guards for Buildings, Version 2.0 for final editorial and legal review prior to publication."

RECOMMENDATIONS

That Council approves the Professional Practice Guidelines – Designing Guards for Buildings, Version 2.0 for final legal and editorial review prior to publication.

MOTION

That Council approves the Professional Practice Guidelines – Designing Guards for Buildings, Version 2.0 for final legal and editorial review prior to publication.

APPENDIX A – Professional Practice Guidelines – Designing Guards for Buildings, Version 2.0

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ITEM 5.5

DATE	August 22, 2018
REPORT TO	Council for Decision
FROM	Peter Mitchell, P.Eng., Director, Professional Practice, Standards and Development
SUBJECT	Professional Practice Guidelines – Professional Structural Engineering Services for Part 3 Building Projects, Version 2.0
LINKAGE TO STRATEGIC PL	Enhance members' awareness and use of professional practice resources.
Purpose	For Council's review and decision to approve the Professional Practice Guidelines – Professional Structural Engineering Services for Part 3 Building Projects, Version 2.0 for final legal and editorial review prior to publication.
Motion	That Council approves the Professional Practice Guidelines – Professional

Structural Engineering Services, Version 2.0 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 standard of practice that engineering/geoscience professionals are expected to provide when carrying out 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 a particular professional activity. These stakeholders include engineering/geoscience professionals, statutory decision makers, clients, the public and a variety of other groups.

DISCUSSION

In recent years, a number of complaints from members of the public have been raised with respect to poor quality drawings submitted for permitting purposes by professional engineers. The Legislation, Ethics and Compliance department communicated this issue with the PPSD department and it was determined that one way to assist with resolving this issue was to revise the *Professional Practice Guideline – Professional Structural Engineering Services for Part 3 Building Projects* to include a section on permit drawing requirements. The goal was to provide some context around what should be included on a structural drawing at the building permitting stage.

The guideline was also revised to expand upon the quality management requirements as per the Departments standard guideline template. The document will also require rebranding during the editorial and legal review stage.

The following senior structural engineers and were engaged to write the revision:

- Clint Low, P.Eng. Struct.Eng., Bush Bohlman and Partners liaison with Association of Consulting Engineering Companies of BC and Structural Engineering Association of BC
- Jeff Corbet, BASc, P.Eng. Struct.Eng., FEC, Reed Jones Christoffersen
- o Greg Smith, P.Eng., Struct.Eng., Weiler Smith Bowers

The revisions were submitted to the following groups for comment:

- Building Codes Committee
- Structural Engineering Association of BC
- Association of Consulting Engineering Companies of BC

Finally, the revised document was submitted to the Professional Practice Committee for review. The following motion was passed:

"The Professional Practice Committee recommends that Council approve the revisions to the Professional Practice Guidelines – Designing Guards for Buildings, Version 2.0 pending final editorial and legal review prior to publication."

RECOMMENDATIONS

That Council approves the Professional Practice Guidelines – Professional Structural Engineering Services for Part 3 Building Projects, Version 2.0 for final legal and editorial review prior to publication.

MOTION

That Council approves the Professional Practice Guidelines – Professional Structural Engineering Services, Version 2.0 for final legal and editorial review prior to publication.

APPENDIX A – Professional Practice Guidelines – Professional Structural Engineering Services for Part 3 Building Projects, Version 2.0

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ITEM 5.6

DATE	August 22, 2018
REPORT TO	Council for Decision
FROM	Peter Mitchell, P.Eng., Director, Professional Practice, Standards and Development
SUBJECT	City of Abbotsford Letters of Assurance
LINKAGE TO STRATEGIC PLAN	Clarify the association's regulatory role and responsibilities through ongoing communication and engagement with members and other stakeholders.

Purpose	For Council's review and decision to endorse the City of Abbotsford Letters of
	Assurance pending final legal and editorial review.
Motion	That Council endorses the City of Abbotsford Letters of Assurance, pending final
	legal and editorial review.

BACKGROUND

Letters of Assurance are legal accountability documents that are required under the British Columbia Building Code (BCBC) 2012, intended to clearly identify the responsibilities of key players in a construction project. Uniform, mandatory Letters of Assurance have been included as Schedules in the BCBC since December 1992. Certain jurisdictions in BC do not operate under the BCBC such as the City of Vancouver, which operates under the Vancouver Building By-Law, and the Vancouver Airport Authority, which operates under the National Building Code. These jurisdictions have developed alternative Letters of Assurance to suit their jurisdiction and have received endorsement from Engineers and Geoscientists BC on these alternative Letters of Assurance. The City of Abbotsford has recently discovered that the airport within their city limits is under Federal jurisdiction and as such requires use of the National Building Code with Letters of Assurance to suit.

The requirement of Letters of Assurance in specific instances is to document the parties responsible for design and field review of construction, and to obtain their professional assurances that the work substantially complies with the requirements of the applicable code, except for construction safety aspects, and that the requisite field reviews have been completed. Construction safety is the responsibility of the Constructor.

DISCUSSION

On April 4, 2018 the City of Abbotsford Director, Building and Development Engineering Ms. Avy Woo, P.Eng. contacted Engineers and Geoscientists BC requesting endorsement of the Letters of Assurance drafted by their legal counsel. The City of Abbotsford Letters of Assurance were modelled after the Vancouver Airport Authority Letters of Assurance since that airport also operates under the National Building Code. After taking the documents to the Building Codes Committee, some suggested revisions were provided to the City of Abbotsford. The documents were then presented to the Professional Practice Committee, who passed the following motion on August 16, 2018:

"The Professional Practice Committee recommends that the Council endorses the City of Abbotsford Letters of Assurance, pending final legal and editorial review."

RECOMMENDATIONS

That Council endorses the City of Abbotsford Letters of Assurance, pending final legal and editorial review.

MOTION

That Council endorses the City of Abbotsford Letters of Assurance, pending final legal and editorial review.

APPENDIX A – City of Abbotsford Schedule RP-A APPENDIX B – City of Abbotsford Schedule RP-CA APPENDIX C – City of Abbotsford Schedule RP-B APPENDIX D – City of Abbotsford Schedule RP-CB



ITEM 5.7

DATE	August 23, 2018
REPORT TO	Council for Decision
FROM	Lindsay Steele, P.Geo., Associate Director, Professional Practice
SUBJECT	Response to 2017 AGM Motion 6 Regarding Landslide Risk
LINKAGE TO STRATEGIC PLAN	Clarify the association's regulatory role and responsibilities through ongoing communication and engagement with members and other stakeholders.

Purpose	To respond to 2017 AGM Motion 6 Regarding Landslide Risk
Motion	That the Engineers and Geoscientists BC Council approves to renew its request to
	the British Columbia provincial government that was made in 2013, and propose
	that the association work with the provincial government to establish a level of
	acceptable natural hazard risk, as well as work on addressing the three
	recommendations made in the report dated April 8, 2013, which are as follows:
	1. Establish a high level government advisory body on natural hazard issues with
	multi-ministry involvement and broad representation from industry and the
	professions. The mandate of this advisory body should include reviewing relevant
	government legislation, regulation and precedents, and advising government on
	development of natural hazard policy and regulations.
	2. Develop a more robust inventory of land subject to natural hazards. This should
	extend to standardizing approaches for natural hazard and risk mapping.
	3. Develop additional tools to assist in the implementation of a risk-based
	approach in dealing with natural hazards and establish thresholds for natural
	hazard risk tolerance and acceptability.

BACKGROUND

At the Engineers and Geoscientists BC Annual General Meeting in October 2017, Tim Smith, P.Geo., Eng.L., FGC, made the following motion which was carried :

That Council give consideration to creating a task force to prepare a guidance document for the provincial government to establish tolerable levels of landslide risk with respect to residential development within BC.

In considering this matter at an Engineers and Geoscientists BC Council meeting, the Council made the following recommendation:

RECOMMENDATION: That this motion be referred to the Professional Practice Committee for consideration and report back to Council with recommendations. The Professional Practice Committee should review the work previously done on this issue in response to a similar AGM motion approved in 2012.

DISCUSSION

In consideration of the direction given by the Engineers and Geoscientists BC Council as reflected in the above referenced motion, the following actions were taken:

i) The three subject matter experts (SME's) who prepared a response to a similar motion previously made by Tim Smith, P.Geo., Eng.L., FGC, at the 2012 AGM were consulted in preparing a response for consideration of the Professional Practice Committee.

(See the attached report dated April 18, 2013, authored by Mike Currie, P.Eng., President, Kerr Wood Leidal Associates Ltd.; Matthias Jakob, P.Geo., Ph.D., Senior Geoscientist, BGC Engineering Inc.; and Mike Church, P.Geo., Ph.D., Professor Emeritus at UBC).

- ii) Dr. Carlos Ventura, P.Eng. (Director of UBC's Earthquake Engineering Research Facility) and Dr. Liam Finn, P.Eng. (UBC professor and international expert on geotechnical slope stability issues and a primary author of the Engineers and Geoscientists BC Professional Practice Guidelines – Legislated Landslide Assessments for Proposed Residential Development in BC) were consulted in preparing a response for consideration of the Professional Practice Committee.
- iii) The Executive of the Engineers and Geoscientists in the Resource Sector Division was consulted in preparing a response for consideration of the Professional Practice Committee.

The attached document dated April 18, 2013 provides relevant background to the issue and the similar motion made by Tim Smith, P.Geo., Eng.L., FGC. As a result of the lack of action taken by government in 2013 in response to the recommendations made in the report dated April 18, 2013 Tim Smith , P.Geo., Eng.L., FGC, made the motion referenced above at the October 2017 AGM.

All three of the above referenced groups recommended against the association preparing a guidance document for the provincial government that would establish tolerable levels of landslide risk with respect to residential development within BC. Their concern being that this would set a dangerous precedent. The association is not in a position nor has the authority or capability to consider a range of societal interests (residential development; public safety due to natural

hazards; industrial development; environmental protection are but a few examples of various competing interests/societal values) and then set public policy on what is an acceptable level of risk.

In addition the recommendations in the attached report dated April 18, 2013 proposed that government take a more comprehensive approach with respect to how natural hazards are dealt with in BC rather than just looking at landslide risk. A broader approach was recommended so that standardized approaches are implemented which deal with a range of natural hazards and the associated risks (e.g. floods, landslides, avalanches).

On this basis the above three groups recommended an alternative to creating a task force that would prepare a guidance document for the provincial government to establish tolerable levels of landslide risk with respect to residential development within BC. Instead they proposed that Engineers and Geoscientists BC should renew its request to government that was made in 2013 and propose that the association work with the provincial government to not only establish a level of acceptable landslide risk but to work on addressing the three recommendations made in the report dated April 8, 2013.

Furthermore, as a result of the provincial government's review of professional reliance in the resource sector, they are already considering a wide variety of issues as it relates to their role and responsibility as well as that of other stakeholders when it comes to the use of self-regulated professionals under a variety of provincial legislation. On this basis, it would be timely to re-engage with the provincial government on the matter of acceptable levels of risk as it appears that they may be more receptive to dealing with this issue than they were in 2013.

RECOMMENDATIONS

In response to the AGM motion made at the 2017 AGM, the following recommendation is proposed by the Professional Practice Committee for the consideration of the Engineers and Geoscientists BC Council:

That the Engineers and Geoscientists BC Council approves to renew its request to the British Columbia provincial government made in 2013, and propose that the association work with the provincial government to establish a level of acceptable natural hazard risk, as well as work on addressing the three recommendations made in the report dated April 8, 2013.

MOTION

That the Engineers and Geoscientists BC Council approves to renew its request to the British Columbia provincial government that was made in 2013, and propose that the association work with the provincial government to establish a level of acceptable natural hazard risk, as well as work on addressing the three recommendations made in the report dated April 8, 2013, which are as follows:

- Establish a high level government advisory body on natural hazard issues with multiministry involvement and broad representation from industry and the professions. The mandate of this advisory body should include reviewing relevant government legislation, regulation and precedents, and advising government on development of natural hazard policy and regulations.
- 2. Develop a more robust inventory of land subject to natural hazards. This should extend to standardizing approaches for natural hazard and risk mapping.
- 3. Develop additional tools to assist in the implementation of a risk-based approach in dealing with natural hazards and establish thresholds for natural hazard risk tolerance and acceptability.

APPENDIX A – Report to Council Dated April 18, 2013

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DATE	August 22, 2018
REPORT TO	Council for Decision
FROM	Peter Mitchell, P.Eng., Director, Professional Practice, Standards and Development
SUBJECT	Truth and Reconciliation – Action for EGBC
LINKAGE TO STRATEGIC PLAN	Principle 5 - We foster diversity and inclusivity

Purpose	Response to the June 15 Council motion, that Council refer the report "Truth and
	Reconciliation Calls to Action – Actions for EGBC" to the Professional Practice
	Committee so they can develop an action plan for Council's consideration which
	identifies budgetary and other resources required to implement the
	recommendations in the report.
Motion	That Council approves the conceptual pilot program and budget of \$50,000 in
	order to address the recommendations in Nalaine Morin's report "Truth and
	Reconciliation Calls to Action – Actions for EGBC".

BACKGROUND

At the 2017 Annual General Meeting, the following member motion was carried:

"MOTION 5: That Council consider:

1. Establishing a Task Force in collaboration with the assembly of BC First Nations to review the recommendations contained within the Truth and Reconciliation Committee (TRC) report with the intent of determining how Engineers and Geoscientists BC can help to facilitate the recommendations within the mandate of the Act as well as within the context of the Code of Ethics. Develop guidelines for members to ensure that professional conduct and professional services performed and delivered by members are consistent with the recommendations of the TRC report and/or help to facilitate the intent of the recommendations."

At its meeting on November 24, 2017, Council referred the motion to the Professional Practice Committee for consideration and to report back to Council at their meeting on June 15, 2018.

At their meeting on January 24, 2018, the Professional Practice Committee considered the issue and agreed that staff should contract with Nalaine Morin in order to prepare a report, which would address the following:

- 1) Which of the Calls to Action relate to the primary duty of Engineers and Geoscientists BC as defined in the *Engineers and Geoscientists Act*, which is "to uphold and protect the public interest respecting the practice of professional engineering and geoscience.
- 2) The action that would be appropriate for the association to take in response to each of the calls to action identified in 1) above.

Then at the Council meeting on February 9, 2018, Calvin VanBuskirk, P.Eng., P.Geo., FEC, FGC, delivered a presentation on the motion he authored at the AGM. Council was also introduced to Nalaine Morin. She was asked to comment on the work she is doing to support the Professional Practice Committee by studying the matter and utilizing her expertise as a subject matter expert in providing a report with recommendations to the Professional Practice Committee.

At the June 15, 2018 Council meeting the report prepared by Nalaine Morin entitled "Truth and Reconciliation Calls to Action – Actions for EGBC" was approved and the Council referred the report to the Professional Practice Committee so they can develop an action plan for Council's consideration which identifies budgetary and other resources required to implement the recommendations in the report.

DISCUSSION

Following the June 15, 2018 Council meeting Professional Practice staff worked with Nalaine Morin and other stakeholders to develop a list of options for a pilot program. The intention of the pilot program is to respond to calls to action identified in Nalaine's report using programs and resources the Association already has in place, which will allow for timely action on this initiative. The pilot program options were presented to the Professional Practice Committee for review and approval to submit to Council.

The conceptual pilot program would consist of three main actions:

 Form a focus group that would include First Nations engineering/geoscience professionals and other appropriate individuals who could review initiatives by Engineers and Geoscientists BC related to Nalaine's recommendations. The group would also include Engineers and Geoscientists BC staff from Communications, Member Services and Professional Practice Departments. The estimated budget to achieve this in a timely manner is \$10,000.

- 2. Develop a CPD event, in collaboration with Member Services, that approaches an engineering infrastructure project (or projects) on First Nations land from simply a technical standpoint (by industry), then from a First Nations standpoint (by Nalaine), and then from a combined industry and First Nations collaborative approach (industry together with Nalaine). The event would finish off with a panel session of professionals providing their experience and lessons learned from working on projects on First Nations land. This would be followed by a Q&A. The estimated budget to achieve this in a timely manner is \$32,000.
- 3. Through collaboration and consultation with Member Services and Communications, develop a plan to target career and community fairs in First Nations communities and have Engineers and Geoscientists BC, representatives from industry, and Nalaine promote the professions of engineering and geoscience in a culturally sensitive and appropriate way. This would include developing material that is targeted to First Nations youth. The estimated budget to achieve this in a timely manner is \$8,000.

Timeline for Implementation:

Fall 2018 – Develop and meet with the focus group

Winter 2019 - Deliver CPD presentation

Winter/Spring 2019 - Attend existing BC First Nations career fairs

Budget:

A total budget of \$50,000 is proposed with the expectation that \$30,000 would come from the Association's Contingency fund as discussed with the Chief Financial Officer and the additional \$20,000 will come from the existing departmental program budget.

RECOMMENDATIONS

The Professional Practice Committee passed the following motion at their meeting on August 16, 2018:

"The Professional Practice Committee recommends that Council approves the Conceptual Pilot Program and budget of \$50,000 in order to address the recommendations from Nalaine's report "Truth and Reconciliation Calls to Action – Actions for EGBC".
MOTION

The following motion is proposed for the Council's consideration:

That Council approves the conceptual pilot program and budget of \$50,000 in order to address the recommendations in Nalaine Morin's report "Truth and Reconciliation Calls to Action – Actions for EGBC".

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ITEM 5.9.1

REPORT TOCouncil for DecisionFROMPhilippe Kruchten, PhD, P.Eng., FEC, Chair of the Registration ConSUBJECTPolicy for Assignment of Confirmatory Examinations	
FROMPhilippe Kruchten, PhD, P.Eng., FEC, Chair of the Registration ConSUBJECTPolicy for Assignment of Confirmatory Examinations	
SUBJECT Policy for Assignment of Confirmatory Examinations	nmittee
LINKAGE TO STRATEGIC PLAN Establish, maintain and enforce qualifications and professional star	dards

Purpose	To outline and explain the rationale for the proposed revisions to the Policy for
	Assignment of Confirmatory Examinations.
Motion	That Council approve the modified Policy for Assignment of Confirmatory
	Examinations.

BACKGROUND

The Policy for Assignment of Confirmatory Examinations contains provisions for the assignment of only one Complimentary Studies Examination (Engineering Economics (CS1)). It is assigned by default to all applicants, unless there is sufficient coverage of this topic through the applicant's prior course work. It is not clear why this topic has been singled out for coverage for candidates who do not hold accredited or equivalent-to-accredited engineering degrees.

As part of regular reviews of Registration policies, staff reviewed the usage of this examination.

DISCUSSION

The association's current policy on the assignment of confirmatory examinations is as follows:

To satisfy the minimum academic requirements for application, candidates who:

- 1. Graduated from:
 - a) an accredited engineering program or
 - b) a Mutually Recognized Agreement engineering program; or

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c) an engineering program from a university whose names appears in the list of Foreign Engineering Degrees and Qualifications, endorsed by Engineers Canada AND membership in another constituent association of Engineers Canada

will normally not be assigned any confirmatory examinations, unless the applicant has uncleared failures on his/her academic record.

2. Graduated from an engineering program from a university whose name appears in the list of Foreign Engineering Degrees and Qualifications, endorsed by Engineers Canada may demonstrate that they are academically qualified by successfully completing examinations.

Such candidates will have the options of

- a) writing and passing the Fundamentals of Engineering Examination and the Engineering Economics Examination (if assigned); or
- b) writing and passing three confirmatory examinations and the Engineering Economics Examination (if assigned).

The three confirmatory examinations consists of two of the candidate's own choosing from "Group A Compulsory Subjects" from the Uniform Syllabus of Examinations and one of the candidate's choosing from "Group B Elective Subjects".

3. Graduated from an engineering or related program from a university whose name does not appear in the list of Foreign Engineering Degrees and Qualifications endorsed by Engineers Canada may demonstrate that they are academically qualified by successfully completing examinations.

Such candidates will have the options of

- a) writing and passing the Fundamentals of Engineering Examination and the Engineering Economics Examination (if assigned); or
- b) writing and passing five confirmatory examinations and the Engineering Economics Examination (if assigned).

The five confirmatory examinations consists of three of the candidate's own choosing from "Group A Compulsory Subjects" from the Uniform Syllabus of Examinations and two of the candidate's choosing from "Group B Elective Subjects".

In practice, the Engineering Economics Examination (CS1) is assigned by default to all applicants as an add-on to a Confirmatory examination assignment, unless there is sufficient coverage of this topic through the applicant's prior course work. It is not clear why this topic has been singled out for coverage for candidates who do not hold accredited or equivalent-to-accredited engineering degrees.

Staff contacted regulators across Canada to understand the practice of assigning this particular Complimentary Studies (CS) examination. The results are summarized below:

Regulator	Practice in assigning the Engineering Economics Examination
Engineers & Geoscientists New Brunswick	The CS1 examination is assigned as part of Confirmatory examinations but it is frequently waived for those who can demonstrate they have taken a course in it. Applicants with more than five years of experience also often have this waived either after an experience review or if it is clear that they have practical application of this through work experience.
Professional Engineers Ontario	The CS1 examination is assigned only if an assessment determines that there is a gap in the academic knowledge of the applicant in engineering economics.
Association of Professional Engineers and Geoscientists of Saskatchewan	No check for complimentary studies – do not assign any of "CS" examinations as part of confirmatory (or deficiency) examination
The Association of Professional Engineers and Geoscientists of Alberta	The CS1 examination is assigned by an Academic Examiner after carrying out a course-by-course assessment and if they determine the applicant lacks the academic courses to meet the requirements of the Complimentary Studies courses.

In discussions with other regulators there was no consensus on how the examination is assigned nor was there a consistent rationale for how and when to assign this examination.

Most jurisdictions either do not assign this examination unless there is a gap found in the academic background of the applicant or do not assign any CS examinations or waive the assignment.

Also, the topics covered by the Complementary Examinations need to be demonstrated as part of the Competency Experience Reporting System prior to registration.

RECOMMENDATIONS

- Complementary Studies Examinations not to be assigned as part of Confirmatory Examinations.
- Complimentary Examinations are to be assigned only if a detailed assessment by the Board of Examiners of the applicant's academic background determines that there is a gap in the academic knowledge of the applicant in a specific syllabus topic.

Appendix A is a red-lined version of the current policy incorporating the recommendations.

MOTION

That Council approve the modified Policy for Assignment of Confirmatory Examinations.

APPENDIX A – Policy on Assignment of Confirmatory Examinations - Red Lined Copy APPENDIX B – Policy on Assignment of Confirmatory Examinations - Clean Copy

Engineers and Geoscientists BC Council | September 7, 2018



ITEM 5.9.2

DATE	August 23, 2018	
REPORT TO Council for Decision		
FROM	Gillian Pichler, P.Eng., Director, Registration on behalf of	
	Philippe Kruchten, PhD, FEC, P.Eng., Chair, Registration Committee	
SUBJECT	Policy on Academic Qualification of Graduates of the BCIT Bachelor of	
	Technology in Electronics Part-Time Program	
	Goal 3 Promote and protect the professions of engineering and geoscience	
LINKAGE TO	(subject to goals 1 & 2);	
STRATEGIC PL/	Strategy 2. Assess and improve admission processes and tools to facilitate	
	robust and timely assessment of applicants.	
Purpose	To revise the Policy on Academic Qualification of Graduates of the BCIT Bachelor	
	of Technology in Electronics Part-Time Program to reflect the current content of	
	the program and to set out a transition plan for academic qualification of the	
	program's graduates.	
Motions	i. That: Council approve the revisions to the Policy on Academic Qualification of	
	Graduates of the BCIT Bachelor of Technology in Electronics Part-Time Program.	
	Graduates of the BCIT Bachelor of Technology in Electronics Part-Time Program. ii. That the policy revisions and proposed transition provisions be communicated to	
	<i>Graduates of the BCIT Bachelor of Technology in Electronics Part-Time Program.</i> ii. That the policy revisions and proposed transition provisions be communicated to the Dean, the appropriate Associate Dean and Program Head at BCIT as soon as	
	<i>Graduates of the BCIT Bachelor of Technology in Electronics Part-Time Program.</i> ii. That the policy revisions and proposed transition provisions be communicated to the Dean, the appropriate Associate Dean and Program Head at BCIT as soon as possible after the September 7, 2018 Council meeting so that as much advanced	
	<i>Graduates of the BCIT Bachelor of Technology in Electronics Part-Time Program.</i> ii. That the policy revisions and proposed transition provisions be communicated to the Dean, the appropriate Associate Dean and Program Head at BCIT as soon as possible after the September 7, 2018 Council meeting so that as much advanced notice as possible is provided to the program administrators; and.	
	<i>Graduates of the BCIT Bachelor of Technology in Electronics Part-Time Program.</i> ii. That the policy revisions and proposed transition provisions be communicated to the Dean, the appropriate Associate Dean and Program Head at BCIT as soon as possible after the September 7, 2018 Council meeting so that as much advanced notice as possible is provided to the program administrators; and. iii. That the Program Head be encouraged to pursue accreditation with CEAB for	

BACKGROUND

In 2004, the Registration Committee established a policy regarding academic qualification of graduates of BCIT's Bachelor of Technology in Electronics Part-Time Program.

The program had been developed as a two-year program aimed at a) allowing completion of a Bachelor's degree for BCIT Diploma in Technology Graduates who were working; and b) providing Canadian content and a Canadian credential for graduates of international engineering programs.

BCIT has been marketing the program as a route to P.Eng. qualification for those who want to work and complete courses on a part-time basis. The maximum time a student can take to complete the program is seven years.

At the time of the program's inception BCIT had investigated the possibility of pursuing CEAB accreditation for the program, but the institution was not in a position at that time to follow this route. Instead, the course content and level was designed with the intent that a graduate would have completed the topics as specified in the then combined CCPE Basic Studies, Electrical Engineering and Complementary Studies syllabi.

At the time the program was developed, the Association's bylaws permitted applicants with a two year post-secondary education to be evaluated against the syllabi with examinations assigned in missing topics. The program was reviewed by the Association's Electrical Examiner and found to be in general compliance with the syllabi and a policy was established permitting its graduates to complete a program of five confirmatory examinations to become qualified for registration as a professional engineer. The Association did not perform an in-depth examination of the program, faculty and facilities as would be done by the CEAB; however the confirmatory examination treatment established in 2004 was considered be in general alignment with that of graduates of a four year program that was not on the then CCPE 'Foreign List'.

Although the policy did not allow writing of the U.S. Fundamentals of Engineering examination in lieu of the confirmatory examination program, this option was extended to program graduates, following the approval in 2008 of this option to writing regular confirmatory examinations for graduates from four year university level engineering programs.

As part of the annual policy review, the current program content and structure were reviewed in depth in 2018. The review consisted of a detailed review by three members of the association's Board of Examiners in the Electrical discipline. Their findings and recommendations for changes to treatment of program graduates were endorsed by the Registration Committee and communicated to the Program Head. The Program Head and a member of his faculty were subsequently given the opportunity to present their analysis of the program's compliance with association requirements to the three examiners.

DISCUSSION

Fundamental Changes Since 2004

Since 2004, several fundamental changes have taken place in Association bylaws and policy. Also, BCIT now offers an accredited engineering program in Electrical Engineering.

Bylaw 11(e) now requires that applicants for registration must hold the equivalent of a full time university level engineering degree in applied science, engineering, geoscience, science or technology. BCIT's Bachelor of Engineering program in Electrical Engineering was accredited in

2011 and sets a benchmark for a university level program within the institution. BCIT's first attempt at accreditation of its Civil Engineering program which allowed Diploma of Technology graduates to 'make up' courses in a third and fourth year add-on to the regulator Diploma program met with failure. The Diploma of Technology programs were then redesigned such that a common first year with the Bachelor of Engineering program that addressed the required fundamental topics was required, followed by a choice to continue with a second year in the Bachelor's of Engineering program or to take second year Diploma courses and graduate with a Diploma of Technology.

Review Findings

The review of the current program by the Examiners found that it has transitioned in course level and content since its inception. The main concern is that in-depth treatment of the subjects in the two years (which are the 3rd and 4th years added to a Diploma program) is inhibited when a program candidate is a graduate of a BCIT Diploma in Technology. This issue is greater when a program graduate came from another technology diploma program that does not share a common first year with an accredited Bachelor's of Engineering program.

Another concern is that the capstone design project is a workplace project that introduces a variability in the level and quality of the design experience. Furthermore, the capstone project tends to be an individual project as opposed to a team-based one.

The examiners found that the four-year program provides three years of education at a university level but that the second year of the program may not offer the required depth of instruction. The examiners also found that there is minimal connection of the program with the BCIT accredited program and no consultation at BCIT with the faculty in the accredited program. The majority of the courses is taught by instructions who are not BCIT faculty and only some of whom are professional engineers.

During the review, the directors of the program said that they have no intention of pursuing CEAB accreditation and that they desire to keep the Fundamentals of Engineering route option for academic qualification of graduates. Graduates of the BCIT Bachelors of Technology program in Electronics program do not qualify for the Fundamentals of Engineering option route as the program is not the equivalent of a four year university level engineering program.

The examiners wished for the program's management to reconsider applying for accreditation. The concept of having an accredited part-time program for those wishing to pursue a professional engineer designation is attractive, but would require a high burden of proof to the CEAB.

The findings of the Examiners and the conclusion of the review were endorsed by the Registration Committee.

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Proposed Policy Revisions and Transition Provisions

Redlined and clean versions of the proposed policy revisions are attached in Appendix A. The revisions allow the existing confirmatory examination assignment for those who enter the program after a Diploma of Technology program that includes a common first year with the accredited Bachelor's of Engineering program; and a detailed assessment of qualifications and assignment of qualifying (deficiency) examinations or courses for graduates whose entry to the program was from another technology program.

The revisions also provide transition provisions via an extension of the confirmatory examination treatment for graduates who were registered in the program before the upcoming winter term in January 2019. It also disallows the writing of the Fundamentals of Engineering examination in lieu of the confirmatory examinations for graduates who apply for EIT enrollment or professional engineer registration after January 1, 2019.

MOTION

- i. That Council approve the revisions to the *Policy on Academic Qualification of Graduates of the BCIT Bachelor of Technology in Electronics Part-Time Program* be approved.
- ii. That the policy revisions and proposed transition provisions be communicated to the Dean, the appropriate Associate Dean and Program Head at BCIT as soon as possible after the September 7, 2018 Council meeting so that as much advanced notice as possible is provided to the program administrators; and
- iii. That the Program Head be encouraged to pursue accreditation with CEAB for this program.

APPENDIX A – Redlined and Clean Versions of the Policy on Academic Qualification of Graduates of the BCIT Bachelor of Technology in Electronics Part-Time Program

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ITEM 5.10.1

DATE	August 23, 2018
REPORT TO	Council for Information
FROM	Ann English, P.Eng., Chief Executive Officer & Registrar
SUBJECT	CEO and Registrar Report to Council
LINKAGE TO STRATEGIC PLAN	To uphold and protect the public interest through the regulation of the professions.

Purpose	This report highlights some of the activities of the Association related to policy
	work, implementation of the Strategic Plan and ongoing Regulatory duties since
	the June 15, 2018 meeting of Council.
Motion	No motion required.

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.

2. MEMBER AND PUBLIC AFFAIRS

a. MEDIA INTERACTIONS

Since the last reporting period, Engineers and Geoscientists BC has fielded media inquiries regarding the Province's professional reliance recommendations from *Engineering Dimensions* (Professional Engineers Ontario's journal), Engineers Canada's newsletter, *CIM magazine* and *The Northern Miner*. We also responded to *BC Business* for an article about seismically resilient building materials, and the *National Observer* regarding the association's Use of Seal guidelines.

We were contacted with an inquiry from the Institute for Canadian Citizenship, seeking information regarding the association's licensing process to inform a report on barriers that international engineering graduates face when entering the engineering profession in Canada.

b. PUBLIC OPINION POLL

Engineers and Geoscientists BC fielded a Public Opinion Survey in late July. This is the first public poll since the launch of the association's new brand identity and related ad campaign. Results have been received are currently being reviewed; more information will be made available at a subsequent Council meeting.

3. COUNCIL ELECTION & BYLAW AMENDMENT VOTE

On September 5th, all eligible voters will be invited to participate in the 2018/19 Council election and to ratify four bylaws. There are two candidate running for the office of President, two candidates running for the office of Vice President and twelve candidates running for the office of Councillor. The election and bylaw vote will close at noon on October 5, 2018.

New this year, candidates running for the positions of President or Vice President were also invited to participate in a short video as part of the candidate information presented to members. Inclusion of a video was optional and is being piloted for the 2018 election as a way to provide voting members with more information about candidates. The videos for the candidates that participated in the optional video component can be found on the candidate's statement page.

Members will be directed to participate in our post-voting survey to provide feedback on the usefulness of the video component.

4. ENVIRONMENT AND CLIMATE CHANGE CONSULTATION

Environment & Climate Change Canada (ECCC) is developing new guidance on how Climate Change should be considered when assessing major projects and has published a discussion paper titled "<u>Developing a Strategic Assessment of Climate Change</u>" for comment. The discussion paper lays out considerations and poses strategic questions related to greenhouse gas emissions (GHGs), climate change and clean growth policies and their potential interactions with impact assessments. It is stated that based on input received on this discussion paper, the Minister of Environment and Climate Change would establish terms of reference, as envisioned in the proposed *Impact Assessment Act*, for conducting the strategic assessment of climate change. A Strategic Assessment of Climate Change Report is expected to be submitted to the Minister of Environment and Climate Change in 2019. Feedback on the discussion paper was collated from members of the association's Climate Change Advisory Group, Energy Efficiency and Renewables Division and the Sustainability Committee and submitted to ECCC on two key areas related to:

• how impact assessments should consider a project's resilience to climate change and,

• the types of expertise that should be represented in establishing an expert advisory panel.

Feedback included integrating GHG impact assessments along with resilience assessments through the use of risk assessment protocols such as the Public Infrastructure Engineering Vulnerability Committee's (PIEVC) Protocol developed by Engineers Canada and including professionals with experience in impact assessment and an understanding of climate risks and adaptation and mitigation strategies in an expert advisory panel established by the government.

Related to the same topic, the Standing Senate Committee on Energy, the Environment and Natural Resources is currently looking at <u>Bill C-69</u>: *An Act to enact the Impact Assessment Act and the Canadian Energy Regulator Act, to amend the Navigation Act and to make consequential amendments to other Acts* and is expected to continue debating this bill in mid-September when Parliament resumes. Engineers Canada prepared its comments and observations relating to the proposed amendments and sought input and feedback from the constituent associations on their recommendations. Engineers Canada's comments proposed:

- amendments to the *Impact Assessment Act* to require consultations with engineers in Canada in the Impact Assessments Agency of Canada's preparations for a possible impact assessment of a designated project; and,
- to use Engineers Canada's Public Infrastructure Engineering Vulnerability Committee (PIEVC) Protocol with respect to the designated project where considerations related to climate vulnerability and public infrastructure risk assessments exists.

The association's Climate Change Advisory Group reviewed Engineers Canada's comments and offered its support for the recommendations.

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ITEM 5.10.2

DATE	August 21, 2018
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

Engineers Canada is the national federation owned by the 12 engineering regulators (Engineers and Geoscientists BC is one), referred to as the "Regulators". The next meeting of the EC Board of Directors will in Ottawa on September 26.

1. Why Engineers Canada Exists

Amendment of the Articles of Continuance for Engineers Canada to incorporate the new Purpose of Engineers Canada was approved on May 26 at the Annual Meeting of Members (the AGM for Engineers Canada). The amended Articles of Continuance are posted at the link https://engineerscanada.ca/about/governance/policies-documents-and-resources.

2. Strategic Plan

A 2019-20121 Strategic Plan was presented to the Meeting of Members (AGM) which in turn approved it on May 26. See <u>https://engineerscanada.ca/sites/default/files/board/engineers-canada-strategic-plan-2019-2021.pdf</u>. The plan includes all operational areas as well as strategic areas in order to facilitate transparency of **all** of the work of Engineers Canada.

The scope of work at Engineers Canada will not expand beyond that in the Strategic Plan for 2019-21. That said, if some new issue arises then it is up to the regulators such as Engineers and Geoscientists BC to raise it for consideration by the Engineers Canada Board. With input from the regulators, the Board will consider the impact and how it is to be resourced.

3. Governance, Strategic Planning and Consultation Project (GSPC Project)

EC Governance committee is currently revising the Governance structure from a Carver Executive Limitation Model to a policy model. This is being done largely to address concerns from the

regulators to increase control and direction from the Board to the CEO. Governance Committee will present draft policy revisions to the EC Board

Further consultations with the regulators on Governance Phase II will be held this fall. Topics for discussion have not been finalized however may include:

- Role of the CEO Group Chair as an advisor to the Board
- Mandate of the Directors
- Relationships between the regulators' Officials Groups and CEAB (Accreditation Board)/CEQB (Qualifications Board) of Engineers Canada
- Role of the regulators and the presidents in Board governance
- Relationships with the NCDEAS (deans) and CFES (students)
- Ensuring excellence Integrating the end-to-end solution on 12 month (operational) and 36 month (strategic) cycles
- Identify a means to restrict future growth of the number of directors on the Engineers Canada Board and budget that is acceptable to the regulators.

4. Engineers Canada Funding Task Force

The Funding Task Force is considering Engineers Canada's dependence on affinity revenues to fund operations with a view towards greater transparency and accountability to the member regulators. Approximately 68% of EC revenue (\$22.77/\$32.98 per member) is generated by affinity revenue of which roughly 75% is generated by home and auto insurance through TD Meloche Monnex.

Most of the participating regulators receive 51% of the net affinity revenue as a rebate; however, BC, Saskatchewan and Manitoba do not participate in the TD home and auto insurance program as these provinces have government auto insurance. BC currently pays net dues to EC at \$10.21/member, which amounts to 32% of the general revenue per member. Funding models being considered include raising the member dues portion to a higher percentage of the general revenue, which **may result in BC member dues to EC increasing over time**.

The Funding Task Force will update the EC Board in September. It is expected to complete its work in 2018.

5. The Accreditation Improvement Program

The National and International Academic Accreditation Programs are one of the key functions of EC as delegated to the Canadian Engineering Accreditation Board.

A world-class accreditation system requires **systematic training** for the people involved, **strong lines of communication** among stakeholders, a **strategy for continual improvement**, and a **sound technical platform**. Achieving these results will allow both institutions and accreditation visitors to put their focus where it should be: on maintaining reputable programs that meet the highest standards.

The four elements

There are four elements to the Accreditation Improvement Program:

- Improving our **stakeholder communication and consultation** process to ensure that the accreditation system is transparent and open to the input of those to whom it matters most.
- Developing a **training program** to improve consistency across accreditation visits by providing volunteers and educators the information they need in a timely and repeatable way.
- Selecting and implementing an improved **data management** system to ensure that the technical side of accreditation optimizes everyone's use of time throughout the accreditation cycle.
- Introducing a process for **continual improvement** to ensure that the accreditation system stays responsive to the evolving needs of Canada's engineering profession.

•

Targeted outcomes

- Improved performance in the delivery of accreditation and the Enrolment and Degrees Awarded Survey.
- **Improved stakeholder consultation** regarding accreditation and the Enrolment and Degrees Awarded Survey.
- **Improved user experience** for those involved in accreditation and the Enrolment and Degrees Awarded Survey.
- **Improved reliability** of technical systems supporting accreditation and the Enrolment and Degrees Awarded Survey.
- **Faster user adoption of changes** impacting accreditation and the Enrolment and Degrees Awarded Survey.
- Sustainable methods to ensure **continual improvement** for both accreditation and the Enrolment and Degrees Awarded Survey.

Enrolment and Degrees Awarded Survey

Improvements to the Enrolment and Degrees Awarded Survey are included in the AIP. This survey provides critical information to HEIs and the engineering sector about participation in engineering programs. This allows for the monitoring of trends, both national and regionally, and is used in strategic decisions by HEIs in how they structure their programs and those with interests in issues of diversity of the profession

Including the Enrolment and Degrees Awarded Survey in the AIP is valuable because:

- 1. There is overlap in the information that is collected through accreditation and the Enrolment and Degrees Awarded Survey. Including this survey in the AIP will reduce work duplication and improve efficiency.
- 2. The current software platform for the survey is at risk of failure. Migrating it to a more stable data management system eliminates this operational risk.

Key messages

The AIP project is much more than a new software tool. The AIP is about improving all aspects of how accreditation is done, and achieving that in a coordinated and deliberate way.

We are committed to listening to our stakeholders and responding to their feedback. If anyone is feeling left in the dark, they should contact us at <u>accreditation@engineerscanada.ca</u> for information, explanations, or assistance.

The AIP is focussed on the operational improvement of accreditation. Issues surrounding policies, including concerns over AUs, are out of scope of this project.

• As such, **the work of the AU Task Force is separate from the AIP**. The Task Force is exploring how the AU approach can continue to be relevant for current educational approaches. Any changes that occur would be policy decisions that modify accreditation criteria. In such a case, changes to criteria would be recommended by the Accreditation Board to the Engineers Canada Board for approval. The AIP is ensuring that the operational aspects of accreditation can effectively implement any policy changes.

The roll out schedule of the data management system is still being finalized. The AIP team is working with the vendor to determine a feasible schedule and stakeholders will be informed as soon as its ready.

When HEIs are impacted by changes in the accreditation process they will be made aware well in advance and supported through the change with training and guidance.

If you need support

If you have any questions the AIP, please contact <u>accreditation@engineerscanada.ca</u>. This email is regularly monitored and will be forwarded to the most appropriate member of the team for a response.

6. Government Relations

Submission to the Government of Canada's Discussion Paper on Mining Ideas for the Canadian Minerals and Metals Plan - Engineers Canada's submission to the noted Paper has been posted on our website under "Public Policy – Government Submissions." A draft version of this submission was shared with regulators on May 11, 2018 with a deadline of May 31, 2018 for responses. Engineers and Geoscientists New Brunswick as well as a member of Professional Engineers Ontario's Council responded with feedback, none of which resulted in the denial of approval to submit.

Submission to the Government of Canada regarding their Infrastructure Projects and the Investing in Canada Plan - Engineers Canada's submission to Plan has been posted on our website under "Public Policy – Government Relations." A draft version of this submission was shared with

regulators on June 25, 2018 with a deadline of July 12, 2018 for responses. The Association of Professional Engineers and Geoscientists of Alberta, Engineers Geoscientists Manitoba, Engineers and Geoscientists New Brunswick, and Engineers PEI responded with feedback, none of which resulted in the denial of approval to submit.

7. Qualifications to Practice

Qualifications to practice engineering in Canada is another major function of EC delegated to the Canadian Engineering Qualifications Board (QB)

The Competency-Based Assessment (CBA) Project's user group met and discussed incorporating the mandatory Canadian environment competencies that have been identified by the National Admissions Officials Group into the online CBA tool. The group discussed how to provide guidance for applicants on the competencies that must have examples in a Canadian Environment or equivalent, and guidance for assessors on how to evaluate those competencies. Future work will include developing a guideline for applicants on the Canadian environment competencies, monitoring the pilot project at Engineers Geoscientist BC that is testing the process of assigning Canadian environment competencies in lieu of assigning one year of Canadian Environment experience, and documenting any required change processes for the CBA project.

Respectfully submitted,

Jeff Holm, P. Eng., FEC and Russ Kinghorn, P. Eng., FEC

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ITEM 5.10.3

DATE	August 26, 2018
REPORT TO	Council for Information
FROM	Engineers and Geoscientists of 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.

BACKGROUND

Since the last report, there have been no meetings or conference calls related to Geoscientists Canada. However, the following is a summary of activities that have taken place over the summer months. Also, CEO Andrea Waldie supplied the board with a weekly report/update. Should council wish these in the future, I will supply as a part of these periodic reports.

DISCUSSION

The following are a list of activities and initiatives:

Letter indicating Geoscientists Canada support to Engineers Yukon concerning revising the current Act to include the registration of geoscientists has been developed and sent to the Executive Director of EY.

AST II update:

- o Arrangements for September AST II SME meeting are underway.
- o Arrangements for the initial online competencies implementation meeting are underway.
- o The AST II Working Group will meet on July 30th to review project progress.
- o The AST II 1/4ly report for April 1 to June 30, 2018 has been filed with ESDC

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Geoscience and Canada - G4S

o Almost the entire initial English print run has now been distributed. We have just a few copies left which will be going out to Federal level policy makers.

o The French language print run has been ordered.

o Response to this document continues to be excellent. Positive comments continue to come through emails. Various bodies have Tweeted about the document and placed comment about it on LinkedIn. One university has inquired as to the cost of print run for 500 copies.

• The Geoscientists Canada comment letter on the Canadian Minerals and Metals Plan discussion paper is complete and will be sent out shortly. The letter will also be shared with Engineers Canada in the interest of keeping the lines of communication open between the two national bodies.

RFG June 16-21, 2018

- o QP Student short course delivered on June 17
- 12 of the registered 25 attended; approximately 50/50 international and Canadian attendance; international attendees – Indonesia, Peru, Russia, US, Other; very engaged attendees
- Attendees almost entirely from the mineral exploration sector
- Short course very well received
- o Geoscience and Canada (G4S) booklet launched.
- IAPG is interested in potentially assisting with development of geoethics online courses with Geoscientists Canada – if that is an avenue we wish to pursue in the future; and looking for other areas of commonality
- EFG continues to be interested in looking at areas of commonality between our organizations, such as CPD requirements particularly in light of CETA
- ASBOG remains interested in continued communications with Geoscientists Canada; remaining informed of undertakings and looking for areas where we are able to support each other
- Provided a presentation on "The Professional Life" in the panel session "Navigating the Professional Aspect of Your Career in Geoscience" for young geoscientists. Unfortunately, not an overly well attended session. However, it did evolve into an excellent discussion between EFG, AIPG, AIG, and Geoscientists Canada.

REQUESTS

There are two requests that Geoscientists Canada have for its constituent associations and I therefore make this request of Engineers and Geoscientists of BC.

- 1) There is a Request to CAs for nominees to the recently established Geoscientists Canada Professional Practice Committee. See attachment A for details.
- 2) There is a request for contributions toward the Geoscience and Canada booklet CFES Geoscientists Canada Joint national project ("G4S") with full narrative text of the document.

a. To provide each CA with the proposed narrative text, to seek comments and improvements;

b. To seek a contribution of funding from either your association or from your association's foundation towards completion costs; and

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c. To request imagery in the form of photographs of geoscientists in action or geoscientific items (maps, sections, instrumentation, field or lab logistics, etc.) that might be suitable for incorporation into the colour design layout.

ATTACHMENT A – Professional Practice Committee Terms of Reference

Respectfully submitted,

Garth Kirkham, P.Geo., FGC Director, Geoscientists Canada

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TERMS OF REFERENCE

1. Name: Professional Practice Committee

2. Purpose/Objective:

To review, consider, and provide opinion on matters of geoscience professional practice, and to review, document and develop geoscience professional practice guidelines for potential use by Constituent Associations (CAs), practitioners, and other stakeholders.

3. Function/Deliverables:

3.1 The Committee shall review, consider, investigate, and may provide reports or opinion, on matters of geoscience professional practice.

3.2 The Committee shall review existing practice guidelines developed by CAs and other likeminded professional organizations; and document a reference library accessible for Canadian geoscience practitioners;

3.3 The Committee shall prioritize guidelines that are outdated, or may be applicable to the profession but need to be edited into the appropriate context; and develop and execute an action plan for updating / editing said documents.

3.4 The Committee shall investigate, document and prioritize a list of potential new guidelines, taking recommendations from CAs and based on industry needs. Develop new guidelines as required.

4. Accountability/Reporting Relationship:

4.1 The Committee is appointed by the Board of Directors from nominations received from the CAs.

4.2 The Committee reports to the Board.

5. Membership:

5.1 A minimum of 1 member from the Board and a minimum/maximum of 5/10 representatives from CAs (maximum 1 representative per CA).

5.2 The Committee may call upon CAs for volunteers to act as subject matter experts, from time to time. These volunteers are not members of the committee but may be formed in sub-committees as required.

5.3 The President and CEO of Geoscientists Canada are ex-officio members of the Committee.

6. Term of Office:

6.1 Appointments are for two years normally, renewable twice unless otherwise extended by the Board.

7. Selection of Chair:

7.1 The Chair is elected by the Committee.

7.2 The Chair serves a two year term that is renewable once, unless otherwise extended by the Board.

8. Quorum:

Majority of members.

9. Frequency of Meetings:

9.1 Meetings are held at least 1 time per annum, or more often, if required, at the call of the Chair.

9.2 Meetings should be held prior to April 30 to be able to report to the Board at the Annual General Meeting.

10. Conduct of Meetings:

10.1 The Committee may meet in person and/or by telephone conference, webcast or other electronic communications media where all members may simultaneously hear each other and participate during the meeting.

10.2 Generally, the latest edition of Robert's Rules should be adopted for the conduct of meetings.

11. Minutes:

11.1 Minutes, notes or recording of decisions are the responsibility of the Committee Chair who may request the support of Geoscientists Canada staff.

11.2 Meeting minutes are to be sent to the CEO for information and archiving.

12. Review of Terms of Reference:

12.1 The Committee shall review its Terms of Reference on an annual basis and submit verification of its review to the Governance Committee before presenting it to the Board for approval.

Approved by Board of Directors: 9 June 2018



ITEM 5.10.4

DATE	August 23 rd , 2018
REPORT TO	Council for Information
FROM	Engineers and Geoscientists BC Representative 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

BACKGROUND

The Canadian Engineering Qualifications Board (the 'Qualifications Board') is a standing committee of the Engineers Canada Board responsible for developing new and maintaining national examination syllabi as well as guidelines that enable the assessment of qualifications, foster excellence in engineering practice/regulation as well as facilitate mobility of practitioners.

DISCUSSION

Update on Current Work

Over the summer, the Qualifications Board consulted national officials groups and the Chief Executive Officers Group to inform the development of its 2019-21 Work Plan. A draft Work Plan and received feedback will be circulated to the Engineers Canada Board for its information in September, and for final approval in December 2018. Regulators may provide their feedback on the Qualifications Board Work Plan through their Board directors during this timeframe.

The Qualifications Board will be meeting in Québec City on September 14-15. It is expected that:

 The new Guideline on Academic Assessment of non-Canadian Engineering Accreditation Board Applicants as well as the revised Model Guide: Mentoring Programs will be approved and subsequently sent to the Engineers Canada Board for final approval in September. Received feedback and the Qualification Board's responses are available on request.

- The revised Geomatics Engineering Syllabus as well as the Mining and Mineral Processing Engineering Syllabus will receive final Qualifications Board approval.
- The Model Guide: Authentication of Engineering Documents and the Model Guide: Concepts of Professionalism for Engineers will be approved for being rescinded and taken off the Engineers Canada website. Copies will be distributed to all regulators prior to removing them from the website.
- The Draft General Direction for the White Paper on Environmental Engineering and the Draft Guideline on Continuing Professional Development will be approved for regulators consultation.

The Qualifications Board would like to thank Engineers Geoscientists British Columbia's ongoing participation and collaboration and welcomes any feedback and suggestions.

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ITEM 5.10.5

DATE August 23, 2018	
REPORT TO	Council for Information
FROM Rohan Hill, Staff Lawyer Regulatory Affairs	
SUBJECT	2018 Enforcement Report
LINKAGE TO STRATEGIC PL	To uphold and protect the public interest through the regulation of the professions. To promote and protect the professions of engineering and geoscience.
Purpose	This report is to update Council on enforcement activities undertaken by the Legislation, Ethics & Compliance Department (the "LEC Department") from July 1, 2017 to June 30, 2018 ("Fiscal 2018"). The report also sets out some key initiatives for fiscal 2019.
Motion	For information only.

BACKGROUND

The LEC Department uses the term "Enforcement" to refer to the portfolio of files it handles on an ongoing basis in relation to potential contraventions of section 22 of the *Engineers and Geoscientists Act.* Enforcement files primarily relate to the unauthorized practice of professional engineering or geoscience by non-members and the unauthorized use of titles by non-members.

LEC Department staff typically open an enforcement file in response to a report from the public, after receiving information from other public bodies, or upon association staff coming to learn that a contravention of section 22 has potentially occurred. Historically, only a small portion of enforcement files have ultimately required court action for resolution because the vast majority of enforcement targets agree to bring themselves into compliance following a demand by the LEC Department. The target typically ceases to engage in prohibited practices or registers with the association. In appropriate cases, the LEC Department is prepared to seek remedies via court action, and has done so on many occasions in the past.

DISCUSSION





File Opening and Closure Figures for Fiscal 2018:

Files open at the start of Fiscal 2018:	39
Files opened during Fiscal 2018:	117
Files closed during Fiscal 2018:	87
Files open at the end of Fiscal 2018:	69

Comments Regarding File Opening and Closure Figures:

In Fiscal 2018, the association opened more enforcement files (117) than in any prior fiscal year, nearly doubling the average number of files opened annually during the past three years (66). The association also tied fiscal 2015 for the highest number of enforcement files successfully closed in any fiscal year (87).

Age of Open Files

A significant accomplishment in Fiscal 2018 was the successful closing of a number of older enforcement files. At the beginning of Fiscal 2018, 20% of the open enforcement files were from fiscal 2015 or earlier. All files from 2015 and earlier were successfully closed during Fiscal 2018, such that as of the end of Fiscal 2018, 90% of the open files were either from the current or previous fiscal year and the remaining 10% were opened in fiscal 2016.

A comparison of file aging between the beginning and end of Fiscal 2018 is included below. The pie graph of file aging from last year's annual enforcement report to Council is shown on the left, with an updated graph showing file aging as at the end of Fiscal 2018 on the right:



Notable Achievements in Fiscal 2018

During Fiscal 2018, highlights of the LEC Department's enforcement efforts (some of which were discussed in previous reports to Council during Fiscal 2018) include:

- 1. Entering into various public letters of undertaking, including letters of undertaking with nonmembers who, individually:
 - a. asserted status as a professional engineer in correspondence with an authority having jurisdiction and in court documents filed with the British Columbia Supreme Court;
 - b. affixed the stamp of a professional engineer to unstamped copies of drawings prepared by that engineer;
 - c. engaged in the practice of professional geoscience and used "geophysicist" in connection with their name for over a decade while employed at various companies in BC; and
 - d. used titles including the word "engineer" for a period of roughly five years in connection with positions held in British Columbia.
- 2. Enforcement activity in connection with a city employee who was using the title "Development Engineer" notwithstanding his lack of registration with the association.
- 3. In conjunction with the Registration Department, writing the content for a dedicated Software Engineering landing page that was published on the association's webpage to provide information about the legal requirement to become registered with the association, Council's

designation of software engineering as a discipline of professional engineering, and the options available to prospective software engineers for obtaining registration with the association.

4. The complete transitioning of the enforcement practice and portfolio of files to a paperless system, including electronic document retention and enhanced electronic tracking of file status, steps taken, and a reminder system.

RECOMMENDATIONS

Planned Activities in Fiscal 2019

Many initiatives are underway to increase the efficiency and throughput of enforcement files. The LEC Department intends to continue its work on these initiatives, including:

- 1. The development and implementation of a standardized enforcement procedure that will increase the consistency of the enforcement process and improve efficiency and file handling capacity by facilitating delegation of less complex tasks by the Staff Lawyer to other staff.
- 2. Adoption of a standardized set of precedent correspondence and templates for briefing notes to be prepared in advance of phone calls.
- 3. Further transitioning to use of the enforcement@egbc.ca email address for enforcement correspondence so that all members of the LEC who are working on enforcement matters have access to file-related emails.

Although a record number of new enforcement files were opened in Fiscal 2018, there is still room to increase the public's awareness of the association's role in preventing unauthorized practice and misuse of title. LEC Department staff made some revisions to the enforcement webpage at the time of the association's rebranding in the summer of 2017, but a more comprehensive review and rewrite of webpage contents is planned for fiscal 2019. We expect to create a "Frequently Asked Questions" list to address common enforcement-related questions.



ITEM 5.10.6

DATE	August 23, 2018
REPORT TO	Council for Information
FROM	Neil Nyberg, P.Eng., FEC Chair, Investigation Committee
	Paul Adams, P.Eng., FEC Chair, Discipline Committee
SUBJECT	2018 Fiscal Year End Investigation & Discipline Status Report
LINKAGE TO STRATEGIC PLAN	Establish, maintain and enforce qualifications and professional standards.

Purpose	Investigation & Discipline Status report for the period July 1, 2017 to June 30, 2018
Motion	For Information Only.

INVESTIGATION

In fiscal 2018, the LEC department managed 67 new complaint files, which is on par with the number of complaints submitted in previous fiscal years. The LEC department worked through a large number of older files, with the majority of open files now being from fiscal 2017 and 2018. The most common types of complaints were conduct matters (27%), structural (25%), geotechnical (7%) and fire protection (7%).

The Investigation Committee concluded two large-scale investigations, both of which were being managed with the assistance of external lawyers.

In fiscal 2018, the size of the Investigation Committee remained unchanged. The members of the Investigation Committee represent a variety of engineering and geoscience disciplines. The LEC department is actively recruiting a sewerage/wastewater engineer for the Investigation Committee.

To assist with the workload in the LEC department, the department successfully recruited an Investigation Manager. The Investigation Manager role was filled by the previous Investigator in November 2017 and a new Investigator was hired to fill the vacant position in January 2018. The

Investigation Manager position was unfilled for half of fiscal 2018. While two articling students have been hired, one of the articling student's responsibilities are to cover the maternity leave for the Compliance Officer position, working on intake of complaint files. Summer law students in 2018 assisted in advancing older complaint intake and investigation files. The hiring of a new Investigator has increased the staff support available to the Investigation Committee to conduct investigations. The Investigation Manager provides staff support to both the Investigation Committee for investigations and the Discipline Committee for discipline matters.

The quality of investigations has improved with the additional staff support. More thorough investigations are being conducted on all files, with investigative interviews being conducted for most investigations. More technical experts have also been retained at the investigation phase to provide detailed technical analysis of the complaint matters to assist the Investigation Committee in making determinations of how to proceed with complaint files, specifically if discipline is warranted.

While the LEC department has employed new staff members, the volume of work remains high given the staff resources available.



Below is a chart showing the number of complaints received in the previous six fiscal years:

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Investigation File Summary July 1, 2017 to June 30, 2018

INVESTIGATION FILES	
Total open investigation files carried forward as of June 30, 2017:	78
New Complaint Files Opened between July 1, 2017 to June 30, 2018:	67
New "Registration Assist" Files Opened between July 1, 2017 to June 30, 2018:	1
Investigation Files Closed between July 1, 2017 to June 30, 2018:	44
Investigation Files sent to Discipline between July 1, 2017 to June 30, 2018:	14
Total Investigation Files Open at June 30, 2018:	



New Files: The following is a breakdown of the categories of the 67 complaint and "registration assist" files received. The categories are approximate only and are not necessarily reflective as to the issues that the Investigation Committee isolated on its review of the complaints:

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Outcomes of Investigation Files between July 1, 2017 and June 30, 2018



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PRC: Practice Review Committee; **IC**: Investigation Committee; **RC**: Registration Committee **DC**: Discipline Committee

Neil Nyberg, P.Eng., FEC Chair, Investigation Committee

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DISCIPLINE

The number of files referred from the Investigation Committee to the Discipline Committee is only one less than fiscal 2017. Fiscal 2017 and 2018 are record high years for the number of files referred from the Investigation Committee to the Discipline Committee. While the number of files referred from the Investigation Committee to the Discipline Committee has not changed significantly from fiscal 2017 to fiscal 2018, there has been an increase in the number of open discipline files carried over at the end of fiscal 2017 and 2018. There were only 5 open discipline files at the end of fiscal 2017, while there were 12 open discipline files at the end of fiscal 2018. The Discipline Committee is quite busy with the ongoing discipline files which include discipline for the two large-scale investigations referenced above.

The following is a summary of the 7 discipline files which were concluded in the 2018 fiscal year, plus 2 additional determinations made in fiscal 2018 by the Discipline Committee. Some of these files have been presented to Council in prior quarterly reports and all are posted on the Engineers and Geoscientists BC website pursuant to the association's Publication Policy.

Boris Klarich, P.Eng.

Engineers and Geoscientists BC issued a Notice of Inquiry to Mr. Klarich in May 2017 regarding his use of engineering seal. In lieu of proceeding to a disciplinary inquiry, Mr. Klarich agreed to a Consent Order dated January 22, 2018. By way of the Consent Order, Mr. Klarich admitted that he demonstrated unprofessional conduct by affixing his engineering seal to a letter (the "Letter") addressed to Dick's Lumber, which he knew contained statements that were untrue as of the date he sealed it, namely that:

- a) the site inspection had been completed on the roof truss or trusses at a property in Vancouver;
- b) that the site inspection found the trusses were manufactured in accordance with the truss drawings; and
- c) that all bracing, hangers and installation of the trusses had been completed satisfactorily.

Mr. Klarich admitted that he issued the Letter to a representative of Dick's Lumber when he knew that the representations were untrue as of the date he issued it. Mr. Klarich further admitted that he issued the Letter to the representative of Dick's Lumber, who is not licensed to engage in the practice of professional engineering, in circumstances where:

- d) Mr. Klarich had not carried out the engineering work necessary to support the representations;
- e) Mr. Klarich knew that the engineering work necessary to support the representations would be, or had been, carried out by the representative of Dick's Lumber without

Mr. Klarich having implemented appropriate quality management procedures in respect of direct supervision; and

f) the representative of Dick's Lumber was left to decide whether and when to issue the Letter to third parties.

Through the circumstances of items d) to f) above, Mr. Klarich admitted that he enabled the representative of Dick's Lumber to fulfill the role of a professional engineer.

As part of the Consent Order, Mr. Klarich agreed to the following:

- 1. His membership in Engineers and Geoscientists BC is suspended for a period of two months, commencing on March 1, 2018.
- 2. From the date of signing the Consent Order until March 1, 2018, Mr. Klarich will limit his practice to projects he is currently engaged on and will not take on any new engineering work.
- Upon the resumption of his practice following the suspension, he will undergo a Practice Review conducted by Engineers and Geoscientists BC, and will pay the costs associated with the Practice Review.
- 4. He must, on or before May 15, 2018, complete and pass the Professional Practice Examination of Engineers and Geoscientists BC.
- 5. He must, on or before May 15, 2018, complete the Professional Engineering and Geoscience in BC Online Seminar.
- 6. He will pay \$6,000 towards the costs incurred by Engineers and Geoscientists BC within 30 days of the date of the Consent Order.
- If he fails to comply with any of the terms of the Consent Order, his membership in Engineers and Geoscientists BC will be suspended until every default has been remedied.

Edward Joe Yam Lee

Mr. Lee was previously suspended in 1995 and 1996 as a result of disciplinary action. Mr. Lee complied with the conditions under the 1995 and 1996 Orders.

A Notice of Inquiry was issued to Mr. Lee in April 2017 regarding his use of engineering seal. In lieu of proceeding to a disciplinary inquiry, Mr. Lee agreed to a Consent Order dated October 31, 2017. By way of the Consent Order, Mr. Lee admitted that he demonstrated unprofessional conduct, incompetence or negligence in 2007 by sealing a drawing for the connection of air conditioning equipment to a cooling tower when the drawing was not prepared under his direct supervision. Mr. Lee admitted that he did not have adequate knowledge of the cooling system at

the property at the time the drawing was sealed and that by sealing the drawing he misrepresented to the Strata Corporation that he prepared or supervised the preparation of the drawing. Mr. Lee admitted that while the drawing was marked "for management approval and construction," he knew the drawing was conceptual only and could not safely be issued for construction.

As part of the Consent Order, Mr. Lee agreed to the following:

- 1. His membership in Engineers and Geoscientists BC is cancelled effective March 1, 2018.
- 2. From the date of signing the Consent Order to March 1, 2018, Mr. Lee will make arrangement for the orderly transfer of his ongoing professional engineering project files to other professional engineers.
- 3. Within 30 days Mr. Lee will pay a fine in the amount of \$1,500 to Engineers and Geoscientists BC.
- 4. Within 30 days Mr. Lee will pay \$7,500 towards the legal costs incurred by Engineers and Geoscientists BC.
- In the event that Mr. Lee fails to comply with the terms of the Consent Order, his membership with Engineers and Geoscientists BC will be suspended until every default has been remedied.

Zhanchao Zhao, P.Eng.

A Notice of Inquiry was issued to Zhanchao Zhao, P. Eng., regarding a practice review Dr. Zhao underwent which identified a number of deficiencies with respect to Dr. Zhao's practice from 2012 to 2014. In lieu of proceeding to a disciplinary inquiry, Dr. Zhao signed a Consent Order agreeing that, in general, Dr. Zhao:

- 1. failed to have documented checks of his engineering work;
- 2. failed to have documented independent reviews of structural designs; and
- 3. failed to obtain and review engineered roof truss shop drawings.

Dr. Zhao further agreed that, on two residential houses, he demonstrated unprofessional conduct, incompetence or negligence as a result of deficiencies and inconsistencies in his designs.

Between 2015 and 2017, Dr. Zhao agreed that he failed to follow through on commitments he made to the Practice Review Committee that he limit new work until an aggressive, supervised program of professional development be completed and that he arrange for independent review of all projects.

As part of the Consent Order, Dr. Zhao agreed to the following:

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- 1. That he is the subject of direct supervision for a period of at least twelve months, the first three months of which Dr. Zhao will work full time in the supervising professional's office.
- 2. During the period of direct supervision, Dr. Zhao must successfully complete a number of courses and examinations.
- 3. That twenty-four months after the completion of direct supervision, Dr. Zhao will undergo a practice review unless his engineering firm obtains OQM certification.
- 4. That he will pay a fine in the amount of \$3,000 and \$3,000 towards legal costs.

Bill Barwig, P.Eng.

Engineers and Geoscientists BC issued a Notice of Inquiry to Mr. Barwig in December 2017 regarding his design for a raft foundation for a business in Pitt Meadows, BC. In lieu of proceeding to a disciplinary inquiry, Mr. Barwig agreed to a Consent Order dated March 8, 2018. By way of the Consent Order, Mr. Barwig admitted that he demonstrated unprofessional conduct, incompetence, or negligence as:

- i. his structural design for the Raft Foundation was under-designed with respect to reinforcing steel size and bar spacing, resulting in a design that provided inadequate support for the intended load;
- ii. his design was based empirically on his experience with a similar project, but he failed to reconcile differences in design conditions between the two projects;
- iii. his design was based on the existence of an interaction purportedly supported by literature (*Brzev and Pao*), but he failed to analytically apply the theory presented in that literature to his specific design; and
- iv. he departed from the standard methodology for analysis and design of a raft foundation, absent the support of rigorous and peer reviewed analysis to justify such departure.

Further, by way of the Consent Order, Mr. Barwig admitted that he failed to comply with section 14(b) of the Bylaws, and that he failed to establish and maintain documented quality management processes for his practice. Specifically that he failed to:

- v. retain complete project documentation for a minimum period of 10 years;
- vi. conduct regular, documented checks of his structural engineering work using a written quality control process appropriate to the risk associated with the work; and
- vii. ensure that documented independent reviews were conducted of his structural design prior to construction.

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As part of the Consent Order, Mr. Barwig agreed to the following:

- 1. His membership in Engineers and Geoscientists BC is suspended for a period of two months commencing on March 12, 2018.
- Following the end of his suspension, his structural engineering design practice will be restricted for at least 4 months to structures falling under the BCBC definition of Part 9 structures.
- 3. He must, before the restriction in item 2 is lifted, and at his own cost, successfully pass the examination titled "07-Str-B5 Foundation Engineering." The restriction on his practice will remain until he has done so.
- 4. At least 3 months after and no later than 6 months after the lifting of the restriction imposed in item 2, he will undergo a Practice Review conducted by Engineers and Geoscientists BC and will pay the costs associated with the Practice Review.
- 5. He will pay \$6,000 towards the legal costs incurred by Engineers and Geoscientists BC.
- If he fails to comply with any of the terms of the Consent Order, his membership with Engineers and Geoscientists BC will be suspended until every default has been remedied.

Frank Hup Mui

Engineers and Geoscientists BC issued a Notice of Inquiry to Mr. Mui in October 2017 regarding his structural design for a commercial property in Delta, BC. In lieu of proceeding to a disciplinary inquiry, Mr. Mui agreed to a Consent Order dated March 13, 2018. By way of the Consent Order, Mr. Mui admitted that he demonstrated unprofessional conduct, incompetence or negligence as:

- A. His structural design of the lateral force resisting system for an extension of the mezzanine level within the Property was deficient, insofar as it:
 - a. used ductility and overstrength factors incorrectly;
 - b. was based on an incorrect application of the principles of force resolution;
 - c. relied on critical knee brace connections that were inadequate to resist the required seismic loads;
 - d. did not include a positive connection between the column and beam resulting in an unstable solution; and
 - e. did not present sufficient information on the drawings for a reviewer or contractor or other professional to ascertain with certainty the load resisting system and the critical components of such a system like the knee brace connection and the foundation connection;

all of which resulted in a design that could not be safely implemented;

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- B. after the adequacy of his structural design was questioned by the Corporation of Delta, he stated to Engineers and Geoscientists BC that he reviewed the design and found it to be satisfactory and in accordance with the British Columbia Building Code (the "Code") when in fact it was not satisfactory and was not in accordance with the Code.
- C. after the adequacy of his structural design was further questioned in an interview conducted pursuant to section 30(4) of the *Engineers and Geoscientists Act*, he delivered to Engineers and Geoscientists BC a new set of calculations and free body diagrams of the design. The new set of calculation and free body diagrams reflected that he had corrected the calculation of the applicable forces, but he failed to translate the revised calculations into connection designs that could resist the calculated forces. Further, the revised design failed to correct the problem identified above at item A(c).

Further, by way of the Consent Order, Mr. Mui admitted that he failed to comply with section 14(b) of the Bylaws, and that he failed to establish and maintain documented quality management processes for his practice. Specifically, Mr. Mui admitted that he failed to:

D. ensure regular, documented checks of his engineering work using a written quality control process.

As part of the Consent Order, Mr. Mui agreed to the following:

- His membership with Engineers and Geoscientists BC is cancelled effective June 1, 2018.
- 2. During the period from March 13, 2018 to June 1, 2018, he must:
 - a. make reasonable arrangements for the orderly transfer of his ongoing professional engineering project files to other professional engineers;
 - b. limit his practice to those project files that he is currently engaged on and not take on any new project files or other engineering work;
 - c. be subject to direct supervision by a "Supervising Engineering Professional" (the "Supervising Professional") as described in the *Quality Management Guidelines – Direct Supervision*, v. 1.3 (the "Direct Supervision Guideline"). The Supervising Professional must be approved in writing and in advance by the Registrar of the Association. The Supervising Professional shall provide "direct supervision", as defined in the Act and as set out in the Direct Supervision Guideline, in respect of all engineering work performed by Mr. Mui (the "Direct Supervision"); and
 - d. pay the costs of the Supervising Professional providing the Direct Supervision.

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- He must pay \$4,000 towards the legal costs incurred by Engineers and Geoscientists BC.
- In the event that he fails to comply with any of the terms of the Consent Order, his membership with Engineers and Geoscientists BC will be suspended until every default has been remedied.

Joseph Jean-Marc Bohemier

Engineers and Geoscientists BC issued a Notice of Inquiry to Mr. Joseph Jean Marc Bohemier, P.Eng, in January 2018 regarding his use of his engineering seal on letters of assurance, specifically a Schedule C-B. Instead of proceeding to a disciplinary inquiry, Mr. Bohemier agreed to a Consent Order dated April 19, 2018. By way of the Consent Order, Mr. Bohemier admitted that he demonstrated unprofessional conduct, incompetence or negligence by sealing a Schedule C-B for fire suppression, which is outside of Mr. Bohemier's training and experience.

Mr. Bohemier admitted that he signed the Schedule C-B despite not conducting field reviews, and that he had not reviewed the supporting documents for the fire suppression system.

As part of the Consent Order, Mr. Bohemier agreed to the following:

He will resign his membership with the association, and will not re-apply for membership or licensure for six months from the date of the Consent Order.

- 1. He will pay \$4,000 toward the association's legal costs within 30 days of the date of the Consent Order.
- If he re-applies for membership, he must complete and pass the Professional Practice Examination and the Professional Engineering and Geoscience Practice in BC Online Seminar.
- 3. If his re-application for membership or licensure is approved, he must not sign or seal any letters of assurance that include fire suppression engineering.
- 4. If his re-application for membership or licensure is approved, he will undergo a Practice Review six months after he is re-admitted.

Bjarne Carlsen

Engineers and Geoscientists BC issued a Notice of Inquiry to Mr. Bjarne Carlsen in January 2018 regarding engineering services he provided relating to a composite lock-block wall and rock-fill slope for a residential property in Summerland, BC. Instead of proceeding to a disciplinary inquiry, Mr. Carlsen agreed to a Consent Order dated May 28, 2018. By way of the Consent Order, Mr.

Carlsen admitted that he had demonstrated unprofessional conduct in connection with engineering services he provided to the property's owner.

Among other defects, Mr. Carlsen admitted that he did not conduct adequate slope stability and factor of safety analyses, he did not properly consider the slope stability and safety implications of relocating the lock-block wall, he did not obtain approval from the proper authority to relocate the lock-block wall, and he did not retain – or was unable to produce – important documents relating to his work on the project.

Mr. Carlsen admitted that this conduct is contrary to Principles 1 and 2 of the *Code of Ethics*. Mr. Carlsen also admitted that he failed to comply with section 20(9) of the *Engineers and Geoscientists Act* by failing to affix his stamp or seal to a geotechnical report he prepared for the project in July 2007.

By way of the Consent Order, Mr. Carlsen also admitted that he failed to comply with section 14(b) of the Bylaws. Mr. Carlsen did not establish and maintain documented quality-management processes for his practice. He failed to retain documentation relating to the project for the required time period, did not properly conduct quality-control checks of his work, and did not ensure that a documented independent review of the project was conducted during implementation or construction.

As part of the Consent Order, Mr. Carlsen agreed to resign his membership in the association effective June 30, 2018, and to not re-apply for membership or licensure. Between May 28 and June 30, 2018:

- 1. He must make reasonable arrangements for the orderly transfer of his ongoing professional engineering project files to other professional engineers;
- 2. He must limit his practice to those project files that he is currently engaged on and not take on any new project files or other engineering work;
- To the extent that he performs any professional engineering during this period of time, his professional engineering work must be peer reviewed pursuant to the association's Discipline Committee Ordered Peer Review Policy;
- 4. The peer reviewer must be approved in advance in writing by the association's Registrar.

Mr. Carlsen agreed to pay \$7,000 toward the association's legal costs within 30 days of May 28, 2018.

If Mr. Carlsen fails to comply with any of the terms of the Consent Order from May 28, 2018, to June 30, 2018, his membership in the association will be suspended until every default has been remedied in accordance with the terms of the Consent Order.

Ahmed Raza Syed, P.Eng.

Engineers and Geoscientists BC issued two Notices of Inquiry to Mr. Syed in June 2017 related to two separate complaint matters. The Notices of Inquiry concerned Mr. Syed's failure to comply with requests of the Investigation Committee of Engineers and Geoscientists BC that he provide his complete files for multiple projects that were the subject of the complaint matters (the "Projects").

A disciplinary inquiry was held on July 20, 2017. A panel of the Discipline Committee (the "Panel") heard evidence from witnesses and Mr. Syed in relation to the allegations set out in the Notices of Inquiry.

On September 18, 2017, the Panel issued their Determination which stated that the allegations set out in the Notices of Inquiry were proven on the balance of probabilities and constitute a breach of s.30(4) of the *Engineers and Geoscientists Act*, R.S.B.C 1996, c. 116.

On February 4, 2018, the Panel issued their Decision and Order on Penalty and Costs and imposed the following conditions on Mr. Syed's membership with Engineers and Geoscientists BC:

- 1. He must pay a fine in the amount of \$5,000.
- 2. He must complete and pass the Engineers and Geoscientists BC Professional Practice Examination and provide written notice once he has done so.
- 3. He must complete the Professional Engineering and Geoscience Practice in BC Online Seminar and provide written notice once he has done so.
- 4. He must pay costs to Engineers and Geoscientists BC in the amount of \$7,500.
- 5. If he does not fulfil the requirements of items 1-4 by May 31, 2018, his membership in Engineers and Geoscientists BC will be suspended until he has done so.

Eric Chrysanthous

In May 2017, an inquiry was held in relation to allegations of unprofessional conduct in relation to Mr. Chrysanthous' written communications, which were threatening in nature, to TransLink officials and others. In March 2018, the Discipline Hearing Panel released a decision where it found that Mr. Chrysanthous demonstrated unprofessional conduct, but withheld its decision on sanctions. In August 2018, the Discipline Hearing Panel released a decision stating that Mr. Chrysanthous' membership with the Association is cancelled.

The website notice can be found here.

Discipline File Summary July 1, 2017 to June 30, 2018

DISCIPLINE FILES	
Open discipline files carried forward as of July 1, 2017 ¹ :	5
Files received from Investigation Committee	14
Direct applications to the Discipline Committee to Apply Discipline from another Jurisdiction	0
Application to the Discipline Committee for Breach of a Consent Order	0
Application to the Discipline Committee for Interim Suspension	0
Discipline Files Closed between July 1, 2017 and June 30, 2018:	7
Total Discipline Files Open at end of June 30, 2018:	12

Outcomes of Discipline Files between July 1, 2017 and June 30, 2018



Paul Adams, P.Eng., FEC Chair, Discipline Committee

For files in progress, this statistic is now measured from the date the Investigation Committee approves the Notice of Inquiry.



ITEM 5.10.7

DATE	August 22, 2018
REPORT TO	Council for Information
FROM	Deesh Olychick, Director of Member Services
SUBJECT	Division Activity Report 2017/ 2018
LINKAGE TO STRATEGIC PLAN	Members and organizations practice to high professional and ethical standards.

Purpose	Provide a summary of division activities from the 2017/2018 fiscal year.
Motion	No motion required.

BACKGROUND

The association currently supports five divisions under its division program. Divisions are made up of members of the association that represent a common or specialized area of the professions of engineering and geoscience. The purpose of each division is to provide a forum for professionals to identify, examine, discuss or resolve specific challenges, emerging issues or opportunities as they relate to their common or specialized area. The association's current divisions include:

- Engineers and Geoscientists in the Resource Sector Division
- Energy Efficiency and Renewable Energy Division
- Environmental Professionals Division
- Municipal Engineers Division
- Women in Engineering and Geoscience Division

All association divisions report to Council. For professional practice related matters, the divisions report to Council through the Professional Practice Committee.

A new reporting system was introduced in 2017 to ensure Council receives regular updates on the activities of all five divisions, typically twice per year. Listed below is a summary of division activities for the fiscal year from July 2017 to June 2018.

DIVISION SUMMARY

- Divisions assisted the association with developing, consulting and providing feedback on numerous guidelines and other professional practice related documents
- Divisions held 11 successful events related to their specific area of interest, which included seminars, annual general meetings, webinars, tours and social events
- Divisions played an integral role in developing topics, soliciting speakers and managing professional development seminars for 4 professional development streams at the 2017 Annual Conference & AGM

DIVISION CONSULTATION/REVIEW CONTRIBUTIONS

Divisions have been engaged to review and provide feedback on the following guidelines:

- Joint Engineers and Geoscientists BC/AIBC Professional Practice Guidelines Whole Building Energy Modelling Services
- Engineers and Geoscientists BC Professional Practice Guidelines Performance Based Seismic Design of Bridges.
- Joint Engineers and Geoscientists BC/BC Forest Professionals Practice Guidelines Professional Services in the Forest Sector - Crossings

Divisions have been engaged to review and provide feedback on the following consultation requests:

- Engineers Canada's Draft National Guideline: Principles of Climate Adaptation and Mitigation for Professional Engineers
- FP Innovation's Technical Report on Adapting Resource Road Infrastructure to Climate Change
- Forest Practices Boards' Special Investigation on Resource Road Construction in Steep
 Terrain
- Provincial government's request for feedback via survey on the professional reliance model
- Engineers Canada Guideline on Climate Change Adaption and Mitigation
- Metro Vancouver's April 2018 Climate 2050 Discussion Paper

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NOTABLE EVENTS/INITIATIVES

The divisions hosted and participated in several notable events and initiatives during the 207/2018 fiscal year some of which are included below.

Energy Efficiency & Renewable Energy Division:

- Organized 4 Professional Development Seminars for the Energy Efficiency and Renewable Energy stream at the 2017 Engineers and Geoscientists BC Annual Conference
- Hosted two tours of specific interest to its members, including General Fusion in Burnaby and Powertech Labs in Surrey

Engineers & Geoscientists in the Resource Sector:

- Awarded the 2017 Engineers & Geoscientists in the Resource Sector Bursary of \$2000 to Michelle Wesolowski
- Hosted a series of webinars on the topics of Porewater and Sediment Sampling; Folisols: Classification, Characteristics and Operational Challenges Across Resource Industries; and Metal Leaching and Acid Rock Drainage on Resource Roads: Issues and Challenges
- Published an Engineers and Geoscientists in the Resource Sector Newsletter
- Hosted Engineers and Geoscientists in the Resource Sector Annual General Meeting
- Organized a well-attended field trip and 4 Professional Development Seminars for the Engineers & Geoscience in the Resource Sector stream at the 2017 Engineers and Geoscientists BC Annual Conference

Environmental Professionals Division:

- Awarded the 2017 Environmental Award to the Mark Creek Flume Flood Management and Rehabilitation Project
- Organized 4 Professional Development Seminars for the Environmental Engineering and Geoscience stream at the 2017 Engineers and Geoscientists BC Annual Conference
- Organized a Field Trip Tour of the Britannia Mine, which included the acid mine drainage/groundwater treatment plant, 4100 level portal/tunnel, the micro hydro-power plant using the acid mine drainage, and the groundwater management system
- Facilitated the nomination process and evaluation of submissions for the 2017 association Environmental Award, which was awarded to the Mark Creek Flume Flood Management and Stream Rehabilitation Project in Kimberley BC, submitted by Aqua-Tex Scientific Consulting

Municipal Engineers Division:

- Hosted Municipal Engineering Division Annual General Meeting, which included workshops
- Organized 4 Professional Development Seminars for the Municipal Engineering stream 2017 Engineers and Geoscientists BC Annual Conference
- Organized their spring professional development session on the topic of improving your chances of receiving grants for your municipality's infrastructure projects

Women in Engineering and Geoscience Division:

- Acknowledged December 6th École Polytechnique Massacre Memorial
- Held their Annual General Meeting and elected 12 new executive members
- Organized a breakfast event to celebrate International Women in Engineering Day
- Organized UVic Leadership Through Diversity in Engineering Panel Discussion
- Participated in the 30-by-30 Champions Group teleconference; and the BC Public Service Diversity and Inclusion Action Plan teleconference
- Are in the process of continuing to revitalize the division with their new team of volunteers



ITEM 5.10.8

DATE	August 21, 2018
REPORT TO	Council for Information
FROM	Deesh Olychick, Director, Member Services Mara Buzgar, Member Services Coordinator Tim Verigin, Member Services Coordinator
SUBJECT	Annual Branch Engagement Report
LINKAGE TO STRATEGIC PLAN	Engaging with members and organizations to ensure high professional ethical practice standards.

Purpose	To update Council on Branch Engagement Activities for the 2017/2018 fiscal year.
Motion	No motion required.

BACKGROUND

Council has identified branches as playing a fundamental role in increasing member engagement. Branches currently support and drive member engagement in several different ways. Below is a summary of the branch achievements for the 2017/18 fiscal year.

BRANCH SUMMARY

- In the 2017/2018 fiscal year, the branches of Engineers and Geoscientists BC held 115 events for association members with a total attendance of 3,096 members.
- Out of the 115 events, 92 events were professional development events in the form of presentations, tours and panel discussions.
- Out of these 92 events that offer professional development, 30 tours were offered to members throughout the province.
- In total, 23 events were social events created to support members in connecting with peers in their communities.
- Supporting Registration: Branches held seven seminars to support Members-in-Training and their path to professional licensure. These events attracted a total of 257 attendees.
- Sustainability: Branches held six events that are linked to sustainability and climate change, engaging with 183 attendees.

• Diversity: Branches held two events for Internationally Trained Engineers and Geoscientists, supporting 70 members in their professions.

NOTABLE EVENTS

Presentations

- Lunch and Learn and Tour of Layfield Geomembranes (Burnaby/New West)
- Managing and Controlling BC Wild Fires (Central Interior)
- LNG Bunkering for Marine Vessels (Fraser Valley)
- Asset Management Presentation (Peace River)
- Branch Dinner Meeting: Artificial Intelligence and Robotics (Richmond/Delta)
- Stakeholder-Centric Project Management (South Central)
- Sea-to-Sky Branch Dinner: North Shore Traffic (Sea to Sky)
- Two-Part Seminar: Starting your own Business (Tri-City)
- Developments in Tsunami Hazard Analysis: Wave and Inundation (Victoria)
- Engineering an Extraordinary Career (Vancouver Island)
- Lunch Seminar: Ore Sorting in the Mining Industry (Vancouver)

Tours

- Skytrain Maintenance and Operations Centre (Burnaby)
- Skookumchuck Pulp Mill Tour (East Kootenay),
- Langley Events Centre (Fraser Valley),
- Ridley Island Propane Export Terminal (Northern),
- Tour of Copper Mountain Mine (Okanagan)
- Geology Hike (South Central) (Geoscience focused),
- Golder Associates Materials Testing Lab (Tri-City Branch)
- Tour of False Creek Neighborhood Energy Utility Centre (Vancouver)

Sustainability Related Events

- Sustainability Panel Discussion (Vancouver)
- Tour of Wood Innovation Research Lab (Central Interior)
- Branch Dinner: Battery Powered Vehicles: Should you be buying one? (Richmond/Delta)
- BCIT Smart Grid Tour (Burnaby)
- Nelson Hydro Dam and Community Solar Garden Tour (West Kootenay)
- Dinner Presentation: Climate Change in Northwest BC: What to expect as our reservoirs of Ice and Snow Disappear (Northern)

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Social Events

- Golf Tournaments raising money for educational scholarships and local charities.
- Coffee Shop Social (Peace River)
- Family Friendly BBQ's and Picnics
- Winter and Spring Socials (South Central)
- Summer Fireworks and Cruise (Sea-to-Sky)
- Bouldering and Networking Event (Victoria)
- EIT/GIT Social Night (Peace River)

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ITEM 5.10.9

DATE	August 21, 2018				
REPORT TO Council for Information					
FROM	Gillian Pichler, P.Eng., Director, Registration				
SUBJECT	Registration Admissions Report to Council for Fiscal 2018				
	Goal 3: Promote and Protect the Professions of Engineering and				
LINKAGE TO	Geoscience: Strategy 2. Assess and improve admission processes and tools				
STRATEGIC FL	to facilitate robust and timely assessment of applicants.				
Purpose	To report on the admissions and membership statistics and performance for Fiscal				
	2018.				
Motion	No motion.				

BACKGROUND

The Registration Report (Admissions & Membership) is provided to Council on a semi-annual basis. Reports are provided to Council at its September meeting to provide fiscal year-end results; and at its first meeting of each calendar year to report on the prior calendar year for budget planning purposes. Members of Council are invited to provide feedback on any aspect of the attached report and are welcome to ask for additional analysis.

DISCUSSION

Changes of Note from the February 2018 Registration Admissions Report

a. Volumes

Total application volumes including reinstatements and Life Memberships remained virtually steady at 4,661 despite the drop in approximately 200 Life Membership applications. First time in Canada applications (requiring the most resources) increased 5% in Fiscal 2018, with an overall increase in total new applications of 4%.

The percentage of the total of new P.Eng. applications that were received from Canadian educated applicants increased slightly to 54%. Iran continues to be the

top source country of applicants after Canada, representing 9% of total first time in Canada applicants.

b. Intra-Process KPIs

KPIs have been developed for each part of the Registration process and are being monitored on a function, staff and volunteer performance basis, with stretch goals established for KPIs for which each staff member has responsibility.

c. Accredited Employer Member-in-Training Program

The Program, made permanent by Council in April continues to expand. To date, 45 Engineers-in-Training whose employers have received accreditation have been had their competencies approved on an expedited basis. Evaluation of the experience of EITs takes an average of 26 days including those that are audited. This is 36% below the evaluation time for all EITs applying for P.Eng.. Eighteen companies are accredited or completing accreditation; and another five have expressed interest in joining the program and are in various stages of training. A listing of participating employers can be found <u>here</u>.

d. Limited Licence Pilots

The pilot to assess the use of the current competency assessment framework for reporting qualifying experience for Limited Licence applicants and the bridging pilot from Eng.L. (Limited Licensee) to P.Eng. are both experiencing low uptake. Recommendations on these two pilots will be made to Council in November.

e. Pan-Canadian Competency Based Assessment (CBA) Project

In May, APEGS' members voted unanimously at its AGM to change its regulations to require competency assessment using the pan-Canadian (BC) framework. EPEI and APEGS applicants can now apply through the pan-Canadian competency system to begin a competency assessment. OIQ has been actively examining whether the pan-Canadian system will suit its needs and is expected to make a decision at its Council meeting in September. APEGNB has verbally expressed its intention to adopt the system. APEGA launched its own online assessment tool in May and has close to 500 applicants participating. APEGA continues to participate in the User Steering Group and is monitoring whether it will move to the pan-Canadian system in the future. A presentation on the project and a demo of the system was made to PEO's Experience Requirements Committee in mid-August.

f. Canadian Environment Experience Pilot

On behalf of the National Admissions Officials Group, BC is piloting competency-based assessment of Canadian Environment Experience for engineering applicant, with the intent of providing an alternative to the current one-year requirement for experience in a Canadian Environment. The User Steering Group for the pan-Canadian CBA project is

concurrently determining the best way to incorporate indicators, advice and requirements for Canadian Environment competencies into the current framework.

g. Geoscience Competencies

Geoscience competencies and indicators continue to be developed, and we understand that Geoscientists Canada's intention is to use the BC Competency-Based assessment tool to launch national competencies for geoscience experience evaluation. More details are available in section 5.10 of the Agenda.

APPENDIX A – Statistics and Analysis

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ITEM 5.10.10

DATE	August 23, 2018						
REPORT TO	Council for Information						
FROM Jason Ong, Manager, Examinations, Geoscience Registration & Mem Training Program							
SUBJECT	Update on Geoscientists Canada's Admissions Support Tools Project – Phase II Competency Assessment						
	Goal 2: Establish, maintain and enforce qualifications and professional						
LINKAGE TO	standards.						
STRATEGIC PL	AN Strategy 4: Participate in initiatives that improve national harmonization of						
	regulatory processes.						
Purpose	To update Council regarding Geoscientists Canada's Admission Support Tools						
	ject – Phase II and its implications for implementation of Geoscience						
	competency assessment.						

BACKGROUND

None.

Motion

The last update to Council was in February 2018 and included portions of this background. The discussion section of this update will outline the major activities since then.

In December 2017, Geoscientists Canada received confirmation from Employment and Social Development Canada (ESDC) that its funding proposal for the Admission Support Tools ("AST") Project – Phase II had been accepted. As an International Qualification Recognition Program, the AST Project will receive a total of \$589,000 over 24 months beginning on January 29, 2018.

This phase of the AST project builds on the first phase (completed in 2014), which resulted in the development of the <u>Competency Profile for Professional Geoscientists at Entry to Practice</u>. Through its Canadian Geoscience Standards Council ("CGSC"), Geoscientists Canada intends to work with its constituent associations to develop a competency based-assessment tool for the purposes of assessing geoscience work experience and to launch a national bilingual online self-assessment module to allow internationally trained geoscientists to obtain a preliminary, low-stakes

determination on their qualifications relative to Canada's professional entry-to-practice requirements. The development and implementation of these tools at a national, collaborative level will help to further standardize licensing requirements across Canada and streamline the registration of those applying for the Professional Geoscientist (P.Geo.) designation. During the development of the AST project, Engineers and Geoscientists BC has demonstrated its existing competency assessment framework and online system for engineering experience and has expressed its willingness to work with the CGSC to develop a similar tool for assessment of geoscience competencies.

The specific objectives of the project are to:

- Determine from the existing competency profile which competencies are achievable through formal education, work experience or both;
- Develop a list of indicators for a work experience competencies framework;
- Develop a competency-based assessment tool for work experience to the pilot stage; and
- Create a national bilingual online self-assessment module.

DISCUSSION

The CGSC met in March 2018 with representatives from various constituent associations. The AST project plan moving forward was discussed and there was a commitment from all members and admissions officials attending to model the wording of the competencies and performance indicators after the Engineers and Geoscientists BC wording for its existing engineering competency framework. The Engineers and Geoscientists BC Competency Experience Reporting System was also demonstrated in detail. By the end of the two-day meeting, there was a commitment from all in attendance to move towards refining the geoscience competencies for the purpose of eventual inclusion in the Engineers and Geoscientists BC Competency Experience Reporting System.

At the meeting, two groups were created. The first is a Subject Matter Expert (SME) group that will be comprised primarily of geoscience practitioners representing a range of disciplines reflective of the membership at a national level. This SME group will also have representatives from academia as well. Its purpose will be to formally analyze and recommend which competencies should be assessed at the entry to practice level as well as determine the indicators. Delbert Ferguson, P.Geo./Eng.L. from Engineers and Geoscientists BC's Geoscience Committee is one of the subject matter experts.

The second group is the AST Working Group comprised of members of the CGSC, the CEO of Geoscientists Canada, as well as a Registration staff member from Engineers and Geoscientists BC (Jason Ong). This group is tasked with working with the AST project lead to work out the logistics of the SME group as well as the overall project deliverables related to engaging stakeholders at all constituent associations. A series of webinars to introduce the draft

competencies and performance indicators is planned for the week of October 1, 2018. Constituent associations will have the opportunity to provide feedback. A CGSC meeting is scheduled for the end of October 2018 to review the competencies and performance indicators in light of the information coming out of the webinar consultations.

A face-to-face meeting is scheduled for September 6, 2018 between the CEO of Geoscientists Canada, Andrea Waldie, P.Geo., along with the AST project leads, and Engineers and Geoscientists BC's Registration and Information Services senior staff. The discussion will focus on the logistics and business process of integrating the geoscience competencies into Engineers & Geoscientists BC's Competency Experience Reporting System.

A further project update will be provided early in the 2018/2019 Council year.

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ITEM 5.10.11

DATE	August 23, 2018
REPORT TO	Council for Information
FROM	Ann English, P.Eng. Chief Executive Officer and Registrar
SUBJECT	Council Road Map (as at September 7, 2018)
LINKAGE TO STRATEGIC PLAN	To uphold and protect the public interest through the regulation of the professions.

Purpose	To provide Council with the current status of the actionable items listed on the Council
	Road Map for 2017/2018
Motion	No motion required.

BACKGROUND

The attached document summarizes the expected agenda items that are planned to be brought forward to Council during the 2017/2018 Council year. The items are aligned with the Strategic Plan and assist Council in seeing the progress on elements of the 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 that the following items on the Work Plan have been postponed:

- Member Engagement Plan Update will be provided at the November 23, 2018 meeting.
- The following Professional Practice Guidelines will be carried forward and submitted for review at the November 23, 2018 Council meeting:
 - Professional Practice (revision)
 - Formwork and Falsework (new)
 - Groundwater at Risk of Pathogens (new)
 - Geotechnical Engineering Services for Building Projects (revision)

- Building Enclosure Engineering Services (revision)
- Retaining Wall Design and Field review Services (new)
- Professional Services in the Forest Sector Forest Roads (revision)

The Guidelines were carried forward from the April 27th and June 15th Council meetings due to the need to focus resources on higher priority projects.

- Report/Policy Bridge Eng.L. to P.Eng. will be carried forward to the November 23, 2018 meeting. Since the inception of this pilot in March 2016, 18 Engineering Licensees have applied; however only two of these have followed through with completing the recommended first stage of the process - a competency assessment. Of these, one (who is a Professional Engineer licensed in the United States) has completed the requirements and has been registered as a professional engineer. The other failed the competency assessment and has been provided feedback. The remaining 16 Eng L.s have either not begun to report their competencies or have stalled in so doing, possibly concluding that the value added by qualifying to become a professional engineer is not worth the time, expense and effort required to complete the requirements. Staff will be bringing a proposal to the Registration Committee in September for consideration regarding whether to make the program permanent or extend the pilot.
- Update/Policy: Move Eng.L. to Competency Assessment will be carried forward to the November 23, 2018 Council meeting. Of 48 Eng.L. applicants who have begun a competency assessment since March 2016 under this pilot, only 5 have completed an assessment. The pilot has therefore not progressed as planned. Staff will be taking a motion to the September 2018 Registration Committee meeting.
- Kindly note that the Induction Ceremony has been rescheduled for September 20, 2018.

ATTACHMENT A – Council Road Map (as at September 7, 2018)

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	Strategies	November 24 (Council Meeting)	February 8 (Half Day Council Forum)	February 9 (Council Meeting)	April 26 (Half Day Council Forum) CANCELLED	April 27 (Council Meeting)	June 14 (Full Day Council Forum)	June 15 (Council Meeting)	September 6 (Full Day Council Forum)	September 7 (Council Meeting)	October 18-20 (AC & AGM)
	Clarify the association's regulatory role and responsibilities through ongoing communication and engagement with members and other stakeholders.		Review of Legislative Amendments	Life Membership Bylaw Update	Professional Reliance Audit Review Update (presented at Feb. 9, 2018 Council Mtg.)	Life Membership Bylaw - draft bylaws for review	PSA Audit Results	Life Membership Bylaw - final bylaws for approval	Strategic Planning	Member Engagement Plan Update	
Goal 1 To uphold and protect the public interest through the regulation of the professions.						Member Engagement Plan Update		Report on AGM Motion 9	Professional Reliance Strategy		
	Identify and implement practices, programs, policies, bylaws, and <i>Act</i> amendments that improve Engineers and Geoscientists BC's ability to more effectively carry out its duty and objects.			Update on Software Engineering Enforcement/ Registration			Nomination & Election Review Task Force Recommendations	Nomination & Election Review Task Force Recommendations			
	Enhance members' awareness and use of	Professional Practice Guidelines:	Continuing Professional	Vancouver Building Bylaw Letters of Assurance (City of Vancouver requires endorsement by Council)		Professional Practice Guidelines: 1. Professional Practice (revision) 2. Formwork and Falsework (new) 3. Groundwater at Risk of Pathogens (new)		Professional Practice Guidelines: 1. Geotechnical Engineering Services for Building Projects (revision) 3. Building Enclosure Engineering Services (revision)		Professional Practice Guidelines: 2. Electrical Engineering Services for Building Projects (revision)	
Goal 2 Establish, maintain and enforce qualifications and professional standards.	professional practice resources.	Seismic Design of Bridges (new)	Guidelines: 1. Whole Building Energy Modelling (new) Report on AGM Motion 3		Professional Practice Guidelines: 4. Structural Engineering Services for Part 3 Buildings (revision)		Professional Practice Guidelines: 2. Designing Guards for Buildings (revision)		Professional Practice Guidelines: 1. Retaining Wall Design and Field Review Services (new) 3. Professional Services in the Forest Sector - Forest Roads (revision)		
						Council Policy on the Development of Professional Practice Guidelines		Report on AGM Motion 5		Report on AGM Motion 6	
	Deliver timely, outcomes-focused complaints and enforcement processes.	Quarterly I&D and Enforcement Reports		[Closed Agenda] Possible Referral of a specific case to the Discipline Committee pursuant to s. 33.1(2) (or electronic meeting by email in January 2018)		Quarterly I&D and Enforcement Reports		Quarterly I&D and Enforcement Reports		Year End I&D and Enforcement Reports	

	Develop a system for corporate regulation that demonstrates enhanced public protection.							Proposal to Revise the Compensation Policy for the Discipline Committee Report to Council by Advisory Task Force on Corporate Practice		
	Participate in initiatives that improve national harmonization of regulatory processes.			Report on APEGBC's Role in Geoscience Competency Assessment (Reg) Report on Competency SaaS Agreement with Participating Regulators						
	Implement the new brand and increase awareness of the high standards that Engineers and Geoscientists BC must meet.		Induction Ceremony				Induction Ceremony	Induction Ceremony		
								Canadian Environment Experience Alternatives Report, Working in Canada Seminar - Policy and Implementation Approval (Reg)		
Goal 3 Promote and protect the professions of engineering and geoscience (subject to goals 1 & 2).	Assess and improve admission processes and tools to facilitate robust and timely assessment of applicants.	Annual Update on Eng.L. to P.Eng. Bridging				Registration Fairness Panel Annual Rpt Convert Accredited Employer Training Program from Pilot to Permanent Policy on Risk-Based Limited Licence Assessment		Update: Enhanced MIT Program	Report/Policy Bridge Eng.L. to P.Eng. (Reg) Update/Policy: Move EngL to Competency Assessment (Reg)	
	Implement processes that support Engineers Canada's 30 by 30 program for improving the number of women in the professions.			Diversity Report (30 by 30 Initiatives) Report on AGM Motion 8 Report on AGM Motion 4						
	Clarify the association's regulatory role and responsbilities through ongoing communication and engagement with members and other stakeholders.	Member Engagement Plan Update Report on Engagement with Past Presidents		Report on AGM Motion 7		Dean's Presentation			Dean's Presentation	Appointment of Councillors tro Committees
	Sustaining Operations		KPI lindata	KBUladata		2010 Budget		2018 Audited Financial Statements	Approval of Auditors	
		Buuger Guidelines				2013 Duuget			KPI Update	

Item Completed

Item Behind Schedule (by end of September)

Item Behind Schedule (carried over to November 2018)

New Item

Items Advanced



ITEM 5.10.12

DATE	August 23, 2018
REPORT TO	Council for Information
FROM	Ann English, P.Eng. Chief Executive Officer and Registrar
SUBJECT	Council Attendance Summary (as at September 7, 2018)
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	No motion required.

BACKGROUND

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

At the end of the Council year, 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 amount of meetings that the average Councillor is required to attend and how many meetings each Committee holds.

ATTACHMENT A – Council Attendance Summary

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(Reg Comm)								✓						✓			✓	
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Attendance Required Attendance Not Required Attendance for Partial Meeting





ITEM 6.1

DATE	August 23, 2018
REPORT TO	Council for Decision
	Suky Cheema, CPA, CA
FROM	Chair, Audit Committee
SUBJECT	PricewaterhouseCoopers LLP (PwC) Auditor's Report FY2018
LINKAGE TO STRATEGIC PLAN	Continue to implement best practices in governance.

Purpose	To accept the Audit Committee report and approve the audited Engineers and Geoscientists BC Financial Statements for the fiscal year ended June 30, 2018.
Motion	1. That Council accept the report of the Audit Committee.
	2. That Council approve an appropriation of \$250,000, effective June 30, 2018,
	from the unrestricted General Operating Fund to the Property, Equipment and
	Systems Replacement Fund.
	3. That Council approve the audited Engineers and Geoscientists BC Financial
	Statements for the fiscal year ended June 30, 2018.
	4. That the President and the Chief Executive Officer and Registrar be authorized
	to sign the fiscal 2018 Financial Statements on behalf of Council.
	5. That the appointment of PricewaterhouseCoopers LLP, CPAs as the
	Association's external auditors for the fiscal year ending June 30, 2019 be
	recommended for final approval at the Annual General Meeting in October 2018.

AUDIT COMMITTEE PURPOSE

The purpose of the Audit Committee is to assist Council in fulfilling its oversight responsibilities by reviewing: the financial information which will be provided to the public and others; reviewing the systems of corporate controls which management and Council have established; and reviewing the external audit process.

BACKGROUND

On August 22, 2018, the Audit Committee met with the Engagement Leader of Audit & Assurance of PricewaterhouseCoopers LLP (PwC) to review the Auditor's Report to Audit Committee of Council and the draft audited Financial Statements of the Association, the Foundation, and the Benevolent Fund Society. The review focused on the unqualified audited financial results, notes, and supporting schedules for the fiscal periods ended June 30, 2018 for the Association, the Foundation and the Benevolent Fund Society. The Committee recommends to the Council, The Foundation Directors, and the Benevolent Society Directors approval of the entities' financial statements.

EXTERNAL AUDIT DISCUSSION

The review with the Auditor included the private discussion on the accounting and other staff of the Association and their co-operation in the external audit of the financial statements. The Audit committee confirmed to PwC it had no knowledge of fraud or internal control problems in the Association.

The Audit Committee has reviewed and discussed the relevant issues with both the PwC auditors and the Engineers and Geoscientists BC staff. PwC reviewed the following key areas, and found that the financial statements present fairly in accordance with Canadian audit standards and under Canadian accounting standards the results and positions of the entities. Below is the summary of audit findings as reported to the Audit Committee for Council by PwC.

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	Significant accounting, auditing and reporting matters							
Matter 1 – Risk of	Significant risk							
material misstatement due to management override (Significant risk)	Accounting regulatory authorities require that the risk of material misstatement due to management override of controls be considered a significant risk on every audit engagement.							
(0.9	Audit work performed							
	 PwC understood management processes and internal controls in place, including application, authorization and monitoring controls; On a risk-based approached we used data auditing tools to select a sample of journal entries to examine and test for reasonableness; PwC examined accounting estimates, taking into account potential management bias; PwC ensured the general ledger is reconciled to the financial statements; Consistent with Canadian generally accepted auditing standards, PwC also implemented a level of unpredictability into our procedures; and There were no exceptions noted from our testing. 							
Matter 2 – Risk of	Significant risk							
fraud in revenue recognition (Significant rick)	Accounting regulatory authorities require that the risk of fraud in revenue recognition be considered as a significant risk on every audit engagement.							
(Significant risk)	Audit work performed							
	 PwC understood management processes and internal controls in place, including application, authorization and monitoring controls; 							
	 PwC have performed substantive audit procedures to address the risk that revenue could be misstated due to fraud; 							
	 PwC recalculate the portions recognized as revenue and deferred at year end; and 							
	 There were no exceptions noted from PwC's testing. 							

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Matter 3 - Response	Area of focus								
to Audit Committee request - Executive Officer Expenses (area of focus)	At the request of the Audit Committee, PwC have reviewed a sample of the Executive Officers expenses to ensure that they are in-line with the Association's reimbursement policy and have been appropriately approved.								
	Audit work performed								
	Executive Officers expenses totaled \$38,000. Of this, \$27,600 related to travel expenses.								
	Using PwC's professional judgment, PwC selected a sample of 20 transactions to test four expenses for each officer. Other than the one instance noted below, PwC agreed these expenses to supporting documentation without exception. All expenses were considered to be consistent with the Association's reimbursement policy and were properly authorized.								
	As a result of PwC's work performed, PwC noted one instance of the same expense being paid twice to an executive. PwC followed up and noted that was due to the executive's assistant including it in a claim prepared for the executive as well as the executive himself claiming it. PwC recommends the executive review the expenses claims submitted on their behalf by their assistants to avoid double payment happening again the future.								
	As discussed at the audit-planning meeting, the CEO's expenses are approved by the CFO. This could create an issue where the CFO is put under pressure to approve an expense. As an alternative to this current policy could remain, and the CEO's expenses are then approved by the audit chair once a quarter. Another alternative could be that the CEO's expenses approved the by President.								

Fraud and illegal acts

No fraud or illegal acts involving senior management, or employees with a significant role in internal control or that would cause a material misstatement of the financial statements and no illegal acts came to PwC's attention as a result of their audit procedures.

As part of PwC's completion procedures, PwC asks management to reconfirm that they are not aware of any known, suspected or alleged incidents of fraud or illegal acts not previously discussed with PwC. This reconfirmation is included as part of management's representation letter to us.

In addition, PwC reconfirms that the Audit Committee is not aware of any known, suspected or alleged incidents of fraud or illegal acts not previously discussed with them.

Summary of unadjusted and adjusted items

As a result of audits, PwC identified no unadjusted or adjusted items.

Internal control recommendations

Canadian Auditing Standards requires PwC to communicate in writing to the Audit Committee internal control weaknesses identified as part of their audit that are considered to be significant deficiencies.

Other than the item noted above regarding the executives expenses, we have no other or significant internal control recommendations to report.

Independence

PwC confirmed their independence with respect to the Association.

Other information in documents containing audited financial information

Once it is available, PwC will read the annual report and consider whether the content or manner of presentation is materially consistent with the financial information covered by their auditor's report.

Subsequent events

No subsequent events which would impact the financial statements other than those disclosed have come to PwC's attention.

EXECUTIVE OFFICERS' EXPENSES

The Audit engagement provides that the audit include an audit of the Executive Officers expenses. PwC reviewed and verified a sample of expenses to supporting documentation and found one discrepancy.

PwC noted one instance of the same expense being paid twice to an executive. PwC followed up and noted that was due to the executive assistant including in a claim prepared for the executive as well as the executive himself claiming it. The executive has since repaid the claim. PwC recommends the executive review the expenses claims submitted on their behalf by their assistants to avoid double payment happening again in the future.

As discussed at the audit-planning meeting, the CEO's expenses are approved by the CFAO. This could create an issue where the CFAO is put under pressure to approve an expense. As an alternative to this current policy could remain, and the CEO's expenses are then approved by the audit chair once a quarter. Another alternative could be that the CEO's expenses approved the by President.

After reviewing PwC's report and a thorough discussion in the August 22nd meeting, the Audit Committee recommends to continue the current approval process and to add an additional layer of review by the Audit Committee Chair. The Chair would review the CEO's expenses on a quarterly basis. In the event that the chair is absent or unavailable, another member of the audit committee will review the CEO's expenses.

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INTERNAL CONTROL REVIEW

The review of current internal controls of the Association was undertaken by enquiry and discussion by the Audit Committee Chair that included enquiries the senior staff with a focus on events, reconciliations, and errors. The discussions indicated normal limitations in a smaller staff environment and the need to return to the subject on the annual cycle.

RECOMMENDATIONS

The enclosed PwC Auditors' Report and Financial Statements package and this memo provide the reporting of the Audit Committee's review of the External Audit to Council. The Audit Committee recommends that Council receive and approve the motions below of this report.

Audit Committee Members

Suky Cheema, CPA, CA – Chair Dr. Nimal Rajapaske, P.Eng John Turner, P.Ag. (ret) Jeremy Vincent, P.Geo Tim Watson, P.Eng

MOTIONS

- 1. That Council accept the report of the Audit Committee.
- 2. That Council approve an appropriation of \$250,000, effective June 30, 2018, from the unrestricted General Operating Fund to the Property, Equipment and Systems Replacement Fund.
- 3. That Council approve the audited Engineers and Geoscientists BC Financial Statements for the fiscal year ended June 30, 2018.
- 4. That the President and the Chief Executive Officer and Registrar be authorized to sign the fiscal 2018 Financial Statements on behalf of Council.
- 5. That the appointment of PricewaterhouseCoopers LLP, CPAs as the Association's external auditors for the fiscal year ending June 30, 2019 be recommended for final approval at the Annual General Meeting in October 2018.

APPENDIX A – Summary of Financial Results 2017/2018

APPENDIX B – Audited Financial Statements

APPENDIX C – Balance Sheet with Descriptions and Explanations for Changes

APPENDIX D – Revenue & Expenditures with Descriptions and Explanations for Changes

APPENDIX E – FY2017/18 Departmental Statement

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ITEM 6.2 DATE August 8, 2018 REPORT TO Council for Decision FROM Jennifer Cho, CPA, CGA
Chief Financial and Administration Officer SUBJECT Budget Webinar Discontinuation LINKAGE TO
STRATEGIC PLAN Implement Best Practices in governance.

Purpose	For Council to review the budget webinar statistics and decide if it is of value to continue to offer the webinar in the future.
Motion	That Council approve discontinuing the budget webinar program as of this fiscal vear.

BACKGROUND

Transparency and accountability are essential principles for a self-regulator. As such, the Association achieves this in part by demonstrating so through its offerings of financial information to its members and the public. Currently, the Association posts on the website the current and prior year budgets, and the audited financial statements for the last nine years. In addition, a budget webinar session is held in the fall free of charge for members to attend to gain knowledge of the annual budget or to ask questions around this topic.

DISCUSSION

The budget webinar stemmed from an in person session that used to be held during the annual conference prior to the AGM. The session's purpose was to provide information to those who were interested on the budget and to have a medium for those who had questions to have them answered. This allowed for a time and place for such questions to be raised. In the past, a handful of members took special interest on this topic and would bring detailed budget questions to the AGM, however, the AGM was not the appropriate time or place for such questions as a proper response to the inquiry would require some time to prepare and would detract from the meeting itself.

Attendance at the conference budget seminar was extremely low. On average over the 4 years that this seminar was held only a handful of members would attend this seminar. Due to the lack of popularity and cost of this seminar, it was decided to best hold the seminar as a webinar as an alternative. As this option would make the seminar more accessible for members.

We have held the webinar for 2 years. In 2016 we had 21 members register and in 2017 we had 27 members register for this webinar. On average, other free of charge webinars yield an attendance of over 200 members. So while the webinar is a better option than the conference seminar, it still yields very low attendance in comparison to other webinars. The interest in this webinar is rather low.

The website statistics note that there were 78 unique page views of the budget document for the 2016/17 budget over the period of August 2016 to August 2017 and 76 unique page views of the 2017/18 budget over the period of August 2017 to July 2018. While there is some interest by the members on the budget information, the website seems to be the most popular medium for members to retrieve information.

The objective of achieving transparency and accountability through the medium of releasing financial information is achieved via the website. As the past years attendance indicates the lack of interest in this topic, it is recommended that the budget webinar offering be discontinued. This will save time and effort of staff to be redirected to work on other strategic initiatives. Financial information is still widely available to members and the public through the website.

MOTION

That Council approve discontinuing the budget webinar program as of this fiscal year.

Engineers and Geoscientists BC Council | September 7, 2018



ITEM 6.3

DATE	August 15, 2018
REPORT TO	Council for Decision
	Jennifer Cho, CPA, CGA
FROM	Chief Financial and Administration Officer
FROM	Vincent Lai, CPA, CGA
	Associate Director, Finance and Administration
SUBJECT	Security Enhancement and Better Office Space Utilization
	Principle 1 – We act first and foremost in the public interest.
LINKAGE TO	Principle 7 – We provide sufficient resources to fulfill our responsibilities.
STRATEGIC PLAN	Principle 8 – We provide effective support and recognition for volunteers,
	staff and members.
STRATEGIC PLAN	Principle 8 – We provide effective support and recognition for volunteers, staff and members.

Purpose	This report summarizes security concerns related to physical security, identifies the risk level of each and provides recommendations for mitigation of these risks. In addition, better utilization of current working space to support future growth.
Motion	That Council approve the recommended security enhancement and office renovation with a budget of \$170K to be funded from Capital budget and General Operating Fund.

BACKGROUND

Over the years, Engineers and Geoscientists BC financial and member information transactions have grown to the level that it is required to meet the privacy and security requirements stipulated by Payment Card Industry (PCI). In order to be compliant on an annual basis, Engineers and Geoscientists BC also needs to develop and maintain its business policy, procedural and IT infrastructure to obtain the annual certification.

In addition to PCI requirements, Engineers and Geoscientists BC is preparing for a Privacy Audit and a Security Penetration test to evaluate its compliance with BC's Freedom of Information and Protection of Privacy Act (FOIPPA). Similar to the PCI mandate, FIOPPIA is also designed to protect personal, credit card and confidential information. These new driving factors have become an essential part the building's operating plan. A majority of the changes will be in the building's physical upgrade in its security and access improvement. Whereby, the building will be divided into public and private space.

As Engineers and Geoscientists BC membership base continues to grow, staff strives to expand its efforts to better serve its members. Consequently, future employee count may increase to support the growing programs and initiatives. In order to provide adequate working space for employees, efficient and optimal utilization of working space is also an important part of our building operating plan before a longer term solution is determined by the Building and Space Planning Task Force.

DISCUSSION

Current privacy and security issues

The current security access does not establish defined public and private areas. The current set up was mainly designed to divide the common areas (such as the reception and the waiting area on the 2nd floor) from staff areas. However, once visitors passed the security doors, they also have full access to staff areas. For example, both kitchens are fully connected to the offices and working space on each floor.

The new security renovation is designed to establish a clear boundary between public and private areas. A number of doors will be added to section off the public areas, combined with relocation of some existing doors. Once these security improvements are complete, visitors in kitchens, public conference rooms, and restrooms will no longer have access to working areas unless granted security clearance.

Utilization of existing working space and integration with security

As the Association continues to expand its initiatives and effort to improve and better serve its members, future employee number also increases in order to support and implement these future programs and member volume growth. Consequently, to provide adequate working space for future employee size, efficient and optimal utilization of working space is an import part of the building operating plan. With current lower mainland real estate pricing, it's important to have a practical and efficient use of our existing space to support future growth.

Currently, several vacant areas can be utilized to meet future office logistics needs. The south-west corner of the second level is a storage room and two casual sitting areas. Another vacant area next to the ground floor's back entrance is currently used for storing electronic equipment and other equipment such a freezer and printer. These areas can be fully utilized and converted to proper working space, which can accommodate up to eight new employees.

While making the security door enhancement, it is also an economical opportunity to improve current working space and integrate with the new security setup. From cost and efficiency
perspective, these two important areas of the building operating plan can be addressed in one single project.

Proposed Budget

The estimated cost of the security enhancement and office renovation is approximately \$170K. This cost estimation includes the cost of architect design fees, permits, construction costs, materials costs, engineering services costs and furniture costs. The estimated project completion time will be around early 2019, depending on the permit process.

As the nature of this project is improvement and new additions to the building, these costs will be considered as asset addition, instead of operating expenses. Thus, these costs will be categorized as capital assets. The Council approved FY2019 capital budget is \$335K, which includes a \$20K allocation to the building's improvement. The difference of \$150K (\$170K budget less \$20K building capital budget) will be drawn from the General Operating fund with closing balance of \$4.7Mill at end of June 30, 2018.

RECOMMENDATION

The proposed security upgrade and renovation will build a clear boundary of public and private areas, and prepare for future working space requirement. Its goal is to provide a long term solution to imminent security and building operating needs. The consequence of not upgrading our security access to the adequate level can lead to failure of obtaining the annual certification of PCI and non-compliance with FOIPPA. More importantly, members' personal information will continue to be exposed to privacy risk. It is recommended that Council approve the project and funding as proposed in this report.

MOTION

That Council approve the recommended security enhancement and office renovation with a budget of \$170K to be funded from Capital budget and General Operating Fund.

Engineers and Geoscientists BC Council | September 7, 2018



OPEN SESSION

ITEM 6.5

DATE	August 22, 2018
REPORT TO	Council for Decision
FROM	Max Logan, Chief of Strategic Operations
SUBJECT	Update on Strategic Plan and Key Progress Indicators
LINKAGE TO	Ma support offective revenues
STRATEGIC PLAN	we support ellective governance

Purpose	To provide Council with an update on year 1 (2017/2018) progress on
	implementing the Strategic Plan.
Motion	That Council confirm the Key Progress Indicators for another year and direct staff
	to monitor and assess the two identified KPIs and report to Council in February
	2019 with a recommendation on whether amendments are required.

BACKGROUND

Key Progress Indicators (KPIs) are a tool that Council can use to assess whether the strategic plan is being achieved. Reports on these indicators should be provided to Council at least semi-annually.

Strategies to support the implementation of the 2017 – 2020 Strategic Plan were approved by Council in April as part of the annual budgeting process. Key Progress Indicators (KPIs) used to measure progress on the various strategies were approved in August 2017.

The 2017/2018 fiscal year represents the first full year of strategic plan.

DISCUSSION

During the 2017/2018 fiscal year, the organization made significant progress toward achieving the strategic plan. The desired outcomes and the supporting strategies provide useful direction to staff to focus efforts and energy where the most value for the organization, and the stakeholders it serves, can be achieved.

Overall, of the nine Key Performance Indicators used to measure progress, seven are on track, one is on track but under review and one is lagging.

While seven KPIs are on track, none are considered complete. All support strategies and activities that are ongoing areas of focus, and support the outcomes and goals for the three-year plan. As such, these KPIs remain relevant and should remain in place for year two.

The lagging KPI is **"A legislative renewal plan is formulated, approved and implemented that has stakeholder support."**

While significant engagement with government has occurred in support of this KPI, much of this activity has been focused on familiarizing the new government with EGBC priorities. In addition, more recently, this engagement has focused on the professional reliance review and the implementation of key recommendations.

While the PR review may result in most, if not all, of EGBC's priority legislative amendments being implemented by government, they may come in a format, under the auspices of a new Office of Professional Oversight, that is less than optimal.

This KPI may need to be adjusted in the coming year to recognize that the majority of EGBC's legislative priorities have been implemented, and/or to recognize that the focus of government engagement for the balance of the strategic plan may be oriented to ensuring that any new Office of Professional Oversight is appropriately implemented.

Once the government's direction on professional reliance is clear, this KPI should be reevaluated.

The KPI that on track but under review is "Gender balance improves."

This KPI is focused on 30 by 30 and promoting gender diversity. While this is a strategic imperative and part of a broader, national program and therefore deserving of its own KPI, there is no KPI that deals with the emerging area of indigenous engagement.

As this area of focus develops and the organization considers how it can and should engage with indigenous communities, an additional KPI for year three may be warranted.

RECOMMENDATIONS

It is recommended that the current Key Progress Indicators remain in place for year two (2018/19) of the strategic plan. Once more clarity on the items above is available, recommendations on these KPIs will be brought to Council.

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MOTION

That Council confirm the Key Progress Indicators for another year and direct staff to monitor and assess the two identified KPIs and report to Council in February 2019 with a recommendation on whether amendments are required.

APPENDIX A – Key Progress Indicator Status – 2017/2018

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OPEN SESSION

ITEM 6.6

DATE	August 22, 2018
REPORT TO	Council for Decision
Susan MacDougall, P.Eng, Council 30 by	Susan MacDougall, P.Eng, Council 30 by 30 Champion
	Deesh Olycnick, Director, Member Services
SUBJECT	30 by 30 Strategy
LINKAGE TO STRATEGIC PLAN	We foster diversity and inclusivity

Purpose	To receive Council feedback and direction on the strategy and framework for the
	30 by 30 Action Plan.
Motion	That Council endorse the strategy for the 30 by 30 action plan, direct staff to
	proceed with consultation, prioritize actions, estimate associated resources and
	report back to Council in November.

BACKGROUND

At the 2017 Annual General Meeting, a motion was carried that asked Council to consider taking the necessary policy and procedural steps to develop a timely plan of action in support of Engineers Canada's 30 by 30 initiative. In response to the member motion, Council passed the following motion at its February 2018 meeting:

That Council direct staff to evaluate the current status of the 30 by 30 target and initiatives, progress since the 2013 Women in Engineering and Geoscience Task Force recommendations, and suggest options for moving ahead to achieve the goal for 2030, within a 6-month period.

PROCESS

Over the past several months, the Council 30 by 30 champion along with staff have engaged in various activities to inform the development of an action plan in support of 30 by 30. Our work plan consists of the following:

- 1. Phase 1- Data collection & Organizing [Jan-Aug 2018]
 - a. 30 by 30 national meeting
 - b. Branch and division engagement
 - c. Building up 30 by 30 network and shared resources
 - d. Other research activities (MBA research project, internal interviews, survey results)

2. Phase 2- Consultation [Sep-Oct 2018]

- a. Council feedback and direction
- b. 30 by 30 network and Women in Engineering and Geoscience Division feedback
- c. Member feedback:
 - i. Article in eNews and website
 - ii. Annual Conference & AGM
 - iii. Women in Engineering and Geoscience Division Networking Event
- 3. Phase 3- Prioritize Actions [Nov 2018]
 - a. Identify key actions and estimate associated resources
 - b. Present to Council
- 4. Put plan in action [2019 onwards]

RESEARCH

As part of Phase 1, we collected and reviewed data from various sources. Our research also included interviews with staff supporting various program areas on program improvements that could be made to further support 30 by 30. Some highlights of our research are presented below.

MBA Research Project Report

Earlier this year, Engineers and Geoscientists BC agreed to be a project sponsor for a student who was completing her MBA. The research project focused on the retention of women in the profession of engineering. The research examined current initiatives, membership data, included an extensive literature review, and resulted in, five recommendations for consideration by the association.

The report made the following recommendations for the association to consider in developing its action plan in support of improving the retention of women in the profession of engineering:

- 1. Create a staff position to focus on diversity
- 2. Enhance the website and other association materials
- 3. Implement volunteer training process (for career outreach volunteers)
- 4. Enhance mentoring program
- 5. Leverage corporate regulation

Branch and Division Representatives Meeting

On May 10, 2018, Council attended a meeting with branch and division representatives where representatives were asked to share concrete actions the association can take to better support the goal of 30 by 30. The themes emerging from that discussion focused on:

- Sharing of resources and partnerships with other organizations
- Addressing workplace culture (work life balance, parental leave, pay equity, improving onramps back to the profession, inclusive policies, tools for employers)
- Opportunities to improve our career outreach (teacher education days, training for career awareness volunteers, partnerships with school districts)
- Changing the perception of engineering (challenge the stereotypes)

Public Opinion Survey

In the recently completed public opinion survey, the following question was included: What is the likelihood of recommending engineering as a career to young women? Responses were: 33% indicated *Very Likely*, 47% indicated *Somewhat Likely*, 16% indicated *Not Very Likely* and 4% indicated *Not at all Likely*. Top reasons for recommending engineering as a career choice were:

- 1. It is male-dominated and we need more female engineers
- 2. It's a good job / career
- 3. Women can make their own choice / should pick what interests them
- 4. Many possibilities / broad career path / excellent job prospects/ good future opportunities

Building up the 30 by 30 Network

After the June 2018 Council meeting that formally approved the group's Terms of Reference we have been actively adding interested individuals to the 30 by 30 network for the purposes of networking and resource sharing. This has included both industry professionals representing their company and representatives from institutions within BC.

We will continue to add members as they express interest in learning more about how they and their organizations can support the 30 by 30 goal.

Other Associations

An overview of activities from other associations was provided at the February Council meeting. We have highlighted below some new initiatives since the last meeting.

OSPE

As part of its Breaking Barriers campaign, the Ontario Society of Professional Engineers (OSPE) conducted a workplace culture survey. Members of Engineers and Geoscientists BC were also encouraged to participate in the survey. The survey looked to identify challenges experienced by professionals, which make it difficult for them to advance in their career as well as tools and resources sought to help navigate one's career. For women, the top tools and resources sought were mentoring, networking and career or professional development.

APEGA

The Association of Professional Engineers and Geoscientists of Alberta (APEGA) was recently awarded a three-year, \$350,000 grant from Status of Women Canada. The funding will be used to examine workplace barriers facing female engineering and geoscience professionals such as pay equity, hiring practices, and advancement opportunities with the intention to create Canada-wide workplace culture guidelines.

APEGA is also offering ten grants of up to \$5,000 each for STEM learning in Alberta schools. This creates an opportunity for Alberta teachers to develop and advance STEM-focused programs in their K-12 classrooms.

Engineers Geoscientists Manitoba

Engineers Geoscientists Manitoba has budgeted an initial \$800,000 for the first phase of its "Engineering Changes Lives" campaign, aimed to reach young women and double the number of women entering the profession by 2030. Their research will look to understand the leaks at all points on the career pipeline. The association also launch an in-school advertising campaign to allow for collaboration between middle school students and engineering employers to address the barriers that keep girls from choosing engineering as a career.

WOMEN IN ENGINEERING AND GEOSCIENCE TASK FORCE RECOMMENDATIONS

As part of the research process, we reviewed the recommendations made previously by the Women in Engineering and Geoscience Task Force (2013). A total of 18 recommendations were made and the implementation of the Task Force recommendations have served as the association's action plan in support of 30 by 30.

In reviewing the Task Force recommendations, we believe the Task Force recommendations continue to be relevant and are foundational to our progression to 30 by 30. The Task Force recommendations lay the groundwork to build our new strategy for 30 by 30.

BROADER SUPPORT FOR STEM

The momentum and public support for encouraging girls to pursue STEM fields is at an all-time high. There are many existing well-established programs. This introduces the opportunity to create partnerships at all levels – from government, industry and educators to community groups. As the regulator of engineering and geoscience, this also creates the unique opportunity for us to facilitate and foster these connections.

STRATEGY FOR 30 BY 30

Our goal is to increase the number of newly licensed engineers that are female to 30% by 2030. We will do this by:

- Increasing awareness of and attraction to the professions of engineering and geoscience
- Improving the retention of women in the professions of engineering and geoscience

We aim to encourage and support the recruitment and retention of women in engineering by:

1. Leveraging our strengths

Our strength is our member support programs. By optimizing and leveraging our programs, we will strengthen our support for 30 by 30

We have an active **career outreach** program – By expanding the program, building key partnerships and providing training to volunteers, we can change the perception of engineering and inspire the next generation of professionals

We have a strong **mentoring** program – By enhancing the scope of the program and focusing a stream on diversity, we can create more peer-to-peer support mechanisms and guide members throughout their career

We have a comprehensive **professional development** program – By incorporating more diversity learning opportunities for members and employers, we can support the advancement of members and facilitate dialogue to better understand the issues

We have effective **member communication** vehicles – By creating key messages, profiling role models, highlighting organizational best practices, sharing resources and facilitating dialogue on the barriers that exist for women in the profession, we can be the catalyst for conversation and aim to advance a cultural shift

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We have an active **student outreach** program – By working with students and universities, we can support students, work to increase retention at the post-secondary level and further support the transition from student to member in training.

We have engaged **branches and divisions** – By working with our volunteers, we can identify champions, and enhance our efforts by creating networking and professional development opportunities to further support members

2. Building relationships to maximize collective efforts

Our strength is our relationships. By building on our existing relationships and developing new partnerships, we can maximize our collective efforts in support of 30 by 30.

We have over **34,000 members** – Through this connection, we have the ability to engage members as champions for diversity and inclusion

We have relationships with **post-secondary institutions** – Through these relationships and the development of new connections, we can identify leaders and key influencers and work collectively in support of diversity and inclusion

We have relationships with other **regulators across the country and Engineers Canada** – Through these connections, we can share resources, and work collectively by collaborating on programs and initiatives

We have relationships with **organizations and employers** – Through setting an example at the association and supporting the development and sharing of strategies and tools for effective workplaces, we can encourage companies and organizations to improve their corporate diversity

3. Fundamental to our strategy is to support girls and women along the full career pathway focusing on the issues unique to each stage:

K-12 & University: Changing perception of engineering and what engineers do, providing mentorship where possible

EITs and Early Members: Assisting in the development of peer and mentoring relationships that will support throughout her career

Mid and Late Members: Supporting members and companies to look at providing more onramps for members who take leave for family reasons, and engaging leaders, employers, key influences as ambassadors for diversity and inclusion

All members: Facilitating dialogue to better understand the barriers that exist for women in the profession with the goal of advancing cultural shift

For more information on current activities and new potential activities related to each of these stages, refer to Appendix A – A Guide to Action. These activities are the basis from which the tactical plan will be developed to support our strategy.

RECOMMENDATION

Council is being asked to provide feedback on the strategy for the 30 by 30 action plan and endorse the strategy for consultation with members (September – October). Post consultation, staff

will work with the Council 30 by 30 champion to prioritize actions, estimate resource requirements, and develop key performance indicators to measure success and track performance.

MOTION

That Council endorse the strategy for the 30 by 30 action plan, direct staff to proceed with consultation, prioritize actions, estimate associated resources and report back to Council in November

APPENDIX A -30 BY 30 - A GUIDE TO ACTION

Engineers and Geoscientists BC Council | September 7, 2018



OPEN SESSION

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DATE	August 23, 2018
REPORT TO	Council for Decision
FROM	Deesh Olychick, Director, Member Services
SUBJECT	Nomination & Election Review Task Force Recommendations
LINKAGE TO STRATEGIC PLAN	Effective governance

Purpose	To provide an update on the Governance Committee's review of the Nomination & Election Review Task Force recommendations and to make a decision on the two recommendations of the Governance Committee: (1) discontinuing paper ballots;
	(2) providing voting rights to Members in Training.
Motion 1	That Council discontinue the practice of paper ballots beginning with the 2021 election.
Motion 2	That Council direct staff to conduct broader member consultation on providing voting rights to Members in Training and report back to Council.

BACKGROUND

At the June 15, 2018 meeting of Council, the Nomination and Election Review Task Force delivered 28 recommendations for Council consideration. These recommendations were forwarded to the Governance Committee for further review as many of the recommendations need to be considered in the context of the Professional Standards Authority Audit and the Professional Reliance Review.

DISCUSSION

At its August meeting, the Governance Committee reviewed the recommendations and agreed that due to the current uncertainty regarding the timing and extent of the professional reliance recommendations, that many of the Task Force recommendations should be deferred until the professional reliance implications are better understood.

However, the Governance Committee did feel that some recommendations could be actioned sooner.

The Governance Committee has directed staff to develop options, budget considerations and a timeline for the Governance Committee's consideration of the following Task Force recommendations:

- 1. Cultivating Leaders for Board Governance
- 2. Developing a linkage between members of the academic community and the association as a better vehicle to bring engineering and geoscience issues forward to Council
- 3. Implementing honorariums for President, Vice President and Councillors, based on recommendations of a qualified third party
- 4. Appoint an independent Chief Elections Officer to oversee the election process

Staff will begin work on these recommendations and bring back additional information for review by the Governance Committee.

The Governance Committee has also forwarded the following two recommendations to the Nominating Committee for feedback:

- In relation to the five appointed members of the Nominating Committee, two should be past presidents, and that for all five, there should be a staggered term of two years, with a onetime optional renewal. For all new members to the committee, there should be an orientation in regards to the role of the Nominating Committee and Council.
- 2. Develop defensible guidelines for the Nominating Committee to use when evaluating incumbent candidates

It is not yet understood how the professional reliance recommendations could potentially affect the Nominating Committee and how it currently functions. The implications of the review could significantly alter the scope of the committee going forward.

There are two recommendations that the Governance Committee makes for Council.

1. Discontinue the practice of paper ballots within a three year period

Ten years after the introduction of electronic balloting, typically less than 12 paper ballots are received each year. As only 0.2% of ballots received are paper ballots, the Nomination and Election Review Task Force recommended Council eliminate paper ballots within a three-year period. Moving to 100% electronic balloting saves time and effort and eliminates the need to verify whether duplicate ballots have been submitted (paper and electronic).

The Governance Committee reviewed this recommendation and supports moving to 100% electronic balloting within a three-year period and passed the following motion:

For recommendation 26, that the Governance Committee recommend to Council to discontinue the practice of paper ballots within a 3 year period.

Should Council support this recommendation, paper ballots would continue to be included for the 2018, 2019 and 2020 elections.

2. Providing voting rights to members in training

At the direction of Council, the Nomination and Election Review Task Force reviewed the motion carried from the 2017 Annual General Meeting asking Council to consider voting rights for members in training. Currently, only professional members and holders of limited licenses are eligible to participate in association voting.

Currently, there are just over 6,000 members in training. The Task Force supports the member motion to extend voting rights to members in training. Providing voting rights to members in training gives those members entering the profession a stake in their future, is more inclusive and encourages election and general association participation earlier (member engagement).

The Governance Committee reviewed this recommendation and supports adding this to Council's list of legislative asks and passed the following motion.

That the Governance Committee recommend that Council add providing voting rights to Members in Training to the legislative requests.

To date, Council has received a member motion from the 2017 AGM in support of this change, as well as the endorsement of the Nomination and Election Review Task Force and the Governance Committee. Council should consider whether it would like to do broader member consultation on this topic prior to adding it on the list of legislative requests.

It is understood that in light of the Professional Reliance recommendations, this may not be a priority for government, however, the Governance Committee wishes it to be placed on the list should the opportunity for inclusion arise.

RECOMMENDATIONS

The Governance Committee makes two recommendations to Council.

- 1. Discontinue the practice of paper ballots within a 3 year period
- 2. Add providing voting rights to Members in Training to the legislative requests

MOTIONS

- 1. That Council discontinue the practice of paper ballots beginning with the 2021 election.
- 2. That Council direct staff to conduct broader member consultation on providing voting rights to members in training and report back to Council.

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- Item 5.3 Appendix A
- Item 5.4 Appendix A
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- Item 5.10.9 Appendix A
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- Item 6.5 Appendix A
- Item 6.6 Appendix A

The parts that are exactly copied from the previous version of the guideline is highlighted in yellow.

The changes approved by all the authors are not highlighted.

BUILDINGS PROFESSIONAL PRACTICE GUIDELINES

ELECTRICAL ENGINEERING SERVICES FOR BUILDING PROJECTS

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

PUBLISHED [], [DAY], 2018



ENGINEERS & GEOSCIENTISTS BRITISH COLUMBIA



PREFACE

The "Guidelines for Electrical Engineering Services for Building Projects" have been prepared to set out the standards of practice which Members should meet and follow in providing professional engineering services. The Association and its Council have a commitment to improve the quality of the services Members provide to Clients and the public, and have published these Guidelines for that purpose.

The guidelines have been written for the information of Engineers and Geoscientists BC members, statutory decision-makers, regulators, the public at large and a range of other stakeholders who might be involved in, or have an interest in, Electrical Engineering Services For Building Projects in British Columbia. They provide a common level of expectation for various stakeholders with respect to the level of effort, due diligence and standard of practice to be followed when carrying out Electrical Engineering Services for Building Projects in BC. The guidelines outline the appropriate standard of practice at the time that 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.

The Association supports the proposition that Members should receive fair and adequate compensation for services rendered and that this principle applies to the services provided to comply with these Guidelines. In no event will low fees be justification for services which do not meet the minimum standards set out by these Guidelines. Members may wish to discuss these Guidelines with their Clients when receiving instructions for assignments and reaching agreements regarding compensation.

> PROFESSIONAL PRACTICE GUIDELINES GUIDELINES FOR ELECTRICAL ENGINEERING SERVICES FOR BUILDING PROJECTS

Version X.0

i

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PROFESSIONAL PRACTICE GUIDELINES

GUIDELINES FOR ELECTRICAL ENGINEERING SERVICES FOR BUILDING PROJECTS

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Appendix A: Common Organizational Structures

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PROFESSIONAL PRACTICE GUIDELINES GUIDELINES FOR ELECTRICAL ENGINEERING SERVICES FOR BUILDING PROJECTS

ABBREVIATIONS

ABBREVIATION	TERM
вс	British Columbia
BCBC	BC Building Code
VBB	Vancouver Building Bylaw
LOA	Letters of Assurance
FSR	Electrical Field Safety Representative
EER	Electrical Engineer of Record(sometimes refer to as the EOR Engineer of record for the electrical discipline)
SRP	Supporting Registered Professional

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DEFINED TERMS

TERM	DEFINITION
Act	Engineers and Geoscientists Act
association	Engineers and Geoscientists BC, formerly known as the Association of Professional Engineers and Geoscientists of British Columbia or APEGBC
Engineers and Geoscientists BC	Formerly known as the Association of Professional Engineers and Geoscientists of British Columbia or APEGBC
Engineering professional(s)	Professional engineers and licensees, licensed to practice by Engineers and Geoscientists BC
Professional of Record	The Engineering professional taking overall responsibility for an engineering or geoscience related activity or service.

PROFESSIONAL PRACTICE GUIDELINES GUIDELINES FOR ELECTRICAL ENGINEERING SERVICES FOR BUILDING PROJECTS

1.0 INTRODUCTION

1.1 PURPOSE OF THESE GUIDELINES

This document provides guidance on professional practice for Electrical Engineering professionals who might be involved in, or have an interest in, Electrical Engineering Services for Building Projects in British Columbia. While this guideline identifies how to carry out Electrical Engineering for Building Projects which reflects good professional practice, the Electrical Engineering Professional must also apply the relevant technical standards issued by others (e.g. technical societies, institutes, standards associations such as IEEE, CSA & CEC, IES, IEC, ASHRAE, etc.) applicable to the nature of the services being provided in projects.

These guidelines provide a common approach for carrying out a range of professional activities.

Following are the specific objectives of these guidelines:

- 1. Describe the standard of practice that Engineering professionals should follow when providing professional services related to this professional activity.
- Specify the tasks that Engineering professionals should complete to meet the appropriate standard of care and fulfill their professional obligations under the *Engineers and Geoscientists Act*. These obligations include the member's primary duty to protect the safety, health, and welfare of the public and the environment.
- 3. Outline the professional services that the Engineering professional conducting this type of work should generally provide.
- 4. Describe the roles and responsibilities of the various participants/stakeholders involved in such work. The document will assist in delineating the roles and responsibilities of the various participants/stakeholders, which will include the professional of record, owners, authorities having jurisdiction, and contractors.
- Define the skill sets that are consistent with the training and experience required to carry out this professional activity.
- 6. Provide an assurance statement, which the professional of record must seal with signature and date. This assurance statement will confirm that the appropriate requirements were met (both regulatory and technical) for the specific professional activity that was carried out.
- 7. Describe how the intent of the seven quality management requirements under the *Engineers and Geoscientists Act* must be met when carrying out the professional activity covered in these professional practice guidelines. This will include outlining expectations regarding peer review and independent checking.

1.2 ROLE OF ENGINEERS AND GEOSCIENTISTS BC

These guidelines were prepared by subject matter experts and reviewed at various stages by a formal review group. The final draft of the guidelines underwent a final consultation process with various PROFESSIONAL PRACTICE GUIDELINES

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Commented [BA1]: Should discuss with Communication on where to define these acronyms. Such as "Canadian Electrical Code"

Commented [BA2]: Peter added based on Ulrich comment

Under 4.1.1, I think we should be explicit that the Association has only this Professional Practice Guidelines on the subject matter. Also, the Guidelines coming from other professional and learning societies should be followed depending on the application (IEEE, IES, IEC, ASHRAE, etc.)

Commented [BA3R2]: Done

committees and divisions of Engineers and Geoscientists British Columbia (the association). The guidelines were approved by the association's Council and, prior to publication, underwent final legal and editorial reviews. The guidelines form part of Engineers and Geoscientists BC's ongoing commitment to maintaining the quality of services that members and licensees provide to their clients and the general public.

An Engineering professional must exercise professional judgment when providing professional services; as such, application of these guidelines will vary depending on the circumstances. The association supports the principle that appropriate financial, professional, and technical services should be provided to support Engineering professionals who are responsible for carrying out professional activities, so they can comply with the standard of care 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.

By following these guidelines, **Electrical** Engineering professionals will fulfill their professional obligations, especially regarding the first principle of the association's Code of Ethics Principle, which is to "hold paramount the safety, health and welfare of the public, protection of the environment and promote health and safety in the workplace." Failure to meet the intent of these guidelines could be an evidence of the unprofessional conduct and lead to disciplinary proceedings by the association.

1.3 INTRODUCTION OF TERMS

The following definitions are specific to this guideline:

Additional Services:

Services which the EER may provide in addition to the Basic Services as set out in section 3.4.

Authority Having Jurisdiction:

The governmental body responsible for the enforcement of any part of the British Columbia Building Code (BCBC), the City of Vancouver Building Bylaw (VBB), the National Building Code (NBC) or a local building bylaw or code as well as government agencies designated to regulate a particular function in a building e.g. Technical Safety BC and their authority over electrical installation and elevating devices.

Basic Services:

The services provided by the EER as set out in section 3.3.

Client:

The party who engages the EER to provide professional electrical engineering services.

Commissioning:

Commissioning consists of three parts:

(a) operating tests

(b) verification reports

(c) demonstration of systems operation to building Owner/users

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Commented [BA4]: Ask for Peter's advice: Leave Electrical or delete it?

Commented [BA5R4]: Delete all Electricals as Peter advised in the general context.

Commented [BA6]: Ask for Peter's advice: Leave Electrical or delete it?

Commented [BA7R6]: Deleted only in General context!

Commented [BA8]: Lindsay on July 2018 decided to delete this as-built definition for legal implications.

Commented [BA9]: By Peter based on Ulrich and Michael comments

Commissioning is defined as the documentation and verification necessary so that the system will function to meet design intent and tuning of the systems necessary to meet the Owner's operational requirements. Generally the post-commissioning phase would include monitoring through the first year of seasonal operations.

Contract Documents:

All documents including the engineering and architectural drawings and specifications as defined in the construction contract(s) for the construction or modification of the building.

Coordinating Registered Professional (CRP):

Often referred to as the "Prime Consultant", the Coordinating Registered Professional is the individual who or firm which is registered as a Member in good standing of the Association or the Architectural Institute of British Columbia and has the responsibility to coordinate the design and Field Reviews of the various design professionals (such as electrical, structural, mechanical, geotechnical, architectural) for the project.

Electrical Engineer Of Record (EER):

The Member with general responsibility for the electrical integrity of the electrical systems as provided by section 2.0 of the Guidelines.

Electrical Field Safety Representative(FSR):

An individual certified by a provincial safety manager under the Safety Standards Act. A Field Safety Representative is responsible for supervising compliance of electrical work, and to make declarations, on behalf of their employer, that regulated work complies with the Act and regulations. Duties of field safety representatives are contained in section 26 of the Safety Standards General Regulation. Scope of Field Safety Representative certification may be found under Certification / Electrical FSR on the Technical Safety BC website at: https://www.technicalsafetybc.ca.

Electrical Safety Officer:

An individual who has been appointed under Section 11 of the Safety Standards Act and is employed by Technical Safety BC or a local government to administer the Act and regulations, in order to promote safety, assess hazards, and reduce risk. Powers of safety officers are contained in section 18 of the Act.

Field Services:

The services provided by the EER as set out in paragraph 3.3.5.3 to ascertain if the electrical construction work is generally in accordance with the electrical Contract Documents.

Field Reviews:

Field review is a defined term in the BCBC 2006 as follows: Field review means a review of the work (a) at a project site of a development to which a building permit relates, and (b) where applicable, at fabrication locations where building components are fabricated for use at the project site that a registered professional in his or her professional discretion considers necessary to ascertain whether the work substantially complies in all material respects with the plans and supporting documents prepared by the registered professional for which the building permit is issued.

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Commented [BA10]: George advised to add definitions for these terms and fix the order.

Commented [BA11R10]: Ulrich provided these definitions July 2018.

Commented [BA12]: If we change field services to Field reviews, then it will be confusing throughout the document because 3.3.5.1 is referring to field services ???

Commented [BA13R12]: Peter ok

Commented [BA14]: Added by Bahareh based on the Structural for part 3.

Final Design Drawings:

These drawings are prepared by the EER and reflect design changes made during construction and incorporate contract-related items such as addenda and change orders, but do not include as-constructed information provided by others. These drawings must be signed, sealed and dated by the registered professional who assumes overall responsibility for the design. Refer to the Use of Seal Quality Management guideline for more information.

Maintenance Manual:

A collection of documentation (in paper or electronic form) containing all the necessary technical information on electrical systems for the building Owner / Operator to carry out maintenance and operation of the equipment installed under the contract.

Member:

A Member in good standing of the Association.

Owner: The party who owns the building.

Prime Contractor:

The contractor who has a contract with the Owner for the construction of all or a portion of the building.

Sometimes called either the Prime Contractor or the General Contractor

Record Drawings:

Drawings prepared, as a record of what was actually constructed. May include measurements, elevations and sizes. These drawings are typically prepared by a general or sub-contractor and should not be sealed by the professional of record, unless an appropriate declaration is added. See Section 3.2.15.9 Quality Management Guideline – Use of Seal.

Registered Professional of Record (RPR)

Defined in the BCBC as a RP retained to undertake design work and field review pursuant to Clause 2.2.7.2(1)(6) in Division C in the BCBC.

Registered Professional (RP)

A Registered Professional (RP) is defined in the BCBC as:

a person who is registered or licensed to practice as an architect under the Architects Act, or
 a person who is registered or licensed to practice as a professional engineer under the Engineers and Geoscientists Act."

For the purposes of the Engineers and Geoscientists Act (the Act), this can include professional engineers and licensees including limited licensees having the appropriate scope of practice all of whom must be qualified by training or experience to provide designs for building projects.

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Commented [BA15]: By Bahareh from Structural part 3 auideline

Commented [BA16]: George advised to clarify It appears that the final Design drawings and the Record drawings are the same. It should be clarified in this document. Is it " Final Record Drawings' Record Drawings"?

Commented [BA17R16]: Fixed by Lindesay on Jul. 2018

Commented [BA18]: Michael commented and accepted by George.

Commented [BA19]: As advised by Peter, we leave the Prime contractor here because the authors agreed on it.

Commented [MP20]: Standard CCDC contractors define the Contractor as what is often called the GC.

Commented [BA21R20]: Peter ok

Commented [BA22]: •This new definition is by Lindsay. July 2018

Specialty Engineer:

The Member who prepares the design and supervises the preparation of documents for such specific elements of the project as seismic restraint, fire stopping, energy modelling, Information Management and Information Technology (IMIT), etc. The Specialty Engineer shall seal specific element designs and documents prepared by or under the supervision of the Specialty Engineer and is responsible for such elements. In some circumstances, the Specialty Engineer would be providing supplementary supporting engineering services to the EER as a supporting registered professional (SRP) and in this capacity would be signing and sealing Schedules S-B and S-C See definition of the SRP provided below).

Specifications:

A written description of the materials, standards of quality and construction requirements for the items

included in a building project. The specifications are that portion of the Contract Documents, which include the written requirements and standards for products, systems, workmanship, quality and the services necessary for the performance of the work.

Sub-Contractors:

Contractors who have a sub-contract with the Prime contractor to provide labour, materials and equipment for the execution and quality control of portions of the work shown in the Contract Documents. The Sub-Contractor's work is generally performed under the direct supervision of the Prime contractor.

Submittal(s):

Items required by the Contract Documents to be submitted by the Prime contractor, such as requests for payment, progress reports, shop drawings, manufacturer's literature on equipment, schedules, etc. Submittals are normally used by the EER to aid in determining if the work and work products conform with the intent of the Contract Documents.

Supporting Registered Professional (SRP)

The RP providing supplementary supporting design and/or field review services for electrical building components, or sub components to the EER (e.g. specialty electrical elements, secondary electrical elements). Schedules S-B and S-C as identified in Appendix A of AIBC/ENGINEERS AND GEOSCIENTISTS BC Practice Note 16, are recommended mechanisms for the EER to receive assurance from the SRP providing supporting engineering services; confirming that the plans and supporting documents relating to the supporting engineering services for a particular electrical component, or sub component substantially comply, in all material respects, with the applicable requirements of the BCBC.

Commented [BA23]: This is added based on the Structural guideline for Part 3; Peter please approve. Approved!

Commented [BA24]: Peter, please confirm:

By Michael:

The standard definition used in the CCDC documents for "drawings" and "specifications" are as follows: (these are both taken from CCDC 2 – 2008).

Drawings: The Drawings are the graphic and pictorial portions of the Contract Documents, wherever located and whenever issued, showing the design location and dimensions of the work, generally including plans, elevations, sections, details and diagrams

Specifications: The specifications are that portion of the Contract Documents, wherever located and whenever issued, consisting of the written requirements and standards for products, systems, workmanship, quality and the services necessary for the performance of the work

Commented [BA25R24]: Peter ok .Decided not to put the drawing definition.

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1.4 SCOPE OF THE GUIDELINES

These Guidelines apply to the practice of Electrical Engineering for buildings governed by Part 3 of the British Columbia Building Code and the City of Vancouver Building By-law. The Guidelines outline the professional services which should generally be provided by the Electrical Engineer of Record (EER) in a building project. They specify tasks which should be performed by the EER to achieve designs which are in the best interest of the Client and the public, and which are properly coordinated with the work of other design, fabrication and construction team participants. These Guidelines should assist in maintaining the integrity of the overall and detailed designs.

These Guidelines also take into account the commitments which municipalities may require from Members as set out in the Letters of Assurance.

1.5 APPLICABILITY OF THE GUIDELINES

These guidelines provide guidance on professional practice for engineering professionals who carry out Electrical Engineering Services for Building Projects. These guidelines are not intended to provide stepby-step instructions for carrying this activity. Rather, the guidelines outline the considerations that go into this activity.

An Engineering professional's decision not to follow one or more aspects of these guidelines does not necessarily mean a failure to meet their required professional obligations. Such judgments and decisions depend upon weighing facts and circumstances to determine whether other reasonable and prudent Engineering professionals, in similar situations, would have conducted themselves similarly.

1.6 ACKNOWLEDGEMENTS

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2.0 ROLES AND RESPONSIBILITIES

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2.1 COMMON FORMS OF PROJECT ORGANIZATION

Project organizations vary according to the needs of the project and the parties. Some common organizational charts are included in the Appendix A.

2.2 RESPONSIBILITIES

2.2.1 Owner

2.2.1.1 In order that the design and construction of the project may be carried out in a manner that meets appropriate standards of public safety and the requirements of applicable building regulations, the Owner shall:

(a) retain or cause to be retained qualified design professionals including a Coordinating Registered Professional (CRP) and a EER with responsibility for the design of the electrical systems of the building;

(b) cooperate with the EER to set out a written description of the scope of the Electrical Engineering's services as referred to in paragraph 2.2.3.5;

(c) not proceed with the contemplated project without adequate financing; provide timely and prompt payment for professional services;

(d) cooperate with the Coordinating Registered Professional so that an adequate written description of the project is developed;

(e) before the commencement of the Electrical Engineering's services, finalize or cause to be finalized a written agreement with the EER (directly with the Owner, or with the Coordinating Registered Professional or with another appropriate party); Some examples of standard contracts include ACEC 31 and RAIC Document 9.

> (f) cooperate with the Coordinating Registered Professional and the EER to establish a realistic schedule for the provision of the Electrical Engineering's services;

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Commented [BA26]: Michael commented: "Recommend adding a description and flow chart for Integrated Project Delivery (IPD) based on CCDC30. This contract form ties the Engineer to the overall financial success of the project as well as the specific discipline being done"

Commented [BA27R26]: As discussed with him, he will send the chart for us and then it should be confirmed with George

Commented [BA28R26]: Dejan did not agree to add this IPD chart to this document at this revision by email.

Commented [BA29R26]: Peter approved not adding it

Commented [BA30]: Added based on Michael comment and approved by Peter.

	(g) authorize in writing any additional services that may be required beyond the scope
	of the EER'S contract;
	(h) assure that all required approvals, licences and permits from the Authorities
	Having Jurisdiction are obtained;
	(i) recognize that, since no design team nor its design is perfect, some unforeseen
	changes may occur and that accordingly a reasonable contingency should be included in
	the Owner's budget;
	(j) recognize that drawings, Specifications and other documents prepared by the EER
	are for the project and that such documents should not be used or copied for other projects without the written agreement of the EEP
	without the written agreement of the LLIV.
	(k) recognize that, because code interpretation of the Authority Having Jurisdiction
	may differ from the EER, some changes may occur.
	However, as identified in BCBC, section 1.2.1.2, the owner of a building is in no way
	relieved of full responsibility for complying with this Code by the AHJ
	granting a building permit,
	approving drawings or specifications, or
	carrying out inspections
2.2.1.2	If the Owner fails or refuses to carry out the obligations as set out in paragraph 2.2.1.1, the
EER should:	
(a)	consider giving written notice to the Owner advising the Owner of the EER's
recommenda	tions:
(b)	consider whether they can continue with the project, and if not inform the owner with a
written notice	
because in a	hy event the EER must comply with the minimum requirements of these Guidelines.
(C) Consider	taking legal action if the written notices referenced above remained unaddressed.
(0) 001101201	
2	2.2.2 Coordinating Registered Professional (Prime Consultant)
To enable th	e EER to perform their duties properly, the Coordinating Registered Professional (Prime
Consultant) s	hould:
2.2.2.1	Interpret and define the needs of the Owner and in doing so should define the Owner's
intended fun	ctions and needs. The Coordinating Registered Professional (Prime Consultant) should
accordingly:	pecial design chiena such as equipment and other requirements and should advise the EER
accordingly;	
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nented [BA31]: This is added based on Michael and comments and Peter's approval.

2.2.2.2 Outline the scope of assignment to each design professional for design, preparation of Contract Documents, review of work during construction and contract administration;

2.2.2.3 Keep all engineers of record informed throughout the contract of budget spending and its status.

2.2.2.4 Provide timely information in sufficient detail as required to adequately perform the EER duties;

2.2.2.5 Coordinate and review the designs, drawings and other Contract Documents produced by all participants of the design team;

2.2.2.6 Coordinate communication of information between the Owner and the Contractor and the design professionals including the EER so that the work proceeds in a manner that complies with applicable codes and regulations and meets the Owner's needs.

2.2.3 Electrical Engineer of Record

2.2.3.1 The Electrical Engineer of Record (EER) is responsible for the electrical integrity of the electrical systems shown on Contract Documents prepared by the EER.

2.2.3.2 The EER may rely on other Members (Specialty Engineers) to be responsible for elements of the electrical and related systems but the EER has the overall responsibility to see that all design is undertaken as is necessary to achieve an electrical system that meets acceptable engineering standards. In this event the EER must require the other Members to sign and seal the documents for such elements.

2.2.3.3 Unless otherwise noted, the EER is responsible to assure that the design and field review of any seismic restraint and other specialties for electrical elements is completed. This review shall be done by the Specialty Engineer. When a Specialty Engineer is retained to design the seismic restraint elements, the EER shall review the design details prepared by the Specialty Engineer for the seismic restraint elements for completeness. The EER shall provide the seismic restraint information to the Structural Engineer of Record for coordination with the building structural system.

2.2.3.4 The EER signs the Assurance Of Professional Design And Commitment For Field Review regarding the electrical design plans and supporting documents which he prepares. The EER shall not sign Schedule C-B until the FSR has completed and documented their work.

Field reviews are the responsibility of the EER but can be carried out by the EER in their professional capacity or under their direct supervision. See Engineers and Geoscientists BC Quality management Guideline: "Documented Field Reviews during Implementation or Construction "and "Direct Supervision".

2.2.3.5 The EER together with the Client is responsible for setting out a written description of the scope of the Electrical Engineering's services sufficient to enable and permit the EER to meet the design and Field Review requirements of these Guidelines and applicable building regulations.

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Commented [BA32]: Deleted as commented by Michael and approved by Peter:

2.2.2.3 Inform the EER of fees submitted by all engineers invited to submit service proposals for engineering services.

Commented [BA33]: Deleted: The EER can delegate field services to a FSR under his direct supervision. As commented by Peter

This sentence is moved from 2.2.7 based on Ulrich comment and Peter's approval.

Commented [BA34]: Added by Peter. Fix the name of the guideline Done.

2.2.3.6 The EER is responsible for providing power to all ancillary systems relevant to the building, which are identified in section 3.4.47.

Commented [BA35]: By Peter

2.2.4 Specialty Engineer or Supporting Registered Professional (SRP)

Where a specialty electrical engineer is engaged directly by the EER (Appendix A Chart 1, for example), the specialty electrical engineer should work with the EER to clearly develop the specialty Electrical engineer's scope of work. The specialty electrical engineer is responsible for the integrity of his/her designs and must sign, seal and date the documents prepared in their professional capacity or under their direct supervision. Where the specialty electrical engineer acts as a SRP (in that they provide supporting engineering services to the EER) they submit to the EER sealed, signed and dated Model Schedules S-B and S-C as identified in Appendix A of AIBC/APEGBC Practice Note 16."

If specified by the EER, Specialty Engineers engaged by the Owner or contractor can be retained to prepare designs and drawings for such specific elements of the project as: seismic restraint, fire stopping, energy modelling, Information Management and Information Technology (IMIT).

2.2.5 Prime contractor

2.2.5.1 The Prime contractor has a contract with the Owner. This contract usually provides that the Prime contractor shall be responsible for the labour, materials and equipment for the work and that the Prime contractor is responsible for the construction methods, techniques, sequences, procedures, safety precautions and programs associated with the construction work, all as set out in the Contract Documents.

2.2.5.2 The Prime contractor is responsible for coordinating the work of the Sub-Contractors and for checking the Sub-Contractor's work prior to field review by the EER.

2.2.5.3 The Prime contractor is responsible for providing reasonable notice to the EER when components are ready for Field Review.

2.2.5.4 The Prime contractor is responsible for providing reasonable notice to the EER to process site queries or shop drawings.

2.2.5.5 At the completion of work, the Prime contractor has to make sure that all documents (.e.g., certificates and reports) relevant to the completion of electrical engineering work are provided by subcontractors. This would allow EER after satisfactory review to issue Schedule C (Letters of Assurance) for successful completion of construction works. Refer to Appendix B for more information about LOA. Refer to section 2.2.7 for more details.

2.2.6 Authority having jurisdiction

Authority having jurisdiction have a responsibility for enforcement of the codes, policies, guidelines, standards and by-laws or for assessing compliance with applicable codes, standards, and local bylaws. An authority having jurisdiction may perform inspections as part of their compliance assessment. Authority having jurisdiction could be provincial, municipal, townships, districts and other specialty groups such as Technical Safety BC.

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Commented [BA36]: Added by Peter based on Ulrich comments

2.2.7 Electrical Field Safety Representatives (FSR)

Electrical FSRs are professionals and experts in electrical codes and regulations. They perform an important function for public safety by assessing and declaring, on behalf of their employer, that electrical work is safe and complies with existing safety codes, standards, acts and regulations. For new buildings, building alterations, and building modifications where a contractor is involved with the project, an Electrical FSR is required to declare that the building's electrical system is in compliance with the *BC Electrical Code* and applicable regulations. This can impact the issuance of a building's occupancy permit. Depending on the jurisdiction where work is being performed, the process for inspection and inspection audit will vary. For information on Technical Safety BC's jurisdiction, including exceptions, visit their website at <u>www.technicalsafetybc.ca/jurisdiction-information</u>.

2.2.7.1 The Field Safety Representative (FSR) is responsible for monitoring work, performed by a licensed electrical contractor, and providing the electrical contractor with regular reports with respect to compliance of that work.

2.2.7.2 The FSR is responsible for inspecting all electrical work, performed under a permit.

2.2.7.3 The FSR is responsible for ensuring that work, performed under a permit, is within the scope of the FSR's certification and within the scope of the certification for the FSR named on the electrical contractor's license.

2.2.7.4 The FSR is responsible for ensuring appropriate qualifications and supervision of individuals who perform electrical work under a permit.

2.2.7.5 The FSR is responsible for physically examining all work performed under a permit, and reporting to the permit holder on the status of that work, with respect to regulatory compliance.

2.2.7.6 The FSR is responsible for ensuring that work is not concealed prior to obtaining authorization from the authority having jurisdiction.

2.2.7.7 The FSR is responsible for ensuring that electrical equipment, circuits, and systems are not connected to an electrical supply unless authorized by the authority having jurisdiction.

2.2.7.8 The FSR is responsible for ensuring that inspections are requested upon completion of each phase of work, and before concealment or connection to an electrical supply.

2.2.7.9 The FSR is responsible for reporting to the authority having jurisdiction any regulated product or regulated work that creates a risk of personal injury or damage to property.

It should be noted that FSR performs the 1st level inspection and confirms compliance of work and equipment with requirements under the Safety Standards Act (including worker qualification and supervision requirements, permit and scope of work performed under the permit, and compliance with BC Electrical Code). Upon completion of the FSR's inspection, the FSR must request a separate inspection by a safety officer who may physically inspect, or waive the inspection.

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Commented [BA37]: By George during the meeting

Commented [BA38]: Added by Ulrich; Peter, Please approve!

Commented [BA39R38]: Approved

Commented [BA40]: George: These sentences are not clear enough. Commented [BA41]: Added by Ulrich and approved by Peter.

2.2.8 Electrical inspections:

Electrical inspections may be carried out on electrical work requiring permits as authorized under the Safety Standards Act and regulations.

Technical Safety BC does not issue electrical permits and complete inspections in all municipalities in BC. Some local governments have been delegated authority to administer the Safety Standards Act for electrical work within their own areas. Please click on the following Link for more information on which jurisdictions carry out their own inspections:

www.technicalsafetybc.ca/jurisdiction-information.

If the Electrical safety officer identifies non-compliances in the installation, the safety officer informs the contractor and the contractor is responsible to ensure that the non-compliances are corrected. Normally if Electrical inspections are carried out, this work is done after EER signs off on Schedule C-B.

The Electrical inspection is focused on conformance with BC Electrical Code. They do not look for operational or design issues.

The public utilities may require sign off on the electrical inspections in order to provide power to the building.

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2.3 SELECTION OF CONSULTANTS

The following resources are provided to assist in matters related to selection of consultants.

Budget Guidelines for Consulting Engineering Services <u>https://www.egbc.ca/getmedia/308d2e85-4d1d-4a1e-99f5-e1ed5485778f/Budget-Guidelines-for-</u> <u>Consulting-Engineering-Services-2009.pdf.aspx</u>

ACEC - BC Consulting Engineers Fee Guideline (Please use the most recent edition): http://www.acec-bc.ca/media/36630/acecbcfeeguide16.pdf

Recommended procedures for selecting a consultant is described in the following document published by the Association of Consulting Engineers of Canada (ACEC) BC.

"ACEC-BC Quality Based Selection guide, User Guide to Implementing Qualifications Based Selection Best Practices for Selecting your Design Professional":

https://www.acec-bc.ca/media/43176/acec-bc-user-guide-to-implementing-gbs.pdf

Commented [BA42]: Fix the name
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3.0 GUIDELINES FOR PROFESSIONAL PRACTICE

3.1 OVERVIEW

The following are outlines of the services which an EER should consider providing as part of good practice. These outlines may assist an EER in explaining his services to a Client. These outlines are not intended to be exhaustive and should not be interpreted to detract in any way from the provisions of these Guidelines.

3.2 SCOPE OF SERVICES

Before commencement of design services, the EER shall meet with the Client, who generally is the Owner or the Coordinating Registered Professional but who may be others such as the contractor in a design-build contract, to:

3.2.1 Determine the terms of reference and the scope of work for Basic Services and Additional Services ;(see sections 3.3 and 3.4 below)

3.2.2 Determine and specify which electrical elements and telecommunication systems are to be designed by Specialty Engineers;

3.2.3 Reach agreement on fees, payment schedule and professional liability insurance coverage;

3.2.4 Reach agreement on a contract. (Please refer to "contract language" page prepared by Association of Consulting Engineering Companies BC at this Link: <u>https://www.acec-bc.ca/resources/contract-language/);</u>

3.2.5 For a "fast-track" or "Construction Management" project, in addition to the above, the EER should:

(a) Establish with the Client the terms and conditions under which preliminary or partially complete Contract Documents may be issued in advance and clearly define the requirements for partially complete Contract Documents;

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(b) Advise the Client that no part of the electrical documents can be considered complete before all Contract Documents including architectural, structural, civil, mechanical and electrical drawings are completed.

3.3 BASIC ELECTRICAL ENGINEERING SERVICES

The usual stages of the Basic Services, as discussed below, are generally organized in an agreement according to the sequential stages of a typical project. Each stage of the Basic Services generally contains those items which pertain most typically to the progress of work for that construction stage. Because of the requirements of a specific project, certain Basic Services activities may be required to be performed out of the normal sequence or in different stages than those indicated in the scope of services.

3.3.1 "Conceptual" or "Schematic" Design Stage

In the Conceptual or Schematic Stage, the EER may:

<mark>3.3.1.1</mark>	Attend, as required, periodic meetings with the Client and design team, to obtain the
	Client's instructions regarding the Client's functional, aesthetic, cost and scheduling
	requirements, to prepare a preliminary design concept and to report on the electrical
	systems considering economy, performance, capital cost, compatibility with other design
	elements and requirements of relevant codes and authorities;
<mark>3.3.1.2</mark>	If required assist the Coordinating Registered Professional (Prime Consultant) or Owner
	in:
	(a) Defining the need for any specialty consulting services which may be required for the
	project, e.g., acoustical, fire protection, code and Certified Professional;
	(b) Developing or reviewing the project schedule, including any milestone dates;
	(c) Determining channels of communication;
	(d) Determining drawing standards, numbering & revisions system and Specifications
	format;
	(e) Determining the number and timing of project team meetings during each stage of the
	project;
0040	Establish dates househish information offection the electrical design will be peeded from
<mark>3.3.1.3</mark>	Establish dates by which information allecung the electrical design will be needed from
	other disciplines,

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- 3.3.1.4 Conduct field reviews and review existing drawings where appropriate;
- 3.3.1.5 Establish criteria for the seismic consultant and other consultants as required. Comment on reports presented;
- 3.3.1.6 Establish electrical design criteria;
- 3.3.1.7 Check applicable codes, regulations and restrictions, insurance requirements and other factors affecting the design of the project;
- 3.3.1.8 Establish service requirements. Determine the allocation of suitable space for electrical vaults, electrical rooms, telecommunications rooms, generator rooms, and other major items of electrical installation;
- 3.3.1.9 Determine equipment weights, size, seismic requirements, and other physical characteristics that are to be considered in the building electrical design. Determine the impact of noise and vibration from the electrical systems on the Client's operational requirements and recommend solutions through the use of a specialist if necessary;

- 3.3.1.10 Establish, where appropriate, comparative information to be used in selection of electrical systems for the project;
- 3.3.1.11 Develop the electrical scheme for the electrical systems. Develop alternate schemes where appropriate. Consider materials and systems suitable to the project requirements. Consider the requirements of the other design professionals and provide the information they require;
- 3.3.1.12 Prepare a preliminary cost estimate (if part of the terms and conditions of the engaged scope of work), or, cooperate appropriately with others responsible for reporting the estimate;

3.3.1.13 Provide, if required, brief outline Specifications for proposed materials and equipment

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3.3.1.14 Describe the major electrical system(s) and each significant component and material;

- 3.3.1.15 Explain in writing to the Client all new construction materials or new techniques proposed for use in the project and their alternatives, including the risks, advantages and disadvantages over both the short and long term, so that the Client can weigh the choices and make an informed decision before the EER proceeds further;
- 3.3.1.16 If required, advise the Client of the recommended electrical systems and telecommunication. Review the effect of these systems on the electrical construction budget for the project;
- 3.3.1.17 Prepare a summary report which defines the electrical systems selected for the project and outlines the reasons involved in the selection.
- 3.3.1.18 A Client may assume responsibility for all or some of the foregoing Conceptual or Schematic Design Stage activities provided:
- the EER's ability to satisfy the requirements of the subsequent stages of these Guidelines is unimpaired;

(b) the responsibility for such preliminary design activities is clearly defined in writing;

(c) the Client, in writing, waives the EER's responsibility for such preliminary design activities and their effect on the selection of the electrical systems.

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3.3.1.19 Submit schematic design for review and approval by the client.

3.3.1.20 Review fire-stopping requirements, which is impacted by electrical installation. The fire stopping requirements to be established by the CRP (see appendix B, section 6.2.)

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3.3.2 Design Development Stage

In the Design Development Stage when the selected scheme is developed in sufficient detail to enable commencement of the final design and construction documents by all participants of the design team, the EER may:

3.3.2.1 Attend, if required, meetings with the Client and design team;

3.3.2.2	Review	results of	studies b	by specialist	consultants,	such as	geotechnical,	fire protection
and code, etc.;								

3.3.2.3 Prepare preliminary electrical analysis and design calculations for lighting, power (e.g. mechanical loads, owner loads, elevating/vertical transportation device loads, and life safety systems. Select appropriate equipment;

3.3.2.4 Prepare preliminary service drawings based on information coordinated with other consultants;

3.3.2.5 Prepare preliminary design and drawings showing layouts of typical areas;

3.3.2.6 Prepare or edit the "outline Specifications" for electrical items, as required;

3.3.2.7 Coordinate electrical design with space and servicing criteria to meet the requirements of the other design team participants. In particular, notify the Mechanical Engineer of Record of all points of interface between the two disciplines and determine as soon as possible the electrical characteristics and

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mechanical requirements of all electrical loads and potential conflicts between the electrical and mechanical riser locations;

3.3.2.8 Submit design development documentation for review and approval by the Client.

3.3.3 Contract Document Stage

3.3.3.1 General:

- (a) Design the electrical systems;
- (c) Attend periodic coordination meetings, as required;
- (d) Coordinate with the Authority Having Jurisdiction, as required;
- (e) Establish testing and inspection requirements;
- (f) Comply with fire resistance requirements as determined by the Coordinating Registered Professional or specialty consultants.
- (g) Sign and Seal documents per Engineers and Geoscientists Act.

3.3.3.2 Electrical Calculations

The EER must prepare electrical calculations to support all electrical designs. The electrical calculations should be prepared legibly and presentably and filed by the EER for record purposes. Hard copy of input and output of any computer analysis should be included as well as description of the software used.

In general, electrical calculations include but are not limited to:

(a) Design criteria:

- Discussion and description of design basis including assumptions;
- Building codes used with edition dates;
- List of electrical design parameters and provisions greater than building code and BC Electrical Code requirements as requested by the Client or otherwise used by the EER;
- (b) Location diagrams for electrical elements;
- (c) Computer analysis and design results, if applicable;

(d) Special studies and analysis where required by Code;

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Commented [BA50]: By BC Safety Authority

(e)	Equipment and cable sizing calculations;		
(f)	Short Circuit Analysis, Protection Devices coordination and Arc Flash Study		Commented [BA51]: By Alex Riftin
(The names of the electrical design environments) and design sheets environment	\sum	Commented [BA52R51]: Peter ok
(g)	The names of the electrical design engineer(s) and design check engineer,		Commented [BA53]: As advised by Dejan
	Table of a second for a finder to the all strictly also defined as		Fix the numbering.
(n)	Table of contents for or index to the electrical calculations.		
<u></u>			
<mark>3.3.3.3</mark>	Electrical Drawings		
Prepare c	omplete, contract drawings. The drawings should be made, where possible, to the same scale		
as that of	the building layout drawings and should define the work:		
	a) Where scale of drawings or complexity of work make drawing difficult to be read and		
	interpreted, separate drawings should be provided for such areas of the work as:		
	Lighting and power		
	HVAC electrical services Life Safety system requirements		
	Single Line diagram and Riser Diagrams	<	Commented [BA54]: By Alex Riftin; Done
	• other scope of services as agreed in 3.2.1;		Commented [BA55R54]: Peter ok
	b) Schematics and riser diagrams should be provided as required for all major systems with notes to describe the function of distribution never and functioning of		
	communication systems;		
	to public utility services and cross-sections and profiles, should be included;		
	 d) Symbol lists and typical details should be included, where required, for all equipment, accessories, devices; 		
	 e) Floor plan layouts for all electrical systems should be provided. Complete electrical feeder sizing together with sizes, types, locations and capacities of all panelboards 		
	should be shown on these documents;		
	f) Establish exit sign locations based on egress path as identified and laid out by an		
	architect or code consultant		
	g) To avoid conflicts, supplementary details should be provided in congested areas of		
	electrical rooms and communication equipment rooms. For clarity, such details should be drawn in plan and elevation views at a scale of 1:50 (1/4" to the foot) or		
	larger;		
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Schedules should be included to provide type and capacities of lighting fixtures, cables, panel boards, motor equipment. Alternatively, these may be included in the Specifications; All drawings as well as details, elevations and sections should be properly cross-referenced.
All drawings as well as details, elevations and sections should be properly cross- referenced.
Specifications
a) Prepare Specifications using a format suitable for inclusion with the overall Contract
Documents;
b) The Specifications should include information on:
 standards, codes, by-laws governing work; Submittals required; quality control requirements; materials; workmanship and fabrication; tolerances; information for temporary works and erection information where necessary to ensure the intent and integrity of the design; construction inspection ,testing, and commissioning. notification by the contractor before significant segments of the work are begun; warranties; performance criteria for design by Specialty Engineers.
c) Where appropriate, the Specifications may be abbreviated and become part of the drawings; that should be part of contract agreement with client (smaller scale projects)
d) The Specifications generally set out that the EER's review of Submittals and inspection of work as well as any testing by independent agencies reporting to the Client are undertaken to inform the Client of the quality of the contractor's performance and that this review and testing are not for the benefit of the contractor. The contractor must provide his own independent quality control program.

3.3.4.1 Assist in the preparation of pre-qualification documents, if required;

3.3.4.2 Assist in reviewing bidder's qualifications, if required;

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3.3.4.3 Assist the Client in obtaining required approvals, licences and permits. Prepare and supply Letters of Assurance and documents required by the Authority Having Jurisdiction; Assist in analysis and evaluation of tenders submitted; 3.3.4.4 3.3.4.5 Provide assistance to the Client in answering queries raised by the bidding contractors and issue electrical addenda and clarification of electrical documents, as required; 3.3.4.6 Assist in the preparation of the contract, if required. 3.3.5 Construction Stage It is essential that Field Services be provided for all systems for which the EER is responsible to ascertain whether or not the work is generally in accordance with the electrical Contract Documents. Field reviews are the responsibility of the EER but can be carried out by the EER in their professional capacity or under their direct supervision. See Engineers and Geoscientists BC Quality management Guideline: "Documented Field Reviews during Implementation or Construction "and "Direct Supervision". Field Services by the EER should not be construed to relieve the contractor of the contractor's responsibility for building the project in accordance with the Contract Documents, controlling the progress, coordinating sub-contractors for the construction logistic, providing safe working conditions, and correcting any deviations from the project requirements. Some items reviewed by the EER may also require review by other members of the design team or by testing and inspection agencies. Such work may include proprietary products and electrical elements designed by others. 3.3.5.1 Field Services During Construction: Field Services should include, but not necessarily be limited to, the following and may vary depending on the complexity of the job. (a) Attend construction meetings, if required; (b) Confirm communication channels and procedures;

(c) Assist in confirming, reporting and scheduling procedures for testing and inspections;

(d) Assist in confirming procedures for shop drawings and other Submittals;

(e) Confirm that the qualifications of manufacturers meet the Specifications;

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Commented [BA56]: As commented by Ulrich and confirmed by Peter :

Remember to change all "field services " to "Field reviews"

Check the exact name of the guidelines.

Commented [BA57R56]: Both terms (field reviews and field services) are used throughout the document. As discussed with Peter, we need to go through the document and decide. Peter ok

Commented [BA58]: Added by Peter. Fix the name of the guideline Done.

- (f) Advise the contractor and the Coordinating Registered Professional on the interpretation of the electrical drawings and Specifications and issue supplementary details and instructions during the construction period as required;
- (g) If requested, advise the Client on the validity of charges for additions to or deletions from the contract and on the issue of change orders;
- (h) Review and comment on, if requested by the Client, the contractor's applications for progress payments. Estimate, if required, completed work and materials on site for payment according to the terms of the construction contract;
- (i) Where the FSR, municipal safety officer, on the installation, note code/safety contravention(s), the EER is to work with Prime contractor to ensure any contravention is corrected prior to occupancy. Where there is uncertainty to the interpretation to the code, EER should work with AHJ to provide clear instruction to contractor to complete the installation.
- Review reports from the testing and inspection agencies to determine if the agency has verified compliance of the reported item of work with the electrical Contract Documents. Initiate any necessary action;
- (k) Conduct substantial and total performance field reviews of the electrical components of the project, note deficiencies and inspect completed corrections;
- (I) Submit, if required, Letters of Assurance and Record Drawings to the Authority Having Jurisdiction; And/or Coordinating Registered Professional.
- (m) Review Record Drawings by contractor once completed. Review Operation and Maintenance Manuals (O & MM) before handing over to client.

3.3.5.2 Review of Submittals

Submittals should be reviewed for general compliance with the electrical Contract Documents and do not include: checking dimensions or quantities or the review of the contractor's safety measures or methods of construction.

 Confirm that the Submittals have been reviewed by the Prime contractor and relevant Sub-Contractor before review by the EER;

(b) Review the shop drawings and other Submittals for conformance with the

Contract Documents and the intent of the design;

With respect to the submission of the shop drawings dealing with ancillary building

systems identified in section 3.4.47, the EER responsibility is to review the relevant shop PROFESSIONAL PRACTICE GUIDELINES

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Commented [BA59]: This comment by Michael should be discussed: The new CCDC standard contracts are going to remove the term "substantial completion" and instead use the "Ready for Use". The intent is to clear issues relating to hold backs etc but may impact other aspects of field reviews and EER work.

I clarified with him in an email.

His clarification:

IN regards to the "substantial completion" comment, the recommendation would be to use different language within the guide during the present revision. Unfortunately the revised language is not present in the current standard contracts and isn't expected to be made until the update for CCDC 2 – which is expected later this year. So at this point it's primarily intended as information.

Commented [BA60R59]: As discussed with Michael on the phone, no changes needed at the time!

drawings to confirm the required power is supplied to the devices in a manner, which is consistent with the requirements in the shop drawings.

Commented [BA61]: Added by Peter

- (c) When required by the Contract Documents, confirm that the shop drawings bear the signature and professional seal of the Specialty Engineer responsible for the design of such specialty systems as seismic elements and connections. Responsibility for the detail design remains with the Specialty Engineer whose seal and signature appear on the drawings. To clarify responsibility, the Specialty Engineer may qualify the extent of work which has been designed by the Specialty Engineer;
- (d) Review Record Drawings prepared and submitted by the contractor either electronically or by hard copy to reflect "Record" condition of the project as turned over to the Client. The Client shall be advised that these drawings are prepared by the contractor and have been reviewed only for general conformity to the drawing standards and the intent of the design and that the EER cannot accept responsibility for their accuracy;
- (e) Arrange for the contractor to submit and review operating and Maintenance Manual for the equipment/systems supplied on this project. The data submitted should include manufacturer's recommendations for maintenance of each piece of equipment and other such information which will enable the Client to assume operation of the building.
- (f) EER shall obtain a written letter from the contractor or the vendor confirming that for all fire stops, the product/material used meets the EER 's design documents(drawings and specifications), and has been tested to confirm it meets the relevant standard(S).

3.3.5.3

Field Review

- (a) Visit the site at intervals appropriate to the stage of construction to observe the quality and the progress of the construction of those elements designed by the EER. At the discretion of the EER, proprietary products, connections and other seismic restraint elements which have been designed by Specialty Engineers should be inspected by those Specialty Engineers at the appropriate stage of construction and reported in writing to the EER;
- (b) Prepare site visit reports outlining observations and deficiencies in the work and bring them to the attention of the contractor's site representative;
- (c) Distribute, as required, site visit reports to the Coordinating Registered Professional and other parties such as the Prime contractor and Owner. Where the Owner directly retains the services of the EER, it is recommended that the Owner also be sent copies of the reports;

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- (d) The EER is to exercise professional discretion in determining the number of field reviews including random checks to ensure an adequate level of effort is met in completing this aspect of the field reviews. This will ascertain whether the work related to installing fire stops for the building's electrical system substantially complies with the plans and supporting documents prepared by the EER for which the building permit is issued.
- (e) Conduct a final project review and advise the Client of continuing or newly-observed defects or deficiencies in the project.

3.4 ADDITIONAL ELECTRICAL ENGINEERING SERVICES

In addition to the Basic Services, the EER may provide the following Additional Services if the EER and the Client reach appropriate mutual agreements. They are generally not considered intrinsic parts of the basic electrical design services, as discussed in Section 3.3, and are not part of the minimum services which the EER should provide under these Guidelines, except as agreed upon in a contract.

The Client should retain the EER to provide additional services in order to review items designed by others to confirm compatibility with the design of the electrical systems.

Examples of Additional Services are:

3.4.1 Provision of services beyond those involved in the design and field review of the base electrical system for the building are considered additional services .This can include such things as the review of matters related to compliance with the relevant Building Code which are not related to the design of electrical services. Examples of these types of additional services could include location of exit signs, exit routes and other life safety matters relevant to the building code. In situations like tenant improvements and the electrical engineer is prime consultant and an architect is not involved, the EER needs to obtain advice from a code consultant/ architect to confirm exiting routes and exit sign locations.

3.4.2 Design work resulting from changes to the project as originally described and agreed to under the contract between the EER and Client such as changes in scope, complexity, diversity or magnitude of the project;

3.4.3 Preparation of alternate electrical designs and related documentation after selection of the electrical system made during the conceptual and schematic design stages;

3.4.4 Review, design and documentation of alternate or substitute systems if requested by the Coordinating Registered Professional (Prime Consultant), the Client or the contractor, for tendering to obtain competitive bids for items such as proprietary products;

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Commented [BA63]: By Alex Riftin Commented [BA64R63]: Peter ok

Commented [BA65]: By Peter

Commented [BA62]: By Peter.

3.4.5 Work connected with the preparation of documents for tendering segregated contracts, pre-tendered contracts, phased or fast-track construction;

3.4.6 Review of alternate designs or products after completion of the Contract Documents;

3.4.7 Work resulting from changes necessary because of construction cost over-run which is outside the control of the EER;

3.4.8 Translation of Contract Documents into a second language, conversion to other units, special preparation of drawings for reduction;

3.4.9 Programming of such items as Owner's equipment and electrical systems where investigation and analysis must determine user requirements for a statement of system requirements, materials and performance;

3.4.10 Analysis of long range plans as defined by the Coordinating Registered Professional (Prime Consultant) and attendant preliminary sketches and reports (master planning);

3.4.11 Preparation of alternative building or system designs and attendant documentation when required by the Coordinating Registered Professional (Prime Consultant) or Client either for review or for competitive tender prices;

3.4.12 Travelling time outside of normal requirements;

3.4.13 Construction or project management services;

3.4.14 Energy analysis and value engineering (life cycle costing) analysis including schematics where required by the Coordinating Registered Professional (Prime Consultant) or Client;

3.4.15 Preparation of designs and documentation for future implementation not included in construction contract;

3.4.16 Preparation of Bills of Material or Schedules of Material at any time during the project;

3.4.17 Resident engineering services during construction. Supply resident staff on the project to determine if the contractor is carrying out his work in accordance with the Contract Documents. If required by the Coordinating Registered Professional (Prime Consultant), resident services may include the recording of all details of construction for final revisions of the plans or drawings to show the work on Record Drawings. "Services" as described do not include the direction of persons or the selection, direction or approval of methods and equipment employed by the contractor in any phase of the construction or the placing in operation of any plant or equipment;

3.4.18 Preparation of drawings, Specifications and change orders and administration of contract additions and/or deletions which are initiated by the Client but either have not been implemented or result in a reduction in the contract price;

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3.4.19 Certification inspections and testing of life safety systems where required by the Authority Having Jurisdiction;
 3.4.20 Testing of building systems requiring confirmation of conformance with Specifications;

3.4.21 Preparation of operating or maintenance manuals;

3.4.22 Preparation of Record Drawings containing contractor information where requested. (The EER does not guarantee the accuracy of information provided to him by the contractor); Refer to section 1.3 for Record Drawings definitions

3.4.23 Providing services after expiry of the period of one (1) year following Certification of Substantial Performance;

3.4.24 Complete or partial revision of design documents previously approved by the Client or in keeping with written instruction or drawings previously received from the Client;

3.4.25 Commissioning of building electrical systems including training of personnel and providing operating and maintenance assistance;

3.4.26 Advisory services which include: testimony; consultation and advice; appraisals; valuations; research; other services leading to specialized conclusions and recommendations;

3.4.27 Surveys of existing electrical equipment, which include elaborate surveys or measurements and evaluation of existing electrical equipment, i.e., securing of information on special existing loadings such as unusual equipment requirements or unusual construction;

3.4.28 Breaker Verification, Factory Witness Testing involve: actual detailed study of the breaker and fuse reaction times to ensure a coordinated distribution system; adjustment of the breaker times on site to respond to the coordination study results. In addition, the EER may witness factory testing of major electrical components to verify performance before shipment from the factory;

3.4.29 Fast-track construction. To facilitate an earlier-than-normal construction start, the prime consultant or project manager may request the EER to prepare several separate bid packages instead of the normal one. In this case, complete tender documentation necessitating extra work on the part of the EER is required for each bid package;

3.4.30 Site work elements beyond the property line;

3.4.31 Review of Seismic restraints designed by Specialty Engineers for electrical systems;

3.4.32 Review of design drawings or Specifications prepared by others to determine adequacy of anchorage of seismic elements for electrical equipment;

3.4.33 Preparing or assisting with the preparation of detailed cost estimates. The EER shall inform the Client of the variables inherent in the estimate and the expected degree of variation from the

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verified;	
<mark>3.4.</mark> 34	Filing application for and obtaining permits;
<mark>3.4.</mark> 35	Preparation of demolition documents;
<mark>3.4.</mark> 36	Tenant-related design services;
<mark>3.4.</mark> 37	Design or review of the effects of the contractor's methods, procedures or construction
equipment on	the structure;
<mark>3.4.</mark> 38	Work resulting from corrections or revisions required because of errors or omissions in
construction b	y the contractor;
<mark>3.4.</mark> 39	Work due to extended time schedules for design or construction;
<mark>3.4.</mark> 40	Services as an expert witness in connection with any public hearing, arbitration or court
proceedings c	oncerning the project, including attendant preparation of same;
<mark>3.4.</mark> 41	Work resulting from damage as the result of fire, man-made disasters, or natural disasters;

estimate. Where the degree of variation is critical, the Owner should have the estimate independently

3.4.42 Authorized overtime work requiring premium pay.

3.4.43 Additional power system studies for the following: Grounding system, harmonics mitigation, lightning protection, detailed coordination study, arc flash study.

3.4.44 Affixing Arc Flash Study warning labels to project electrical equipment.

3.4.45 Preparation of cost estimates.

3.4.46 Design of onsite Renewable (alternate) Energy Generation Systems and coordination with the local utility regarding related protection and energy production monitoring. Where relevant, the EER will contact the utility authority in order to define responsibilities and relationships between power producer and local authorities. The EER is responsible for determining the electrical capacity of the electrical system and the design of the backup capacity (others may be required to determine this if it relates to the electrical capacity required to heat the whole building);

3.4.47 Design and/or manage the integration of various building systems including but not limited to Building Management System (BMS), Access Control System, Video Surveillance System, security /communication systems, Intrusion Detection System, Public Address/Information Display System, Audio Visual System, Nurse Call System, elevating devices.

Commented [BA66]: on section 3.4.46, the first sentence "and coordination with the local utility related protection and energy production monitoring"; does it make sense?

Commented [BA67R66]: Peter fixed it

Commented [BA68]: Added: "security /communication systems" as commented by Michael and approved by Peter.

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3.4.48 Heat recovery systems designed by the mechanical engineer of record needs to include estimated heat gains recovered from electrical equipment; for example, the EER may be required to determine the heat from other sources (e.g. Transformers, computers, racks, etc.)

3.4.49 EER can act as the CRP for simple design projects for which the majority of work relates to the design of electrical systems. An example is tenant improvements where there are more than one engineering discipline involved e.g. fire protection system and electrical system.

3.5 FABRICATION DRAWINGS AND DOCUMENTS

The fabricator or manufacturer shall produce all necessary drawings and documents to represent the work covered by his contract with the contractor. These drawings and documents are prepared following a review of the Contract Drawings, Specifications and Contract Documents supplied by the EER and following the resolution of any errors or requested changes. They usually include:

3.5.1 SHOP DRAWINGS

These are drawings produced by the fabricator and/or manufacturer to provide all information necessary for shop personnel to fabricate and assemble the items. The drawings shall be sealed, signed and dated when incorporating design by the Specialty Engineer.

3.5.2 CATALOGUES

Catalogues of the project equipment, which contain details of wiring, controls, and protection devices.

3.5.3 MANUALS

Manuals for operation and maintenance of project equipment.

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4.0 QUALITY MANAGEMENT IN ELECTRICAL ENGINEERING PROFESSIONAL PRACTICE

Engineering professionals must adhere to the applicable quality management requirements during all phases of the work, as per the association's bylaws. It is also important to be aware of whether additional quality management requirements exist through other authorities having jurisdiction or through service contracts.

4.1 QUALITY MANAGEMENT REQUIREMENTS

Engineering professionals are obligated to abide by the quality management requirements set out in the association's bylaws. To meet the intent of those requirements, Engineering professionals must establish and maintain documented quality management processes for the following activities:

- The application of relevant Professional Practice Guidelines
- Authentication of professional documents by the application of the professional seal
- Direct supervision of delegated professional Electrical Engineering activities
- Retention of complete project documentation
- · Regular, documented checks using a written quality control process
- Documented field reviews of Electrical Engineering designs/recommendations during implementation or construction

4.1.1 PROFESSIONAL PRACTICE GUIDELINES

As per the *Engineers and Geoscientists Act*, s.4(1) and Bylaw 11(e)(4)(h), engineering/geoscience professionals are required to comply with the intent of any applicable professional practice guidelines related to the engineering or geoscience work they undertake. One of the three objectives of the Association, as stated in the *Act* is "to establish, maintain, and enforce standards for the qualifications and practice of its members and licensees." Practice guidelines are one means by which the association fulfills this obligation.

4.1.2 USE OF SEAL

According to the *Engineers and Geoscientists Act*, s.20(9), engineering/geoscience professionals are required to seal all and only professional engineering or professional geoscience documents that they will deliver to others who will rely on the information contained in the documents. This applies to documents

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Commented [BA69]: •Deleted "Where applicable, documented independent review of structural designs prior to construction

" after receiving Gruja 's comment.

Commented [BA70]: Gruja commented:

"Under 4.1.1, I think we should be explicit that the Association has only this Professional Practice Guidelines on the subject matter. Also, the Guidelines coming from other professional and learning societies should be followed depending on the application (IEEE, IES, IEC, ASHRE, etc.)

Discussion needed on where to add part of this note and who should complete the note.

Commented [BA71R70]: Done .Added in Section 1

Commented [BA72]: Kelly commented: This is an unapproved modification that makes this GL inconsistent with our standard template and changes the meaning

Commented [BA73R72]: Proposed by Karen in the Geotech

Discussed with Peter and Harshan and they agreed. We should always be able to improve the template!

It should be discussed with Kelly and Peter as advised by Peter.

Approved by Peter

that Engineering professionals have personally prepared and those that others have prepared under their direct supervision.

Failure to seal engineering or geoscience documents that they prepare and deliver in their professional capacity or have prepared and delivered under their direct supervision in any sector is a breach of the *Act*.

Refer to the Use of Seal Guideline for additional restrictions pertaining to the record drawings.

For more information, refer to the Quality Management Guideline – Use of the Seal, available on the association's website.

4.1.3 DIRECT SUPERVISION

According to the *Engineers and Geoscientists Act*, s.1(1) and 20(9), engineering/geoscience professionals are required to directly supervise any engineering or geoscience work that they delegate. When working under the direct supervision of an engineering/geoscience professional, unlicensed persons or non-members may assist in performing engineering and geoscience work, but they may not assume responsibility for it. Engineering/geoscience professionals who are limited licensees may only directly supervise work within the scope of their license.

With regard to direct supervision, the engineering/geoscience professional having overall responsibility should consider:

- the complexity of the project and the nature of the risks;
- which aspects of the work should be delegated;
- the training and experience of individuals to whom work is delegated; and
- the amount of instruction, supervision, and review required.

Careful consideration must be given to delegating fieldwork. Due to the complex nature of fieldwork, direct supervision is difficult and care must be taken so delegated work meets the standard expected by the engineering/geoscience professional with overall responsibility. Typically, such direct supervision could take the form of specific instructions on what to observe, check, confirm, record, and report to the supervising professional. Engineering/geoscience professionals with overall responsibility should exercise judgment when relying on delegated field observations, and they should conduct a sufficient level of review to have confidence in the quality and accuracy of the field observations.

For more information, refer to the Quality Management Guideline – Direct Supervision, available on the association's website.

4.1.4 RETENTION OF PROJECT DOCUMENTATION

As per Bylaw 14(b)(1), engineering/geoscience 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 or geoscience documentation is no longer in use.

These obligations apply to engineering/geoscience professionals in all sectors. Project documentation in this context includes documentation related to any ongoing engineering or geoscience work, which may not have a discrete start and end, and may occur in any sector.

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Commented [BA74]: Advised by George.

Many engineering/geoscience professionals are employed by organizations, which ultimately own the project documentation. Engineering/geoscience professionals are considered compliant with this quality management requirement when a complete set of project documentation is retained by the organizations that employ them using means and methods that are consistent with the association's bylaws and guidelines.

For more information, refer to the Quality Management Guideline – Retention of Project Documentation, available on the association's website.

4.1.5 DOCUMENTED CHECKING

As per Bylaw 14(b)(2), engineering/geoscience professionals are required to undergo documented quality checking and review of engineering and geoscience work appropriate to the risk associated with that work.

Regardless of sector, engineering/geoscience professionals are required to meet this quality management requirement. In this context, 'checking' means all professional deliverables must undergo a documented checking and review process before being finalized and delivered. This process would normally involve an internal review by another engineering/geoscience professional within the same organization. Where an appropriate internal reviewer is not available, an external reviewer (i.e., one outside the organization) must be engaged. Where an internal or external review has been carried out, this must be documented.

Engineering/geoscience professionals are responsible for ensuring that the checks being performed are appropriate to the level of risk. Considerations for the level of review should include the type of document and the complexity of the subject matter and underlying conditions; quality and reliability of background information, field data, and elements at risk; and the engineering/geoscience professional's training and experience.

For more information, refer to the Quality Management Guideline – Documented Checks of Engineering and Geoscience Work, available on the association's website.

4.1.6 FIELD REVIEWS

As per Bylaw 14(b)(3), 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/geoscience professional or a subordinate acting under the professional's direct supervision. Field reviews enable the engineering/geoscience professional to ascertain whether the construction or implementation of the work substantially complies in all material respects with the engineering or geoscience concepts or intent reflected in the engineering or geoscience documents prepared for the work.

Engineering/geoscience professionals are required to establish and maintain documented quality management processes, which include carrying out documented field reviews of their domestic projects or work during implementation or construction. Domestic works or projects include those located in Canada and for which an engineering/geoscience professional meets the registration requirements for the engineering or geoscience regulatory body that has jurisdiction.

For more information, refer to the Quality Management Guideline – Documented Field Reviews during Implementation or Construction, available on the association's website.

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For critical design elements of the electrical system or where there are significant life safety implications or where required by Code, the design shall be checked by an independent engineer, not necessarily from a separate company; The Independent Review shall be documented and the documentation retained as per section 4.1.

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Commented [BA75]: Suggested By Kelly. Done!

5.0 PROFESSIONAL REGISTRATION & EDUCATION, TRAINING, AND EXPERIENCE

5.1 PROFESSIONAL REGISTRATION

It is the responsibility of Engineering professionals to determine whether they are qualified by training and/or experience to undertake and accept responsibility for the carrying out Electrical engineering tasks (Code of Ethics Principle 2).

5.2 EDUCATION, TRAINING, AND EXPERIENCE

An Electrical Engineer, as described in these guidelines, requires minimum levels of education, training and experience in many overlapping areas of engineering and geoscience. The Engineering professional taking responsibility must adhere to the association's Code of Ethics (to undertake and accept responsibility for professional assignments only when qualified by training or experience) and, therefore, must evaluate his/her qualifications and must possess the appropriate education, training, and experience to provide the services.

The level of education, training, and experience required of the Engineering professional should be adequate for the complexity of the project. Typical qualifications for the lead Electrical Engineering professional or a team of professionals may include education and experience in the following areas:

• Electrical engineering, with basic knowledge of mechanical, civil, architectural and sustainability.

The academic training for the above skill sets can be acquired by taking formal university or college courses plus kept current through continuing professional development. There may be some overlap in courses and specific courses may not correlate to specific skill sets. An Electrical Engineering professional should also remain current with evolving topics, through continuing professional development. Continuing professional development can include taking formal courses; attending conferences, workshops, seminars, and technical talks; reading technical publications; searching the web; and participating in field trips.

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- The Electrical Engineering Professional must be able to communicate effectively both verbally and in • writing in the English language.
- A Professional Engineer (P.Eng) should not act as an EER unless they have obtained a minimum of 2 ٠ years experience under the direct supervision of another EER. These two years of experience can be gained while going through the four years training under the EIT program. The experience gained in order to practice as an EER must be relevant to the type of work and projects for which they will be taking responsibility.



Commented [BA76]: As advised by authors: "EER is a Professional Engineer who chooses to use his seal. EER cannot be EIT." You cannot be an EIT and Act as an EER.

As a result it should be clarified.

This is suggested instead:

" A P.Eng should not act as an EER unless they have obtained a minimum of 2 years experience under the direct supervision of another EER during their EIT program."

Commented [BA77R76]: Bahareh fixed it on July 17 2018 based on discussion with Lindsay and author's suggestions. To be approved by Peter later.

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6.0 REFERENCES AND RELATED DOCUMENTS

Contract Language Association of Consulting Engineers of Canada https://www.acec-bc.ca/resources/contract-language/

CCDC (Canadian Construction Documents Committee); Contract forms

http://csc-dcc.ca/ccdc+(canadian+construction+documents+committee)/

"Budget Guidelines for Consulting Engineering Services"; by Engineers and Geoscientists BC and the Consulting Engineers of B.C <u>https://www.egbc.ca/getmedia/308d2e85-4d1d-4a1e-99f5-e1ed5485778f/Budget-Guidelines-for-Consulting-Engineering-Services-2009.pdf.aspx</u>

"Consulting Engineers Fee Guideline"; by the Consulting Engineers of B.C <u>http://www.acec-bc.ca/media/36630/acecbcfeeguide16.pdf</u>

"Guideline -Professional Engineers Providing Mechanical and Electrical Engineering Services in Buildings", 1997, Association of Professional Engineers of Ontario http://peo.or.ca/index.php/ci_id/22115/la_id/1.htm

Engineers and Geoscientists BC Website; Professional Practice Guidelines; Engineers and Geoscientists BC /Architectural Institute of BC Professional Practice Guidelines; Whole Building Energy Modelling Services

Engineers and Geoscientists BC Website; Professional Practice Guidelines; Guide to the Letters of Assurance in the B.C. Building Code

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Commented [BA78]: Peter , please approve:

As suggested by Michael on "Specifications", could we add the following reference:

CCDC (Canadian Construction Documents Committee); Contract forms.

http://csc-

Commented [BA79R78]: Add it as Peter approved

LIST OF APPENDICES

Appendix A: Common Organizational Structures

Appendix B: Letters of Assurance (LOA)

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APPENDIX A: COMMON ORGANIZATIONAL CHARTS



Commented [BA80]: Comments and mark ups on Appendix A is attached in a separate PDF file.

NOTE:

- 1. The Specialty Engineer may be hired by the Owner, the Electrical Engineer of Record or by contractors.
- 2. It must be noted that in some circumstances the EER will be prime consultant or can take the role of a Prime consultant.

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2. Electrical Engineer of Record (EER)/Owner Contract



Contractual Functional Relationship Interface

NOTE: 1. The Specialty Engineer may be hired by the Owner, the Electrical Engineer of Record or by contractors. 2. The Coordinating Registered Professional shall be responsible for coordination of the sub consultants even though they are hired by the Owner.

3. It should be noted that in some circumstances the EER will be prime consultant or can take the role of a Prime consultant.

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3. Design/Build Contract



- NOTE: 1. The Specialty Engineer may be hired by the Owner, the Electrical Engineer of Record or by contractors.
 - 2. The *Coordinating Registered Professional* shall be responsible for coordination of the sub consultants even though they are hired by the *Owner*

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APPENDIX B: LETTERS OF ASSURANCE (LOA)

LOAs were introduced in 1990 in the VBB, and in 1992 in the BCBC and continue to be referenced in the current editions of the VBB and BCBC. They were developed after discussions among the City of Vancouver, the BC Building Policy Branch, the Architectural Institute of British Columbia and ENGINEERS AND GEOSCIENTISTS BC, and in close consultation with the Building Officials Association of BC.

The intent of the LOA is to assure the authority having jurisdiction that for a particular building project:

- the activities of the various RPRs are coordinated;
- the design documents submitted in support of the application for a building permit substantially comply with the BCBC or VBB;
- building designs substantially comply with the requirements of the BCBC or VBB; and
- the RPR will undertake, and has undertaken, the necessary field reviews to determine that building construction substantially complies with the BCBC or VBB.

Schedule B identifies the various RPRs who acknowledge responsibility for their designs and that they substantially comply with the BCBC or VBB respecting safety, except for construction safety aspects. Schedules B also provide a commitment that the RPRs will be responsible for field reviews required for the project.

Schedule C-B confirms that the necessary field reviews have been completed by the RPR, and the finished project substantially conforms to the design, and the BCBC or VBB.

A RPR acting as the EER should only undertake design and field review for the items identified on the LOA for their discipline based on their competency. As such, a RPR, or owner, may require supplementary supporting engineering services for a particular electrical component, or sub-component. In instances where supporting engineering services are required, it is recommended that appropriate assurances should be obtained by the relevant RPR from the SRP (who could be engaged by the RPR; the owner; a contractor, sub-trade or supplier) providing the supporting design service and/or field service. Upon receipt of assurance from such SRP that a particular component, or sub-component substantially complies, in all material respects, with the applicable requirements of the BCBC, the RPR can complete and submit the LOA for his or her discipline. Please refer to

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AIBC/ENGINEERS AND GEOSCIENTISTS BC Practice Note 16 to view the model supporting LOAs Schedules S-B and S-C, that Engineers and Geoscientists BC and the AIBC have recommended for use by registered professionals acting as a SRP.

For further reference to the BCBC and VBB LOA refer to:

- British Columbia Building Code, Letters of Assurance [web]
- The City of Vancouver Building Bylaw, Letters of Assurance [web]
- Guide to the Letters of Assurance in the British Columbia Building Code [web]
- Engineers and Geoscientists BC Bulletin K Letters of Assurance in the BC Building Code and Due
 Diligence
- AIBC/ENGINEERS AND GEOSCIENTISTS BC Practice Note 16: Professional Design and Field Review by a Supporting Registered Professional.

Where unanticipated conditions are observed, the design professional should provide recommendations and additional field reviews to achieve the design objectives. A design professional has the responsibility to ensure deficiencies identified in field reviews, for which he/she is responsible, are addressed adequately.

Where the requirements of the BCBC or VBB are at variance with standard practice, there are provisions for "generally accepted design" or "established local practice" to satisfy the requirements.

• Schedule B

Descriptions of the various items set out in Schedule B that relate to electrical engineering practices are presented below.

With respect to the items under the heading of "Electrical", the purpose is to clearly identify the RP who has the overall responsibility for these items as the RPR acting as the EER.

The EER has the responsibility for the design and field review of the electrical system.

Only the EER acting as the RPR for the electrical system should sign off for the electrical items on Schedule B.

The following sections cover the relevant electrical items within Schedule B:

> Electrical Engineer of Record (EER) or RPR for the Electrical System

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The numbers provided for each of the items discussed below are consistent with those in Schedule B.

> The EER should only sign off LOA items 6.1-6.10 after the FSR has completed their review to confirm that the installation is safe with respect to being in compliance with the CEC (Canadian Electrical Code).

6.1 Electrical systems and devices, including high building requirements where applicable:

EER will sign off on this item only after FSR completed their review and the EER has determined that there is sufficient evidence that the systems and devices are in compliance with relevant Standards and Codes.

6.2 Continuity of fire separations at electrical penetrations

In order for the EER to sign off on item 6.2, the EER needs to either:

- carry out visual and random checks to confirm that the fire separations at electrical penetrations caused by electrical devices have been addressed and that the product specified has been used and installed, or,
- specify that an independent third party inspector undertakes a full and complete inspection, produces a final signed and sealed report/certificate (similar to 6.3 below).

6.3 Functional testing of electrical related fire emergency systems and devices

Based on testing report signed by contractor and testing agency confirming functional testing of particular system, the EER can sign off this item.

6.4 Electrical systems and devices maintenance manuals

The Operation and Maintenance Manuals must contain all relevant documents for all systems and devices on the project including shop drawings, cut sheets and catalogues in order EER can sign off this item.

6.5 Structural capacity of electrical components, including anchorage and seismic restraint

This work can include anchorages, supports and restraints for transformers, panels, and lighting equipment.

The EER typically initials this item. The design of the anchorage and seismic restraints of electrical components is typically carried out by a SRP who submits a Schedule S-B and S-C to the EER.

Neither the EER nor the SRP takes responsibility for the structural integrity of the electrical components themselves.

6.6 Clearances from buildings of all electrical utility equipment

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Commented [BA81]: Changed on Jun21 by Peter

Conformance with local utility Authority conditions for connections must be confirmed on the site before EER can sign off this item.

6.7 Fire protection of wiring for emergency systems

The Code compliance must be satisfied for fire protection of the emergency wiring before EER can sign off this item.

6.8 Review of all applicable shop drawings

All relevant project shop drawings must be reviewed and signed off by the electrical contractor.

The EER will only review for conformity to the design concept and for general arrangement. Unless a deviation on the shop drawings has been previously approved in writing by the EER, such a review by the EER does not relieve the contractor from its responsibility for any and all errors or omissions in the shop drawings or from its responsibility for meeting all the requirements contained in the contract documents. The EER must confirm that he/she has reviewed the shop drawings e.g., using a stamp that confirms the shop drawings have been reviewed. The shop drawing review stamp should include appropriate wording to indicate the nature of the review, and that the shop drawings were reviewed for general conformance only to the design concept and for general arrangement. Where variations from the design intent are identified during the review of shop drawings they must be documented and followed up.

For more information, Please refer to the Engineers and Geoscientists BC Guideline on Shop Drawings.

6.9 Electrical systems, Part 10 – ASHRAE, NECB or Energy Step Code requirements

Please refer to section 2 for more details as follows.

6.10 Electrical systems, testing and/or confirmation of Part 10 requirements

The Architectural, Mechanical, Plumbing, and Electrical disciplines refer to "testing, confirmation or both as per Part 10 requirements". The intention is that the registered professional of record provides assurance regarding the design and field review requirements for testing, confirmation, or both, as per the requirements of the Part 10 compliance path chosen for the building (i.e., ASHRAE 90.1-2010, NECB 2011, or the BC Energy Step Code). As an example, professionals working on lighting and following the ASHRAE 90.1-2010 compliance path confirm that the design work complies with the requirements of Section 9, should undertake a field review to confirm that the installed lighting complies with their design, and should prepare submittals based on the requirements of Section 9.7.

https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/construction-industry/building-codes-andstandards/bulletins/b18-01 - january 2018 update - letters of assurance.pdf

The BCBC Letters of Assurance and Part 10 (Energy) Aspects of the Building Code:

- Regardless of what energy codes (National Energy Code for Buildings) and standard (ASHRAE 90.1, BC Energy Step Code) is used in the project, for Part 3 new construction projects, the EER should sign off on items 6.9 and 6.10 in the Schedule B of the LOA relating to conformance with the Part 10 (Energy) aspects of the Code.
- In projects where building energy modelling is not required, EER can sign off on:
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Commented [BA82]: Needs revising; Ulrich also commented: Grammer? Commented [BA83R82]: Fixed by Peter. This content comes from section 2.4 of the shop

Commented [BA84]: Jun. 21 by Peter

- Item 6.9 by confirming that the electrical requirements within Sections 8 and 9 of ASHRAE 90.1, or Part 4 and Part 7 of NECB have been met.
- Item 6.10 by specifying the testing requirements in energy code or standard as applicable to the building and confirming that the testing will be carried out.
- In projects where building energy modelling is required, EER can sign off on:
 - Item 6.9 by confirming that electrical discipline's inputs to the energy model have been provided per Sections 8,9 and 10 (including mandatory requirements) of ASHRAE 90.1, or Part 8 with relevant prescriptive requirements under Part 4 of NECB (applies to both NECB and the BC Energy Step Code), and after confirming their design's compliance as it pertains to the model.
 - Item 6.10 by specifying the testing requirements in energy code or standard as applicable to the building, confirming that the testing will be carried out, and confirming that any changes to the electrical design that could affect the energy model will be communicated to the *Coordinator* (as defined in the Professional Practice Guidelines – Whole Building Energy Modelling Services).

> Additional notes for building energy modelling projects:

In projects in which whole building energy modelling is required under Part 10 (Energy) of the Code, the following applies:

- EER is to review the pertinent sections of the Professional Practice Guidelines Whole Building Energy Modelling Services and provide inputs to the energy model through the coordinating registered professional as it pertains to the scope of their project.
- Through the *Coordinator* (as defined in the Professional Practice Guidelines Whole Building Energy Modelling Services), the electrical EER provides relevant inputs to the energy modeler (referred to a *qualified modeler* or an *energy modelling supervisor* (EMS) those guidelines) at the design process in order to confirm compliance with the energy performance objectives of the energy codes/standard (e.g. BC Energy Step Code). This includes providing information on building design and systems that impact building energy consumption applicable to their scope of work.
- Through communications with the *Coordinator*, the electrical EER can sign off on items 6.9 and 6.10 of Schedule B regarding compliance with the Part 10 (Energy) aspects of the code. This can be achieved through the provision of electrical related model inputs to the *qualified modeler* or *energy modelling supervisor* and after getting conformation from the *Coordinator* that, the building's design meets the whole building energy performance objectives.
- Based on field reviews, the electrical EER would also confirm the electrical discipline specific inputs to the energy modeler have been accepted and are being utilized in the energy model based on the as-constructed condition. This should occur prior to the issuance of Schedule C-B.

Note: Except on existing buildings and project in which commissioning, or measurement & verification is involved, the energy modelling exercise is only relevant to the completed design at the time of occupancy and does not deal with energy usage once the building is operational.

How to address changing EER part way through the project :

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For more information about the allocation of responsibilities, please refer to the "Guide to the Letters of Assurance in the B.C. Building Code " posted on Engineers and Geoscientists BC Website, section "DEALING WITH CHANGES IN REGISTERED PROFESSIONALS OF RECORD AFTER A BUILDING PERMIT IS ISSUED"

• Schedule S:

As mentioned above, please refer to AIBC/ENGINEERS AND GEOSCIENTISTS BC Practice Note 16 to view the model supporting LOAs Schedules S-B and S-C, that Engineers and Geoscientists BC and the AIBC have recommended for use by registered professionals acting as a SRP.

For the definition of SRP, please refer to section 1.3.

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PROFESSIONAL PRACTICE GUIDELINES DOCUMENT TITLE GOES HERE

Version.

NAME OF SECTOR PROFESSIONAL RRACTICE GUIDELINES

DESIGNING GUARDS FOR BUILDINGS Draft July 2018

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


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PREFACE

These *Professional Practice Guidelines – Designing Guards for Buildings* were developed to guide professional practice related to the design of Guards. Guards are considered secondary structural components that are critical to life safety since they act as barriers to prevent people from falling from a height. Within these guidelines, a myriad of issues such as design considerations, continuity of professional responsibility, and assurance pathways are discussed.

This update to these guidelines was undertaken to reflect current industry standards and practices. In particular there has been a new Canadian standard published in 2016, the CSA A500 entitled "Building Guards", which is a comprehensive standard on the design, testing and implementation of Guards and provides explicit guidance on the use of glass in Guards.

This document has been prepared for the information of Engineering Professionals, Architects, Designers, Authorities Having Jurisdiction, the public, and a range of other stakeholders who might be involved in, or have an interest in, Guard design. These guidelines provide a minimum expectation for the various stakeholders with respect to level of effort, due diligence, and standard of practice to be followed when carrying out Guard design.

These guidelines outline the appropriate standard of practice to be followed at the time that 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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Appendix A: Case Studies

Appendix B: Model Specification for Guards

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No table of figures entries found.

ABBREVIATIONS

ABBREVIATION	TERM
вс	British Columbia
BCBC	British Columbia Building Code
NBCC	National Building Code of Canada
VBBL	Vancouver Building Bylaw

DEFINED TERMS

TERM	DEFINITION
Act	<i>Engineers and Geoscientists Act</i> [RSBC 1996] Chapter 116.
Architect	An individual who is registered or licensed to practice as an architect under the Architects Act, which is administered by the Architectural Institute of British Columbia.
Association	Engineers and Geoscientists BC, formerly known as the Association of Professional Engineers and Geoscientists of British Columbia or APEGBC.
Authority Having Jurisdiction	The jurisdictional body (usually municipal) with authority to administer and enforce the British Columbia Building Code (BCBC), the City of Vancouver Building Bylaw (VBBL), the National Building Code of Canada (NBCC) or a local building bylaw or code.
Base Building Structural Engineer	The Engineering Professional assuming responsibility for the structural integrity of the base building including effects of secondary structural components such as Guards and their attachments to the base building.
Bylaws	The Bylaws of Engineers and Geoscientists BC made under the <i>Act</i> .
Design/Build Contractor	A contractor retained by an Owner to be responsible for both the design and construction aspects of a building project.
Engineers and Geoscientists BC	Formerly known as the Association of Professional Engineers and Geoscientists of British Columbia or APEGBC.
Engineering Professional(s)	Professional engineers and licencees, licensed to practice by Engineers and Geoscientists BC.
General Contractor	A contractor who has a contract with an Owner for construction of all, or a portion, of a building project.

Guard	A protective barrier around openings in floors or at the open sides of stairs, landings, balconies, mezzanines, galleries, raised walkways or other locations to prevent accidental falls from one level to another. Such a barrier may or may not have openings through it.
Letters of Assurance	Uniform, mandatory documents intended to clearly identify the responsibilities of key individuals in a building project.
Owner	A party who owns a building, or will own a building once construction is complete.
Registered Professional	A Registered Professional is defined in the BCBC 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 <i>Engineers and</i> <i>Geoscientists Act.</i> " For the purposes of the <i>Engineers and Geoscientists Act</i> (the <i>Act</i>) this can include professional engineers and licensees including limited licensees having the appropriate scope of practice all of whom must be qualified by training or experience to provide designs for building projects.
Registered Professional of Record	Defined in the BCBC as a Registered Professional retained to undertake design work and field reviews pursuant to Article 2.2.7.3 in Division C in the BCBC.
Specialty Structural Engineer	For the purpose of these guidelines, a Specialty Structural Engineer is the Engineering Professional taking responsibility for design and specification of Guards for buildings. The Specialty Structural Engineer may act as the Registered Professional of Record or as a Supporting Registered Professional.
Supporting Registered Professional	The Registered Professional providing supplementary supporting design and/or field review services for the Guard to the Registered Professional of Record for the Guard. Schedules S- B and S-C, as identified in Appendix A of Architectural Institute of BC/Engineers and Geoscientists BC Practice Note 16, are recommended mechanisms for the Registered Professional of Record to receive assurance from the Supporting Registered Professional providing supporting engineering services; confirming that the plans and supporting documents relating to the supporting engineering services for a Guard substantially comply, in all material respects, with the applicable requirements of the applicable building code.

1.0 INTRODUCTION

1.1 PURPOSE OF THESE GUIDELINES

This document provides guidance on professional practice for Engineering Professionals who design Guards for buildings. Guards are typically considered as secondary structural elements of a building as they do not support the primary structure; however, guards play a significant role in public safety. The purpose of this document is to serve as a design guide for individual practitioners when preparing drawings and specifications in the design and implementation of Guards used in buildings.

These guidelines provide a common approach for carrying out a range of professional activities related to Guard design. These guidelines are a revision that reflect current industry standards and practices, the most notable being the introduction of the CSA A500 – Building Guards.

Following are the specific objectives of these guidelines:

- 1. Describe the standard of practice that Engineering Professionals should follow when providing professional services related to Guard design.
- Specify the tasks that Engineering Professionals should complete to meet the appropriate standard of care and fulfill their professional obligations under the *Act*. These obligations include the member's primary duty to protect the safety, health, and welfare of the public and the environment.
- 3. Outline the professional services that the Engineering Professional conducting this type of work should generally provide.
- 4. Describe the roles and responsibilities of the various participants/stakeholders involved in such work. The document will assist in delineating the roles and responsibilities of the various participants/stakeholders, which may include the Specialty Structural Engineer, Base Building Structural Engineer, Owner, Architect, General Contractor, and Design/Build Contractor.
- 5. Define the skill sets that are consistent with the training and experience required to carry out this professional activity.
- 6. Provide guidance on the use of Letters of Assurance such that the appropriate considerations have been addressed (both regulatory and technical) for the specific professional activity that was carried out.
- 7. Provide guidance as to how to meet the seven quality management (QM) 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 have been formally adopted by the Engineers and Geoscientists BC Council, and form part of the ongoing commitment to maintaining the quality of professional services that

Engineering Professionals provide to their clients and the general public. Engineering Professionals are professionally accountable for their work under the *Act*, which is enforced by Engineers and Geoscientists BC.

An Engineering Professional must exercise professional judgment when providing professional services; as such, application of these guidelines will vary depending on the circumstances.

The Association supports the principle that appropriate financial, professional, and technical resources should be provided (ie. by the client and/or the employer) to support Engineering Professionals who are responsible for carrying out Guard design, so they can comply with the standard of care 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.

By following these guidelines, Engineering Professionals will fulfill their professional obligations, especially regarding the first principle of the Association's Code of Ethics Principle, which is to "hold paramount the safety, health and welfare of the public, protection of the environment and promote health and safety in the workplace." Failure to meet the intent of these guidelines could be evidence of unprofessional conduct and lead to disciplinary proceedings by the Association.

1.3 INTRODUCTION OF TERMS

For the purpose of these guidelines, the Specialty Structural Engineer is the Engineering Professional taking responsibility for design, specification and field reviews of Guards for buildings. The Specialty Structural Engineer may act as the Registered Professional of Record or as the Supporting Registered Professional (see Section 2).

Guard is defined in the British Columbia Building Code (BCBC) Division A, Sentence 1.4.1.2.(1) to mean a protective barrier around openings in floors or at the open sides of stairs, landings, balconies, mezzanines, galleries, raised walkways or other locations to prevent accidental falls from one level to another. A Guard may or may not have openings through it. A handrail, though not a defined term in BCBC Division A, Sentence 1.4.1.2.(1), has a function to minimize the risk of injury to persons as a result of tripping, slipping, falling, contact, drowning or collision and may or may not function as a Guard.

As a note of clarification, guardrail is not a term used in the BCBC except for in Schedule B of the Letters of Assurance. WorkSafeBC Occupational Health and Safety Regulation also uses the term guardrail. Other terms that are sometimes used to refer to structures that function as Guards are balustrades, parapets, walls and windows. For the purpose of these guidelines, the term Guard will be used throughout.

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

1.4 SCOPE OF THE GUIDELINES

These guidelines apply to the practice of structural engineering as related to Guard design for buildings. They summarize the standard of practice for a Specialty Structural Engineer when preparing drawings and specifications in the design and implementation of Guards used in buildings.

Specific requirements for Guards may differ between Authorities Having Jurisdiction. It will be the responsibility of the Engineering Professional to be familiar with local requirements.

These guidelines specify tasks which should be performed by the Specialty Structural Engineer to achieve designs which are in the best interest of the project and the public, and which are properly coordinated with the work of other design and construction team participants, if applicable. These guidelines should assist in maintaining the integrity of the overall and detailed designs. The Specialty Structural Engineer responsible for Guards may work in conjunction with other design team members or contractors on certain projects; these guidelines should assist in the delineation of responsibilities among these parties.

These guidelines are not intended to be used as the standard for Guard design. Instead they are intended to establish standards of practice which a Specialty Structural Engineer should meet to fulfil their professional obligations, especially in regard to the primary duty to protect the safety, health and welfare of the public. It is up to the individual to perform the required due-diligence in preparing the drawings and specifications. This document must not be used in a way that reduces any requirement specified in any applicable code, bylaw or standard.

1.5 APPLICABILITY OF THE GUIDELINES.

These guidelines provide guidance on professional practice for Specialty Structural Engineers who carry out design of Guards for buildings. These guidelines are not intended to provide step-by-step instructions for carrying out this activity. Rather, these guidelines outline considerations for this activity.

A Specialty Structural Engineer's decision not to follow one or more aspects of these guidelines does not necessarily mean a failure to meet their professional obligations. Such judgments and decisions depend upon weighing facts and circumstances to determine whether other reasonable and prudent Specialty Structural Engineers, in similar situations, would have conducted themselves similarly.

1.6 ACKNOWLEDGEMENTS

This revision to these guidelines were prepared on behalf of Engineers and Geoscientists BC by Leonard Pianalto, P.Eng., LEED® AP, FEC. The document was reviewed by a group of technical experts as well as by the Structural Engineering Association of BC, the Architectural Institute of BC, and various Engineers and Geoscientists BC committees and divisions.

2.0 ROLES AND RESPONSIBILITIES

2.1 COMMON FORMS OF PROJECT ORGANIZATION

Project organization can vary according to the needs of the project and the parties. Various parties can engage the Specialty Structural Engineer for designing Guards for buildings. The following cases outline some of the typical project organization arrangements:

- General Contractor engages Specialty Structural Engineer either directly, through a subcontractor, or through a material supplier to act as either a Registered Professional of Record or a Supporting Registered Professional
- Design/Build Contractor, that could be the glazing contractor, engages Specialty Structural Engineer as part of the design/build team to act as either a Registered Professional of Record or a Supporting Registered Professional
- Owner engages Specialty Structural Engineer directly to act as the Registered Professional of Record
- Architect engages Specialty Structural Engineer to act as a Supporting Registered
 Professional

2.2 **RESPONSIBILITIES**

The following outlines the responsibilities of the various potential project team members in order to ensure the design and construction of a Guard meets the appropriate standards of public safety and the requirements of the applicable building codes.

2.2.1 SPECIALTY STRUCTURAL ENGINEER

The Specialty Structural Engineer must:

- work with whomever has engaged them on the project to develop a scope of work that enables them to provide the required designs, specifications and field reviews for the Guard as well as the connection to, and the effect on, the base structure;
- liaise as required with the appropriate Registered Professionals for the purposes of their services, but if they are acting independent of any other Registered Professionals of Record, they become the Registered Professional of Record;

- follow Section 3 of these guidelines when undertaking design, specifications and field reviews of the Guard;
- provide Letters of Assurance, if appropriate (see Section 3.5 for more information on schedules and Letters of Assurance); and
- ensure compliance with Engineers and Geoscientists BC Bylaw 14(b)(4) regarding the completion of documented independent reviews of structural designs.

2.2.2 OWNER

The Owner must:

- retain the appropriate Registered Professionals, as required, to complete the scope of the project, which may include a Specialty Structural Engineer to be responsible for the design, specifications and field reviews of a Guard;
- obtain required approvals, licenses and permits from the Authority Having Jurisdiction;
- ensure appropriate scopes of work and realistic schedules of work are developed and that the associated contracts are finalized with all Registered Professionals, including the Specialty Structural Engineer, before their services are required; and
- recognize that drawings, specifications and other documents prepared by the Specialty Structural Engineer are for the project and should not be used or copied for other projects without the consent of the Specialty Structural Engineer.

2.2.3 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, and that they are responsible for 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 the General Contractor's work, for supervision and coordination of the sub-contractors' work, and for inspection of the sub-contractors' work prior to field reviews by the Specialty Structural Engineer, where applicable. The General Contractor is responsible for providing reasonable notice to the Specialty Structural Engineer when Guard components are ready for field review.

The General Contractor must communicate with the Owner and any Registered Professionals on a project to ensure that schedules are obtained in accordance with the project requirements.

The General Contractor may obtain a Schedule B or a Schedule S-B from the Specialty Structural Engineer for the design of the Guard, depending on how the project is organized (see Section 3.5 for more information on schedules and Letters of Assurance). Where a Schedule B or Schedule S-B is not applicable, the Specialty Structural Engineer for the Guard should prepare and submit signed and sealed shop drawings and field review reports to the General Contractor.

2.2.4 DESIGN/BUILD CONTRACTOR

For Design/Build Contractor building projects, the Design/Build Contractor may apply for the building permit and may engage the Specialty Structural Engineer directly for their services. In other cases when an Architect is required as part of the design/build team, the Architect may engage the Specialty Structural Engineer (see Section 2.2.5).

2.2.5 ARCHITECT

If an Architect engages the services of a Specialty Structural Engineer, the Architect must:

- interpret the needs of the Owner so that the Guard design will meet the intended form and function;
- identify and advise the Specialty Structural Engineer of special design criteria, such as equipment, loads, and span requirements;
- develop the scope of work with the Specialty Structural Engineer for the Guard design, specification and field reviews, as well as any contract administration requirements;
- provide timely and appropriately detailed information to allow the Specialty Structural Engineer to adequately carry out their scope of work;
- coordinate and review designs, specifications and contract documents prepared by the Specialty Structural Engineer;
- coordinate communications of information between the Owner, the General Contractor, and other Registered Professionals as appropriate so that the building project substantially complies in all material respects with the applicable building codes, and meets the Owner's needs; and
- obtain a Schedule S-B and Schedule S-C from the Specialty Structural Engineer who is acting as a Supporting Registered Professional for the Guard (see Section 3.5 for more information on schedules and Letters of Assurance).

2.2.6 BASE BUILDING STRUCTURAL ENGINEER

If there is a Base Building Structural Engineer engaged on the project, they must review shop drawings for effect of the Guard on the base structure.

3.0 GUIDELINES FOR PROFESSIONAL PRACTICE

3.1 REVIEW OF CODES AND STANDARDS

The Specialty Structural Engineer is required to be aware of, and adhere to, the applicable codes and standards that apply to Guard design, as outlined in the following sections.

3.1.1 NATIONAL BUILDING CODE OF CANADA 2015 (NBCC 2015)

The NBCC 2015 is an objective-based code. The relevant objectives and functional statements with respect to Guards are as follows:

Objectives:

- OS2 Structural Safety
- OS3 Safety in Use
- OP2 Structural Sufficiency of the Building

Functional statements:

- F10: To facilitate the timely movement of persons to a safe place in an emergency.
- F20: To support and withstand expected loads and forces.
- F30: To minimize the risk of injury to persons as a result of tripping, slipping, falling, contact, drowning or collision.

3.1.2 BRITISH COLUMBIA BUILDING CODE 2012 (BCBC 2012)

The following summarizes selected criteria relevant to the design of Guards as presented in the BCBC 2012 which is based on the NBCC 2010.

- BCBC 2012 Division B Part 3 requirements cover the following:
 - Areas for which Guards are required.
 - Requirement that a Guard be provided at a certain height.
 - \circ $\;$ Limitations on the size of openings.
 - Discussion on climb-ability.
 - Dimensions and loadings for handrails.

- BCBC 2012 Division B Part 4 requirements cover the following:
 - Horizontal, concentrated, and uniform load requirements on a Guard.

NOTE: The difference in load requirements depending on location or other factors can be critical to both the design of Guards and the structure to which Guards are attached. The load requirements should be very carefully stated in the design requirements.

- Instructions on how to apply concurrent loads on individual elements below or within the Guard.
- Requirements on how to apply the vertical load at the top of the Guard.
- BCBC 2012 Division B Part 9 requirements cover similar requirements to those described in Part 3 and Part 4 as referenced above.

It is the responsibility of the Registered Professional of Record to read and understand the code requirements.

3.1.3 WORKSAFEBC

WorkSafeBC has requirements for the protection of workers. These legal requirements apply to all workplaces and arise from the Occupational Health and Safety Regulation. Enforcement of these regulations falls under the jurisdiction of WorkSafeBC. These requirements are intended to provide safe environments for workers in areas that are not specifically accessible to the public as defined in the above BCBC references.

Some pertinent points from this regulation are summarized as follows:

- A guardrail consists of a top rail located 102 cm to 112 cm above the work surface and an intermediate rail located midway.
- It must be designed to withstand a load of 0.55 kN applied perpendicular to the span in a horizontal or vertical direction.
- It must not be made of fibre or wire rope unless it meets the requirements of *WorkSafeBC Standard Guardrails using rope or other non-rigid material*.

3.1.4 OTHER CODES AND STANDARDS

3.1.4.1 CAN/CGSB – 12.20-M89 Structural Design of Glass for Buildings

This standard addresses the brittle nature of glass where used as a structural material by stipulating that support members be designed with a redundant load path. The underlying principle being that if one member fails, a cascading or catastrophic failure mechanism does not develop. This standard is referenced in the NBCC 2015, and is also referenced in the new CSA A500 standard discussed below. CAN/CGSB – 12.20-M89 is an antiquated standard and is likely to be replaced by the ASTM E1300 (see Section 3.1.4.2).

3.1.4.2 ASTM E1300 Standard Practice for Determining Load Resistance of Glass in Buildings

The ASTM E1300 is the American standard that describes the procedures to determine the load resistance of specified glass types, when exposed to uniform lateral load of short or long duration, for

a specified probability of breakage. Historically it has been referenced by American building codes, however more recently it has been referenced by the NBCC 2015.

3.1.4.3 CSA A500 Building Guards

The CSA A500 is a Canadian standard which specifies requirements for the materials, design, construction, testing and performance of Guards in buildings. A building Guard in this standard is defined as a protective barrier to prevent accidental falls from one level to another.

The requirements in this standard are not intended to supersede any provisions contained within a governing building code or regulation.

The design of Guards shall follow one or more of the following:

- Engineering analysis based on first principals and recognized practices
- Testing of prototypes
- Testing of physical scaled models
- Computer simulations

When designing Guards the risk of injury or property damage arising from a failure of Guard components must be considered including the risks associated with components falling to a public space below.

Durability must be considered where Guards are exposed to environmental attack. The design shall consider a service life of a Guard, in these circumstances, to be a minimum of half the design life of the building as defined in the CSA S478 – Guideline on Durability in Buildings.

The substrate to which the Guard is attached shall be of adequate strength to sustain all loads. This is part of what must be considered in the design of a Guard.

Guards must be designed to drain moisture and minimise the collection of debris.

Loads shall include load combinations, importance factors and companion loads as well as the effects of impact testing per this standard. Vibration should also be considered including fatigue and serviceability issues arising from noise. The design Guard load is classified as a live load. This standard defines different load combinations for ultimate limit states and serviceability limit states.

The height of the Guard should conform to the requirements set out in the building code. Usually this is between 900 mm and 1500 mm. The point of application of the load should correspond to the top of the Guard. All components of the Guard, including the supporting structure, must be designed to resist the applied loads.

Guards should be designed to meet the requirements for non-climbable Guards as defined in the building code and this standard. Additionally, steps and curbs must be considered so as not to reduce the apparent height of the Guard. In general, the height of the Guard must not be less than the radial distance from the highest and nearest point on the step.

Balcony dividers not connected to the Guard must be designed to resist both wind loads and live loads.

Deflection limitations are provided.

This standard defines load testing protocols for Guard assemblies. This standard also suggests that confirmatory tests be carried out at representative areas on every Guard installation including the reinstallation of existing Guards. The number of test samples should reflect the number of Guards installed but should not be less than two. Pass-fail criteria is set forth in the standard.

Procedures are also described for impact testing for the purpose of reviewing the performance with respect to post breakage retention. Minimum impact energy levels are established to ensure that elements do not fail and fall out of the assembly after impact.

This standard covers materials used for Guards including concrete, masonry, wood, steel, aluminum and glass.

There are many special requirements for glass used in Guards highlighted as follows:

- Criteria are established for the use of annealed, heat strengthened, and fully tempered (heat soaked or non-heat soaked) glass as well as soft versus stiff interlayers.
- Glass is designed according to CAN/CGSB 12.20-M89 or ASTM E1300 with special modifications outlined in this standard.
- A procedure for designing and constructing freestanding glass Guards is provided.
- Freestanding glass Guards may be designed without a top rail or cap if laminated glass with a stiff interlayer is used. However, protection of the top edge of glass may be required in certain circumstances.
- Infill tempered glass panels need not carry a load after breakage.
 - NOTE: It is the opinion of the authors that consideration of the risk associated with a breakage should be given to laminating these type of panels for safety purposes.
 - After breakage of a freestanding monolithic glass Guard, the top rail shall resist the design load without load factors. After breakage of both plies of a freestanding laminated glass Guard, the assembly need not accommodate full specified loads; rather it must remain standing in place until it can be serviced.

3.2 DESIGN CONSIDERATIONS

A Guard is meant to prevent an individual from falling from a higher elevation to a lower elevation. A Guard should also create a sense of safety among building occupants.

Design of a Guard must consider the following:

- Where is a Guard required
- Dimensional requirements
- Strength design including the load path to the primary structure

- Serviceability (deflection / grasp-ability / climb-ability)
- Relationship to building enclosure
- Aesthetics

When using aluminum, consideration should be made for the loss of temper and associated reduction in strength where welded connections are used. Refer to CAN/CSA – S157 Strength Design in Aluminum.

Special consideration must be given to the use of glass as Guard elements. Some means of structural redundancy must be built into the system to prevent progressive collapse of the assembly following the failure of a glass member. In particular, when using tempered glass there exists a potential for spontaneous breakage due to impurities (also referred to as Nickel Sulfide inclusions). Refer to the design guides published by the Glazing Contractors Association of BC (now Fenestration BC) in their Glazing Systems Specification Manual entitled: "*Glass Design to Human Impact Load*" and "*Glass Guards and Balustrades*". These issues are also covered in more detail in the CSA A500 standard.

Consideration should also be given to windows acting as Guards where the sill extends below 1070 mm of the finished floor. In this instance, the window must be treated as a wall separating the elevation difference and be designed to withstand the appropriate Guard load. Further consideration should be given to operable sashes where there may be a risk of falling through the open window. Such windows must be equipped with a limiter to restrict the size of the opening. Although, there may be cases where operable windows are required to allow egress during a fire, in which case there can be two contradictory code requirements.

In the cases of unique architectural designs, non-traditional construction methods or use of exotic materials (i.e. art glass or reclaimed timber), where the available codes and standards do not provide adequate guidance, the designer may employ proof testing. It should be noted, however, that proof testing may be employed for any Guard design. In some instances where materials and methods deviate significantly from normal practice, an alternative solution may be required during the permit process. This involves a special application with the Authority Having Jurisdiction and can add time and cost to the project.

3.3 CONTINUITY OF RESPONSIBILITY

The supply and installation of Guards often involves multiple trade disciplines. In turn, there may be several design professionals involved in the design oversight for individual elements of the Guard. For example, a typical glass Guard may include a specialty fitting supplier, a glass supplier, a glazing installer, a miscellaneous metals sub-contractor, and a millworker. Consider the figure below:



In this type of situation, there can be a discontinuity of responsibility arising from the diffusion of design oversight. Each element may be the responsibility of a different design professional with little or no coordination between them. Specialty Structural Engineers may oversee individual elements; however, it is the responsibility of each of the Specialty Structural Engineers to ensure their component fits into a complete assembly that includes a competent load path and that is constructable. Taking professional responsibility for one component in an assembly does not nullify the responsibility to also ensure that other components fit together to create a complete structural assembly including an appropriate attachment to the base structure.

3.4 SHOP DRAWINGS

When preparing shop drawings, the Specialty Structural Engineer must be careful to define their scope of work clearly while at the same time ensuring that connecting elements are suitable for the completed system. For example, if reviewing shop drawings and taking responsibility for the glass elements only, it should be clearly stated that the design of the glass is based on the continuity of the Guard assembly and that the other components need to be designed accordingly. In this instance, the Specialty Structural Engineer, acting as one of multiple Supporting Registered Professionals, when providing a Schedule S for the glazing component of the Guard may insist that he or she have copies of the Schedule S's provided for the other components of the Guard, up to and including the base structure. See Section 3.5 for more information related to schedules and Letters of Assurance.

Shop drawings should be prepared in accordance with the Association's *Professional Practice Guidelines - Shop Drawings* (Engineers and Geoscientists BC 2015). The following basic elements must be identified on the shop drawings:

• Clearly show the elements for which design responsibility is assumed (e.g. use darker line types).

- Show the completed Guard assembly and clearly identify the structural function and requirement for those components for which design responsibility is assumed to be by others.
- Identify the intended load path to the base structure.
- Show reaction loads.
- Show connection details.
- Provide general notes indicating materials used, design codes referenced, and description of the scope of work.
- Provide a plan drawing showing the extent and location of items.

3.5 LETTERS OF ASSURANCE

Part 9 of the building code, which applies to housing and small buildings, is primarily prescriptive and when followed in its entirety, this part of the BCBC does not require Registered Professionals to provide professional design and review. For the other parts of the building code, Letters of Assurance are used to confirm appropriate professional design and review. Structural design of Guards and their attachments is covered under the architectural section of the Letters of Assurance. There are two main scenarios under which a Specialty Structural Engineer may be engaged to design a Guard for a building:

Scenario 1 – When a Guard is designed for a Part 3 building as per the BCBC

Scenario 2 - When a Guard is designed for a Part 9 building as per the BCBC

For scenario 1, when an Architect is engaged on the project, the Architect will sign the Letters of Assurance for the Guard and may use a Specialty Structural Engineer as the Supporting Registered Professional. As per the Architectural Institute of BC / Engineers and Geoscientists BC joint Practice Note 16 – *Professional Design and Field Review by Supporting Registered Professionals*, the Supporting Registered Professional shall submit Schedules S-B and S-C to the Architect, however; Schedules S-B and S-C do not need to be submitted to the Authority Having Jurisdiction. If an Architect is not required on a Part 3 building project, a Specialty Structural Engineer may act as the Registered Professional of Record and sign the architectural item for the structural capacity of the Guard on the Letters of Assurance.

For scenario 2, no Registered Professionals are required if the building follows the prescriptive requirements of Part 9. If a Specialty Structural Engineer is engaged to design a Guard for a Part 9 building, in order to fulfill their professional obligation, the professional should prepare and submit stamped shop drawings and field review reports. In the event that an Authority Having Jurisdiction requires Letters of Assurance for a Guard on a Part 9 building where no Architect is required on the project, a Specialty Structural Engineer may act as the Registered Professional of Record and sign the architectural item for the structural capacity of the Guard on the Letters of Assurance, and may modify the Letters of Assurance, as appropriate.

4.0 QUALITY MANAGEMENT IN PROFESSIONAL PRACTICE

Engineering Professionals must adhere to the applicable quality management requirements during all phases of the work, as per the Association's Bylaws. It is also important to be aware of whether additional quality management requirements exist from the Authority Having Jurisdiction or through service contracts.

4.1 QUALITY MANAGEMENT REQUIREMENTS

To meet the intent of the quality management requirements, Engineering Professionals must establish and maintain documented quality management processes for the following activities:

- The application of relevant professional practice guidelines
- Authentication of professional documents by the 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/recommendations during implementation or construction
- Where applicable, documented independent review of structural designs prior to construction

4.1.1 PROFESSIONAL PRACTICE GUIDELINES

Pursuant to the *Act*, s.4(1) and Bylaw 11(e)(4)(h), Engineering Professionals are required to comply with the intent of any applicable professional practice guidelines related to the engineering work they undertake. One of the three objectives of the Association, as stated in the *Act* is "to establish, maintain, and enforce standards for the qualifications and practice of its members and licensees." Practice guidelines are one means by which the Association fulfills this obligation.

4.1.2 USE OF SEAL

According to the *Act*, s.20(9), Engineering Professionals are required to seal all professional engineering documents they prepare or deliver in their professional capacity to others who will rely on the information contained in the documents. This applies to documents that Engineering

Professionals have personally prepared and those that others have prepared under their direct supervision.

Failure to seal engineering documents is a breach of the Act.

For more information, refer to the *Quality Management Guideline – Use of the Seal* (Engineers and Geoscientists BC 2018).

4.1.3 DIRECT SUPERVISION

According to the *Act*, s.1(1) and 20(9), Engineering Professionals are required to directly supervise any engineering work that they delegate. When working under the direct supervision of an Engineering Professional, unlicensed persons or non-members may assist in performing engineering work, but they may not assume responsibility for it. Engineering Professionals who are limited licensees may only directly supervise work within the scope of their license.

With regard to direct supervision, the Engineering Professional having overall responsibility should consider:

- the complexity of the project and the nature of the risks;
- which aspects of the work should be delegated;
- the training and experience of individuals to whom work is delegated; and
- the amount of instruction, supervision, and review required.

Careful consideration must be given to delegating fieldwork. Due to the complex nature of fieldwork, direct supervision is difficult and care must be taken so delegated work meets the standard expected by the Engineering Professional with overall responsibility. Typically, such direct supervision could take the form of specific instructions on what to observe, check, confirm, record, and report to the supervising Engineering Professional. Engineering Professionals with overall responsibility should exercise judgment when relying on delegated field observations, and they should conduct a sufficient level of review to have confidence in the quality and accuracy of the field observations.

For more information, refer to the *Quality Management Guideline – Direct Supervision* (Engineers and Geoscientists BC 2018a).

4.1.4 RETENTION OF PROJECT DOCUMENTATION

Pursuant to Bylaw 14(b)(1), 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.

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 a complete set of project documentation is retained by the organizations that employ them using means and methods that are consistent with the Association's Bylaws and guidelines.

For more information, refer to the *Quality Management Guideline – Retention of Project Documentation* (Engineers and Geoscientists BC 2018b).

4.1.5 DOCUMENTED CHECKS OF ENGINEERING AND GEOSCIENCE WORK

As per Bylaw 14(b)(2), Engineering Professionals are required to undergo documented quality checking and review of engineering work appropriate to the risk associated with that work.

Regardless of sector, Engineering Professionals are required to meet this quality management requirement. In this context, 'checking' means all professional deliverables must undergo a documented checking and review process before being finalized and delivered. This process would normally involve an internal review by another Engineering Professional within the same organization. Where an appropriate internal reviewer is not available, an external reviewer (i.e., one outside the organization) must be engaged. Where an internal or external review has been carried out, this must be documented.

Engineering Professionals are responsible for ensuring that the checks being performed are appropriate to the level of risk. Considerations for the level of review should include the type of document and the complexity of the subject matter and underlying conditions; quality and reliability of background information, field data, and elements at risk; and the Engineering Professional's training and experience.

For more information, refer to the *Quality Management Guideline – Documented Checks of Engineering and Geoscience Work* (Engineers and Geoscientists BC 2018c).

4.1.6 DOCUMENTED FIELD REVIEWS DURING IMPLEMENTATION OR CONSTRUCTION

As per Bylaw 14(b)(3), 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. 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.

Engineering Professionals are required to establish and maintain documented quality management processes, which include carrying out documented field reviews of their domestic projects or work during implementation or construction. Domestic works or projects include those located in Canada and for which an Engineering Professional meets the registration requirements for the engineering regulatory body that has jurisdiction.

For more information, refer to the *Quality Management Guideline – Documented Field Reviews during Implementation or Construction* (Engineers and Geoscientists BC 2018d).

4.1.7 DOCUMENTED INDEPENDENT REVIEW OF STRUCTURAL DESIGNS

Bylaw 14(b)(4) refers to an independent review in the context of structural engineering. 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. It is carried out by an

experienced Engineering Professional qualified to practice structural engineering, who has not been involved in preparing the design.

For more information, refer to *Quality Management Guidelines – Documented Independent Review of Structural Designs* (Engineers and Geoscientists BC 2018e).

PROFESSIONAL PRACTICE GUIDELINES DESIGNING GUARDS FOR BUILDINGS

5.0 PROFESSIONAL REGISTRATION & EDUCATION, TRAINING, AND EXPERIENCE

5.1 PROFESSIONAL REGISTRATION

It is the responsibility of Engineering Professionals to determine whether they are qualified by training and/or experience to undertake and accept responsibility for the carrying out design of Guards for buildings (Code of Ethics Principle 2).

5.2 EDUCATION, TRAINING, AND EXPERIENCE

Design of Guards for buildings, as described in these guidelines, requires minimum levels of education, training and experience in structural engineering. The Engineering Professional acting as the Specialty Structural Engineer and taking design responsibility must adhere to the Association's Code of Ethics (to undertake and accept responsibility for professional assignments only when qualified by training or experience) and, therefore, must evaluate his/her qualifications and must possess the appropriate education, training, and experience to provide the services.

The level of education, training, and experience required of the Engineering Professional should be adequate for the complexity of the project. Typical qualifications for the Specialty Structural Engineer may include education and experience in the following areas:

- Structural engineering
- Materials engineering
- Experience in designing secondary structural elements
- Experience in designing with materials such as aluminum and glass

The academic training for the above skill sets can be acquired by taking formal university or college courses or through continuing professional development. There may be some overlap in courses and specific courses may not correlate to specific skill sets. An Engineering Professional should also remain current with evolving topics, through continuing professional development. Continuing professional development can include taking formal courses; attending conferences, workshops,

seminars, and technical talks; reading technical publications; doing web research; and participating in field trips.

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LIST OF APPENDICES

Appendix A: Case Studies

Appendix B: Model Specification for Guards

APPENDIX A: CASE STUDIES

The following case studies are intended to illustrate different scenarios that may be encountered with an engineered Guard assembly. These cases are fictitious and are intended to provide anecdotal precedents in partitioning design responsibility among different stakeholders in the construction team.

Scenario 1: Traditional new construction project involving a Part 3 building with an Architect and Base Building Structural Engineer. The building is a typical Lower Mainland concrete tower with Guards surrounding exterior balconies. The work is proceeding under a permit granted by the governing Authority Having Jurisdiction. The Guards proposed for this project include aluminum posts and top rail with glass in-fill.

Key roles defining areas of professional responsibility:

- 1. Architect Contract is with the Owner; has signed Letters of Assurance (Schedule B) assuming responsibility for the Architect's scope, which includes the purview over structural design and attachment of Guard components.
- Base Building Structural Engineer Contract is with the Architect; has signed Letters of Assurance (Schedule B) assuming responsibility for the structural integrity of the base building including effects of secondary components such as Guards and their attachments to the base building.
- Specialty Structural Engineer Contract is with the supplier / sub-contractor who is in turn contracted to the General Contractor; has signed Letters of Assurance as the Supporting Registered Professional (Schedule S-B – in accordance with Practice Note 16 and Bulletin K).

Key interactions during the course of construction:

- 1. Architectural drawings and specifications provide general details of form including shape, color, overall dimensions and materials of construction for the proposed Guards.
- 2. General Contractor engages a sub-contractor to provide a proposed system to generally conform to the architectural specifications. The sub-contractor engages the services of a Specialty Structural Engineer to act as a Supporting Registered Professional through a Schedule S-B. The Specialty Structural Engineer provides shop drawings detailing all aspects of the proposed Guard. An initial submission may not be stamped as it may be incomplete and intended to solicit feedback from the Architect about specific design characteristics that may be entirely aesthetic.
- 3. Once such details are agreed upon, the sub-contractor will submit a set of shop drawings that bear the seal of the Specialty Structural Engineer. These shop drawings should include all relevant details to show the structural function of the assembly including materials used, fasteners, and how the Guard interacts with the base building including indication of the forces transferred to the base building. These shop drawings are forwarded on to the Architect via the General Contractor.

- 4. The design by the Specialty Structural Engineer to provide connection to the primary structure and must include the design of collateral secondary elements as necessary to pass the load through to the primary structure. If connecting to a steel stud, for example, the shop drawings must indicate the requirement for the connection (e.g. 18 ga steel stud required at the Guard attachment).
- 5. Specialty Structural Engineer to follow instructions for connection to primary structure as provided by the structural drawings prepared by the Base Building Structural Engineer. The Specialty Structural Engineer should contact the Base Building Structural Engineer to discuss any anchorage concerns.
- 6. The Architect will review the shop drawings and forward a set of the drawings to the Base Building Structural Engineer to review the Guards for their effect on the base building. The Base Building Structural Engineer will not review the structural adequacy of the Guard assembly, but will only review the effect of the Guard on the base building structure.
- 7. Once the shop drawings have been reviewed and accepted, the installation will proceed. During the installation, the Specialty Structural Engineer acting for the sub-contractor should visit the site at his/her discretion to conduct field reviews as required and as defined in Practice Note 16 and Bulletin K. The scope of the field review should align with the scope of responsibility defined in the sealed shop drawings.
- 8. At completion of the installation the Specialty Structural Engineer will submit the Schedule S-C, confirming that the obligation for field review has been completed. If required, he/she will contact the Base Building Structural Engineer to clarify any matters that relate to the structural interaction between the Guard assembly and the base building. This is in accordance with the declaration that the Specialty Structural Engineer makes in signing the Schedule S-B: Assurance of Professional Design and Commitment for Field Review, which reads as follows:

"I confirm I have liaised as required with the appropriate Registered Professionals for the purposes of my services."

Additional comments

Scenario 1 is likely the most common that will be encountered in typical construction projects. However, there are a number of similar variants of this scenario that warrant further discussion as follows:

Scenario 1a: New construction project with Guard assembly incorporating several engineered components. This will be similar to Scenario 1 yet more demanding for the Architect as there will be a number of specialty engineers involved in defining the completed assembly. Some components will interact with the base building, while others will interact with other specialty components. Avoiding conflicting requirements as well as gaps in responsibility will be a significant challenge in this scenario.

A modification to the definition of the key players is as follows:

 Multiple Specialty Structural Engineers – Contracts will be with a number of the suppliers / subcontractors who are in turn contracted to the General Contractor; each have signed Letters of Assurance as Supporting Registered Professionals (Schedule S-B – in accordance with Practice Note 16 and Bulletin K).

Scenario 1b: Another common case for Part 3 buildings occurs where there are a variety of Guard elements that are fabricated from a "basic" material, say structural steel. For example: common steel

picketed Guard/handrail in a concrete stairwell, to be fabricated by the steel fabricator or possibly the miscellaneous metals fabricator if such a sub-contract is in place.

These items would then fall under the responsibility of the Base Building Structural Engineer, which will be the case if all the details of the Guard assembly are shown on the structural drawings or on the architectural drawings with some structural comments.

At other times the fabricator prepares shop drawings based on the Architect's drawings. Often, the shop drawings contain a variety of structural problems that are revealed following review by the Base Building Structural Engineer.

It is recommended that a Specialty Structural Engineer be engaged in these circumstances. The requirement for specialty engineering should be no different than for other pre-engineered components such as open web steel joists or commercial glazing assemblies.

This requirement for a Specialty Structural Engineer should be made clear in the specifications. Typically, miscellaneous metals are defined in the Division 5 specifications. However, any project that includes Guards should include a separate specification to cover all Guard assemblies. This would cover "architectural" Guard assemblies that might be typically encountered in living spaces like balconies and mezzanines as well as utilitarian Guards that might be typically seen in exit stairs and parkades.

Appendix B contains an example generic NMS Master Format Specification.

Scenario 2: Proprietary Guard system involving a "pre-engineered" Guard assembly essentially "ordered out of a catalogue".

Key roles defining areas of professional responsibility:

- 1. Architect Contract is with the Owner; has signed Letters of Assurance (Schedule B) assuming responsibility for the Architect's scope which includes the purview over structural design and attachment of Guard components.
- Base Building Structural Engineer Contract is with the Architect; has signed Letters of Assurance (Schedule B) assuming responsibility for the structural integrity of the base building including effects of secondary components such as Guards and their attachments to the base building.

Key interactions during the course of construction:

- 1. Architectural drawings and specifications provide a specific product to be installed. Shop drawings may or may not be required depending on the nature of the product and project. However, it is still essential for the Base Building Structural Engineer to be made aware of the fastening method and configuration such that he/she can provide suitable base building structure to resist the Guard loads.
- 2. General Contractor purchases product and installs it as per the manufacturers' instructions.
- 3. Guard supplier must provide capacity criteria and installation details for all aspects including base connection (for example: use hilti products).
- 4. In this case there is no need for a Specialty Structural Engineer as the Architect assumes the design responsibility of the system. The Architect may rely on pre-engineering that has been completed by the manufacturer, however this will be entirely at the Architect's discretion. Regardless of what information the Architect relies upon, he or she will assume responsibility for assuring all building code requirements related to the Guard assembly, including those defined in Part 4.

<u>Scenario 3:</u> Repair project where no Architect is required. An Engineering Professional acts as prime consultant, building enclosure engineer and Base Building Structural Engineer.

Key roles defining areas of professional responsibility:

- Prime consultant engineer Contract is with the Owner; has signed Letters of Assurance (Schedule B) assuming responsibility for the Architect's scope which includes the purview over structural design and attachment of Guard components.
- Specialty Structural Engineer Contract is with the supplier / sub-contractor who is in turn contracted to the General Contractor; has signed Letters of Assurance as the Supporting Registered Professional (Schedule S-B – in accordance with Practice Note 16 and Bulletin K).

Key interactions during the course of construction:

- 1. These will be similar to the interactions defined in Scenario 1 with prime consultant engineer acting in the role of the Architect.
- The prime consultant engineer should be aware of their responsibility as the Base Building Structural Engineer to cover the review of structural effects of the Guard to the base building. The Base Building Structural Engineer will be expected to sign Letters of Assurance to cover the Part 4 requirements of the permit application.

Scenario 4: Repair project with no Base Building Structural Engineer. Such projects might include a simple repair project where the permit application is made by a designer (i.e. not a Registered Professional), a General Contractor, or the Owner. Such projects would typically include a residential repair or upgrade (i.e. addition of balcony or patio).

Key roles defining areas of professional responsibility:

- 1. Designer, General Contractor, Owner There are no Letters of Assurance; permit is granted under purview of the building inspector (in some jurisdictions this is referred to as a "field review" permit).
- 2. Specialty Structural Engineer Contract may be with the Owner, General Contractor, or supplier; must take responsibility for the specialty item as well as the effect on the base building.
- 3. Building inspector Represents Authority Having Jurisdiction; will conduct inspections to review for permit and building code compliance; will request engineering on various components as he/she sees fit during the course of his/her inspections.

Key interactions during the course of construction:

- 1. The Guard assembly will be installed by the Owner directly or by a contractor.
- Once complete and prior to granting occupancy (i.e. closing the permit) the building inspector may request Letters of Assurance. There may be a number of components that will require Letters of Assurance such as engineered wood products (e.g. pre-fabricated roof truss) or Guards.
- 3. The Specialty Structural Engineer should submit Letters of Assurance including Schedule B and C-B. These letters are different from Schedules S-B and S-C because they require that the Specialty Structural Engineer take responsibility for the connection to the base building and the effect on the base building. The Letters of Assurance will be addressed to the building inspector.
- 4. The Specialty Structural Engineer should take special precautions in accurately defining his/her scope of responsibility as he/she will likely be the only Engineering Professional on the project.
APPENDIX B: MODEL SPECIFICATION FOR GUARDS

The following is intended to be an example of a specification that might be used to define the requirements for a Guard assembly.

1.0 GENERAL

1.1 WORK INCLUDED

- 1.1.1 Guards, guardrails and handrails indicated on the drawings.
- 1.1.2 Glass infill panels.

1.2 **RELATED WORK**

- 1.2.1 Section 09900 Finish Painting
- 1.2.2 Section 08800 Glass
- 1.3 REFERENCE STANDARDS (Most recent version unless noted otherwise)
- 1.3.1 CAN/CSA-S16.1, Limit States Design of Steel Structures.
- 1.3.2 CAN/CSA-S157, Limit States Design of Aluminum Structures.
- 1.3.3 CAN/CSA-O86.1, Limit States Design of Wood Structures.
- 1.3.4 CAN/CGSB-12.20, Structural Design of Glass for Buildings.
- 1.3.5 CAN/CGSB-12.1, Glass, Safety, Tempered or Laminated.
- 1.3.6 American Architectural Manufacturers Association.
- 1.3.7 ASTM A269, Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service.
- 1.3.8 ASTM E1300, Standard Practice for Determining Load Resistance of Glass in Buildings
- 1.3.9 CAN/CSA-G40.20/G40.21, General Requirements for Rolled or Welded Structural Quality Steel.
- 1.3.10 CAN/CSA-G164, Hot Dip Galvanizing for Irregularly Shaped Articles.
- 1.3.11 CSA A500, Building Guards
- 1.3.12 CSA W59, Welded Steel Construction (Metal Arc Welding).
- 1.3.13 CSA W59.2, Welded Aluminum.

PROFESSIONAL PRACTICE GUIDELINES DESIGNING GUARDS FOR BUILDINGS

1.4 DESIGN CRITERIA

1.4.1 Loads and load factors are determined in accordance with the National Building Code and the bylaws of the local municipality. Resistances must be determined by the applicable material design standards.

<Spec note: Is loading for egress from assembly areas required? If so there can be significant loads transmitted to the base structure. This should be coordinated with the base building structural engineer.>

1.5 SUBMITTALS

- 1.5.1 If requested, submit three (3) certified copies of mill reports covering chemical and mechanical properties, and coating designation of steel used in this work.
- 1.5.2 Submit samples of framing and fastener components to Consultant if requested.
- 1.5.3 Submit duplicate samples of joining and finishes to the Consultant for approval.
- 1.5.4 Product Data
- .1 Submit product data for mechanical fasteners, indicating sizes, shear, and pull-over loading capacity where applicable. Provide data indicating thickness and type of corrosion protection coating.
- .2 Submit product data indicating suitability of explosive powder actuated fasteners for application.
- 1.5.5 Shop Drawings
- .1 Shop drawings must incorporate plans, all elevations, sections and full size details for all work in this section. Completely detail items indicating all dimensions and methods of fixing, field jointing, attachment to building structure, size, thickness, gauges of metals and fasteners in accordance with Engineers and Geoscientists BC Professional Practice Guidelines: Shop Drawings.
- .2 No work must be fabricated until the shop drawings and samples have been reviewed by the Consultant. The Consultant's review must be for conformity to the design concept, for general arrangement only and such review must not relieve the Contractor of any of their responsibilities.
- .3 Shop drawings must be sealed by a Professional Engineer.

.4 The Engineer who sealed the shop drawings must provide periodic field review. Written inspection reports of field review must be submitted to the Consultant promptly as field reviews are made.

- 1.5.6 Submit evidence of welder qualifications specified in this Section.
- 1.5.7 Maintenance Data:

.1 Submit data covering the care, cleaning and maintenance of finishes for incorporation in maintenance manuals.

.2 Letters of Assurance: The Engineer who sealed the shop drawings must submit to the Consultant with the initial shop drawing submission, an Assurance of "Structural Design" and commitment for "Field Review".

1.6 QUALITY ASSURANCE

- 1.6.1 Contractor to provide proof of manufacturer training for installation of proprietary fastener systems.
- 1.6.2 Welding must be by company certified by the Canadian Welding Bureau to CSA W47.1-92, Certification of Companies for Fusion Welding of Steel Structures.
- 1.6.3 Any glazed elements should be completed by Journeymen glaziers and be members in good standing with the provincial glazing contractors association.

1.7 DELIVERY, STORAGE AND HANDLING

- 1.7.1 Exercise care in storing, handing and erecting all material and support all materials properly at all times so that no piece will be bent, twisted or otherwise damaged structurally or visually.
- 1.7.2 Correct damaged material and where damaged is deemed irreparable by the Consultant, replace the affected item at no additional expense to the Owner.
- 1.7.3 Fabricate large assemblies so they can be safely and easily handled to their place of installation.

1.8 MOCK-UP - GUARD AND HANDRAILS

<Spec note: Delete if not required.>

- 1.8.1 Provide a complete mockup of a guard and or handrail on site for review by the Consultant. Make revisions to mockup as required by the Consultant.
- 1.8.2 Mock-up must include all components of the system, including typical joints and connection hardware, and typical tie-ins to adjoining systems, all finished as specified.
- 1.8.3 Modify the mock-up at no additional cost to the contract as may be required to meet design and performance requirements.
- 1.8.4 Mock-up, if deemed to be in general conformance with the Specifications and Drawings by the Consultant, must remain on site as finished part of the work.

1.9 SITE CONDITIONS

- 1.9.1 Ensure temperature and ventilation conditions are maintained for various components and materials of the system, as required by manufacturer.
- 1.9.2 Protect work of other sections and sub trades from damage resulting from work of this section.
- 1.9.3 Take necessary care to avoid damage of adjacent surfaces.
- 1.9.4 Examine the underlying visible surfaces and adjoining work and report defects at time of installation, which might impair the work of this section to the Consultant, in writing.
- 1.9.5 Commencement of work must imply acceptance of surfaces.

1.9.6 Cooperate with other trades to accommodate fixtures and attachments in the system.

1.10 REVIEW

- 1.10.1 The Design Engineer, responsible for the production of the shop drawings, must provide periodic field review during construction and must submit reports.
- 1.10.2 Additional inspection and testing of materials workmanship may be carried out by a qualified independent Inspection Agency appointed by the Consultant.
- .1 The cost of this additional inspection must be paid by the Owner.
- .2 Any testing or inspection required by the Consultant because of an error by the Contractor or due to departure from the contract documents by the Contractor, must be paid for by the Contractor.
- 1.10.3 Review must include
- .1 Checking that mill test reports are properly correlated to materials.
- .2 Sampling fabrication and erection procedures for general conformity to the requirements of the specification.
- .3 Checking that the welding conforms to the requirements of this specification.
- .4 Checking fabricated members against specified member shapes.
- .5 Visual inspection of all welded connections including sample checking of joint preparation and fit-up.
- .6 Sample checking of screwed and bolted joints.
- .7 Sample checking that tolerances are not exceeded during fit-up or erection.
- .8 Additional inspection and testing of welded connections as required by CSA W59.
- .9 General Inspection of field cutting and alternations required by other trades.
- .10 Submission of reports to the Consultant, the Contractor, and the authorities having jurisdiction covering the work inspected with details of deficiencies discovered.
- 1.10.4 The Contractor must provide the necessary cooperation to insure that the review can proceed.
- 1.10.5 The review provided in this section does not relieve the Contractor of their responsibility for the performance of the contract. The Contractor is solely responsible for quality control and must implement their own supervisory and quality control procedures.
- 1.10.6 Materials or workmanship not conforming to the requirements of the contract documents may be rejected at any time during the progress or work.

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Guidelines for Professional Structural Engineering Services for Part 3 Building Projects

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1 DEFINITIONS

The following definitions are specific to these guidelines. These words and terms are italicized in the text.

Additional Structural Engineering Services (Additional Services)

The structural engineering services provided by a *structural engineer of record* for a building project that are in addition to the *basic structural engineering services*.

APEGBC

Association of Professional Engineers and Geoscientists of British Columbia.

Authority Having Jurisdiction

The jurisdictional body (usually municipal) with authority to administer and enforce the *British Columbia Building Code* (BCBC), the City of Vancouver *Building Bylaw* (VBB), the *National Building Code* (NBC) or a local building bylaw or code.

Basic Structural Engineering Services (Basic Services)

The structural engineering services provided by a *structural engineer of record* that are basic to a building project.

Client

A party who contracts with a *structural engineer of record* to provide structural engineering services.

Contract Documents

The documents, including engineering and architectural drawings and *specifications*, that are referenced in contracts for construction of a building.

Coordinating Registered Professional (CRP)

A *member* of *APEGBC*, or a *member* of the Architectural Institute of British Columbia, who has the responsibility to coordinate the design and *field reviews* of various *registered professionals* for a building project. The role of the *CRP* is clearly defined in Division C, Appendix A-2.2.7 in the *BCBC* and further documented in the Letters of Assurance contained in the *BCBC*.

Design/Build Contractor

A contractor retained by an *owner* to be responsible for both the design and construction aspects of a building project.

Design Drawings

Drawings (except *final design drawings*, see below), including *site instructions*, prepared by a *registered professional* at any stage of a building project. *Design drawings*, including those submitted for building permitting, or other purposes, must be signed, sealed and dated by the *registered professional of record* who assumes overall responsibility for the particular aspect of the design which they prepared.

Direct Supervision

Taking responsibility for the control and conduct of an assisting *member* or *licensee*¹, a less experienced *member*, an Engineer-in-Training (EIT) or a non-*member*.

¹ In these guidelines, *members* and *licensees* are collectively referred to as *members*.

Field Review

Field reviews can be provided by the *registered professional of record* responsible for the *primary structural system* (the *structural engineer of record*), or the structural engineer providing supporting structural engineering services to the *registered professional of record*.

Field review is a defined term in the *BCBC* 200612 as follows:

Field review means a review of the work

- (a) at a project <u>building</u> site of a development to which a building permit relates, and
- (b) where applicable, at fabrication locations where building components are fabricated for use at the project building site

that a *registered professional* in his or her professional discretion considers necessary to ascertain whether the work substantially complies in all material respects with the plans and supporting documents prepared by the *registered professional*. <u>for which the building permit is issued</u>.

Final Design Drawings

Design drawings prepared by a *registered professional* to reflect design changes made during construction of a building project. These drawings are intended to incorporate addenda, change orders and other significant design changes, but not necessarily *site instructions*. These drawings must be signed, sealed and dated by the *registered professional* who assumes overall responsibility for the design.

General Contractor

A contractor who has a contract with an *owner* for construction of all, or a portion, of a building project.

Licensee

A registered licensee in-good-standing with APEGBC which includes limited licensees.

Member

A registered *member* in-good-standing with APEGBC.

Non-Structural Element

A design element of a building that is not a *primary structural element*, *secondary structural element*, or *specialty structural element*. Examples can include non-bearing partitions and suspended ceilings.

Owner

A party who owns a building, or will own a building once construction is complete.

Primary Structural Element

A beam, column or other structural design element that, when combined with others, forms the *primary structural system*.

Primary Structural System

A combination of *primary structural elements* 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.

Record Drawings

Drawings prepared as a record to confirm what was constructed. The types of information provided vary, but can include measurements, elevations and sizes. They are typically prepared by a *general or sub-contractor*. They can be signed, sealed and dated by a *member* retained by a *general or sub-contractor*, but are typically not signed, sealed or dated by the *registered professional* responsible for the particular aspect of the design reflected in the drawings, unless provided for in their contractual obligations.

Registered Professional (RP)

A Registered Professional (RP) is defined in the BCBC 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 the *Engineers and Geoscientists Act* (the *Act*) this can include professional engineers and *licensees* including limited licensees having the appropriate scope of practice all of whom must be qualified by training or experience to provide designs for building projects.

Registered Professional of Record (RPR)

Defined in the *BCBC* as a *RP* retained to undertake design work and *field review* pursuant to Clause 2.2.7. $\frac{32(1)(6)}{100}$ in Division C in the *BCBC*.

Secondary Structural Element

A structural design element that is structurally significant for the function it serves but does not contribute to the overall strength or stability of the *primary structural system*. The design and *field review* of *secondary structural elements* may fall under the responsibility of the *structural engineer of record* or the *RP* providing supporting engineering services as the *supporting registered professional. Examples* can include elevator support rails and beams, curtain wall systems, cladding, and seismic restraints for architectural, mechanical and electrical design elements.

Site Instructions

Drawings prepared and used to make minor adjustments to a design. *Site instructions* must be signed, sealed and dated by the *RP* who assumes overall responsibility for the design.

Specialty Structural Element

A structural design element that is designed and *field reviewed* by a *speciality structural engineer* providing structural engineering services as a *supporting registered professional*. These elements, normally fabricated off-site, typically require specialized fabrication equipment or a proprietary fabrication process not usually available at the project site. Examples can include open-web steel joists, wood trusses, combination wood and metal or plywood joists, precast concrete elements, seismic dampers and base-isolation devices and anchors, and other miscellaneous prefabricated structural components of wood or metal buildings.

Specialty Structural Engineer

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

Specification

A written description of the materials, standards of quality and construction requirements for design elements of a building project.

Struct.Eng.

A designation which reflects a grade of membership granted by *APEGBC* to a professional engineer or *licensee* who has demonstrated to *APEGBC* 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 (SER) or RPR for the Primary Structural System

A *member* with general responsibility for the structural integrity of the *primary structural system* and for general conformance of *secondary structural elements* and *specialty structural elements* with the *primary structural system*. A *SER* may be required to be registered as *Struct.Eng.* (see above). The *SER* takes overall responsibility as the *RPR* for all items under the structural discipline on the Schedule B of the Letters of Assurance in the *BCBC*.

Sub-Contractor

A contractor who has a sub-contract with a *general contractor* to provide labour, materials and equipment for the construction and quality control of portions of a building project.

Submittals

Documents required to be submitted by a *general contractor*, such as a request for payment, progress report, shop drawing, manufacturer's literature on equipment, concrete mix design, aggregate gradation report, or work schedule. A *submittal* is commonly used by the *SER* to help determine if the work and work products conform with the intent of the *contract documents*.

Supporting Registered Professional (SRP)

The *RP* providing supplementary supporting design and/or *field review* services for structural building components, or sub components to the *SER* (e.g. *specialty structural elements*, *secondary structural elements*). Schedules S-B and S-C as identified in Appendix A of AIBC/APEGBC Practice Note 16, are recommended mechanisms for the *RPR* to receive assurance from the *SRP* providing supporting engineering services; confirming that the plans and supporting documents relating to the supporting engineering services for a particular structural component, or sub component substantially comply, in all material respects, with the applicable requirements of the *BCBC*.

Sustainable Goal

A goal to try to balance economics, environmental issues and social issues for a building project and/or a built environment so that they are truly sustainable. Also referred to as a "high performance" goal or "green design".

2 INTRODUCTION

In 1993, the Council of the Association of Professional Engineers and Geoscientists of the Province of British Columbia (*APEGBC*)² adopted the first edition of *Guidelines for Structural Engineering Services for Building Projects*³. In 2007, members of the Professional Practice Committee of the Structural Engineering Association of BC (SEABC) reviewed the 1993 document, and produced this new document. *APEGBC* Council formally adopted this guideline in December 2008.

The Guideline was updated in December 2010 to provide consistency with the designations used in the *BCBC* and with the Letters of Assurance in the *BCBC* (See Appendix B).

These guidelines form part of *APEGBC*'s ongoing commitment to maintain the quality of services that its *member*s and *licensees*⁴ provide to both their *clients* and the public. Professional Engineers and Professional Geoscientists are professionally accountable for their work under the *Act*, the *Act* that is enforced by *APEGBC*.

2.1 PURPOSE OF GUIDELINES

These guidelines set out the standards of practice that a *member* should follow and meet in providing structural engineering services for building projects. Refer to Section 2.2 for the scope of building projects to which these guidelines apply.

A *member* must exercise judgment when providing professional services. As such, application of these guidelines will vary depending on the circumstances, however, the services should meet the intent of these guidelines.

APEGBC supports the principle that a *member* should receive fair and adequate compensation for professional services, including services provided to comply with these guidelines. An insufficient fee does not justify services that do not meet the intent of these guidelines. *Members* should refer to *APEGBC's/CEBC's Budget Guidelines for Consulting Engineering Services (2009)*. A *member* may wish to discuss both these guidelines and the recommended fee guidelines with his/her *client* when discussing an assignment and reaching an agreement regarding compensation.

These guidelines can be used to assist in establishing the scope of professional services and terms of reference of a *member*'s agreement with his/her *client*. It is not intended, however, that these guidelines be used as a legal document or to alter contracts between a *member* and a *client*.

By following these guidelines, a *member* should fulfill his/her professional obligations, especially with regards to *APEGBC's Code of Ethics* Principle 1 which is to hold paramount the safety, health and welfare of the public, protection of the environment and promote health and safety in the workplace. Failure of a *member* to meet the intent of these guidelines could be evidence of unprofessional conduct and lead to disciplinary proceedings by *APEGBC*.

² Words or terms in italics are defined in Section 1 of these guidelines.

³ refer to Section 6 – References and Bibliography, for references to, and sources of, referenced documents.

⁴ In these guidelines, *members* and *licensees* are collectively referred to as *members*.

2.2 SCOPE OF GUIDELINES

These guidelines apply to the practice of structural engineering for buildings which fall under Part 3 of the *BCBC*, *VBB* or the *NBC*, or parts of buildings, governed by Part 4 of the *BCBC*, the *VBB*, the *NBC*.

These guidelines outline structural engineering services that should typically be provided by the *SER* in a building project. They specify tasks that should be performed by the *SER* to achieve designs that are in the best interest of the *client* and the public, and that are appropriately coordinated with the work of other *registered professionals*, the *general contractor and sub-contractors* associated with the building project. These guidelines should assist in maintaining the integrity of the overall and detailed designs.

These guidelines also discuss the role of the *RP* providing supplementary supporting structural engineering services (*SRP*) to the *SER* acting as the *RPR* for the *primary structural system* which can include the services of a *specialty structural engineer*. Section 5.1.3 of these guidelines discusses the delegation of responsibility from a *SER* or *SRP* to a less experienced *member*, an EIT or a non-*member* under the *direct supervision* of the *SER* or *SRP*.

Appendix B of these guidelines discusses the *BCBC* and *VBB* Letters of Assurance (LOA) for design and *field reviews* that an *authority having jurisdiction* can require from a *member*.

2.3 QUALIFICATION OF THESE GUIDELINES

Notwithstanding the purpose and scope of these guidelines, a *member's* decision not to follow one or more of these guidelines does not necessarily mean that the *member* has failed to meet his/her professional obligations. Such decisions depend upon the *member's* exercise of professional judgment including weighing facts and circumstances particular to a project. Determining whether a *member* has met his/her professional obligations will involve a comparison of the *member's* services to these guidelines and the range of actions of a reasonable and prudent *member* in similar circumstances.

3 PROJECT ORGANIZATION AND RESPONSIBILITIES

3.1 COMMON FORMS OF PROJECT ORGANIZATION

The organization of building projects vary according to the needs of the project and the parties involved. Three common organizational charts are provided in Appendix A. They identify some examples of how a project can be organized, including the reporting relationship of various *RPs*.

Charts 1 and 2 indicate that the *owner* retains a *CRP* to act as the prime consultant for the building project. Chart 1 shows that the *SER* has a contractual relationship with the *owner*. Chart 2 shows that the *SER* has a contractual relationship with the *CRP*. Chart 3 indicates that the *owner* retains a *design/build contractor* to oversee the building project and the *SER* has a contractual relationship with the *design/build contractor*. Therefore, the *SER's client* can either be the *owner*, the *CRP* or the *design/build contractor*.

The three charts indicate that the *SER* interfaces with the *registered professionals*, the *general contractor* and the testing and inspection companies associated with the building project.

Regardless of the project organization, the various participants have particular responsibilities as described below.

3.2 **RESPONSIBILITIES OF ORGANIZATION PARTICIPANTS**

3.2.1 Owner

As discussed in Section 3.1, the *owner* can also be the *client* of the *SER*. Regardless of the contractual relationship between the *owner* and *SER*, to ensure the design and construction of the building project meets appropriate standards of public safety and the requirements of applicable building codes, the *owner* should assume the following responsibilities. (Note, that regardless of the type of *RP*, the *owner*'s responsibilities are similar).

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 *RPs* are retained;
- ensure required approvals, licences and permits from the *authorities having jurisdiction* are obtained;
- develop, along with the CRP or the design/build contractor, an appropriate written description of the building project;
- ensure appropriate scopes of work and realistic schedules of work are developed for RPs;
- ensure contracts are finalized with *RPs* before their services are required;
- ensure the contracts with *RPs* are amended to include services required beyond the original scopes of work;
- recognize that designs, *design drawings*, *specifications*, *contract documents* and other documents prepared by *RPs* are for that building project only and should not be used or copied for other building projects without consent of the *RPs*;
- recognize that some design changes may be required because interpretations of building codes can differ between the *authority having jurisdiction* and *RPs*; and
- confirm if the SER is to apply APEGBC's Sustainability Guidelines to the building project and the specific nature of the services to be provided.

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If the *owner* does not assume the above responsibilities, *RPs* should:

- consider recommending to the owner in writing that he/she fulfills his/her responsibilities; or
- consider withdrawing from the building project.

3.2.2 Coordinating Registered Professional (CRP)

The role of the *CRP* as described in the LOA Schedule A, is to coordinate the design work and *field reviews* of the *RPs* required for the project in order to ascertain that the design will substantially comply with the relevant building code.

The role of the *CRP* is clearly defined in Division C, Appendix A-2.2.7 in the *BCBC*.

It is not intended that the *CRP* assume responsibility for the adequacy or accuracy of the technical design or subsequent *field reviews* of the *RPs* providing design and *field review* services. However, the *CRP* needs to provide a level of administrative overview beyond simply obtaining sealed drawings and LOAs whether or not the *CRP* has a contractual relationship with the *RPs* involved in the project. The *CRP* should assume the following responsibilities to enable *RPs* to perform their duties appropriately. These responsibilities may include the following activities:

- interpret the needs of the *owner* so that the designs will meet the intended function of the building project;
- identify and advise *RPs* of special design criteria, such as in the case of a *SER*, equipment, loads, and span requirements;
- develop the scope of work with *RPs* for designs, *specifications*, *contract documents*, *field reviews* and/or contract administration;
- provide timely and appropriately detailed information to allow *RPs* to adequately carry out their scope of work;
- coordinate and review designs, specifications, contract documents prepared by RPs;
- coordinate communications of information between the *owner*, the *general contractor*, and *RPs* so that the building project substantially complies in all material respects with the applicable building codes, and meets the *owner's* needs; and
- that APEGBC Bylaw 14(b)(4) regarding the completion of documented reviews of structural designs is complied with.

3.2.3 Design/Build Contractor

For *design/build contractor* building projects, the *design/build contractor* should assume the same responsibilities as the *CRP* to enable *design professionals* to perform their duties appropriately (refer to Section 3.2.2).

3.2.4 Structural Engineer of Record (SER) or Registered Professional of Record (RPR)

As discussed in Section 3.1, although the *SER* can have a contractual relationship directly with the *owner*, the *CRP* or the *design/build contractor*, he/she interfaces with most other *registered professionals*, the *general contractor* and the testing and inspection companies associated with the building project.

The SER should work with the owner, the CRP or the design/build contractor to develop a scope of work to enable and permit him/her to provide the required designs, specifications, contract documents, field reviews and/or contract administration as described in these guidelines and applicable building codes.

The SER is responsible for the integrity of the *primary structural system* of the building. Although the SER can rely on other *structural engineers* to be responsible for *primary structural elements*, the SER has the overall responsibility to ensure designs necessary to achieve a *primary structural system* meet acceptable standards. In situations where other *structural engineers* are acting as an SRP they are responsible for signing and sealing the documents related to the structural components (either *secondary* or *speciality structural elements*) they are responsible for.

The SER may be responsible for the design of secondary structural elements, specialty structural elements or non-structural elements. However, the SER remains responsible for designing the primary structural system to accommodate these other elements, and for allowing for their effects on the primary structural system. For this purpose, the SER is responsible for the review of these elements.

The SER must sign, seal and date the appropriate BCBC or VBB LOAs for design and *field reviews* regarding the designs and supporting documents he/she prepares. This includes taking responsibility for all structural items under Schedule B of the LOA and crossing out and initialling only those items not applicable to the project. When required by the *authorities having jurisdiction*, the SER should coordinate the preparation and submission of the *final design drawings*.

The SER should be familiar with and, where appropriate, apply APEGBC's Sustainability *Guidelines* to the work.

3.2.5 Specialty Structural Engineer or Supporting Registered Professional (SRP)

Where a *specialty structural engineer* is engaged directly by the *SER* (Appendix B, Chart 3, for example), the *specialty structural engineer* should work with the *SER* to clearly develop the *specialty structural engineer*'s scope of work. The *specialty structural engineer* is responsible for the integrity of his/her designs and must sign, seal and date the documents prepared in their professional capacity or under their *direct supervision*. As the *specialty structural engineer* acts as a *SRP* in that they provide supporting engineering services to the *SER* they submit to the *SER* sealed, signed and dated Model Schedules S-B and S-C as identified in Appendix A of AIBC/APEGBC Practice Note 16.

3.2.6 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, and that he/she is responsible for 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 the general contractor's work and supervision of the work of *sub-contractors*, co-ordinating the work of *sub-contractors* and for inspecting *sub-contractors*' work prior to *field reviews* by the *SER*, and 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*.

The general contractor must provide independent quality control.

3.3 SELECTION OF CONSULTANTS

The recommended procedures for selecting an engineering consultant are described in Consulting Engineers of British Columbia's documents *Appointing Your Consulting Engineer Using Qualifications Based Selection*, Selecting a Professional Consultant prepared by the Federation of Canadian Municipalities and the National Research Council and in *APEGBC's* document *Advice on Hiring a Professional Engineer or Professional Geoscientist in British Columbia*.

4 GUIDELINES FOR PROFESSIONAL PRACTICE

The following sub-sections outline the services that a *SER* should provide for a building project. These services can assist a *SER* in explaining his/her services to a *client*, whether that *client* is an *owner*, a *CRP* or a *design/build contractor*. These outlines are not intended to be exhaustive, and should not detract from other provisions of these guidelines.

4.1 SCOPE OF WORK

Before commencement of services, the SER should meet with the *client* to:

- develop the scope of work for *basic services* and *additional services*;
- reach agreement on fees, payment schedule and professional liability insurance; and
- reach agreement on, and complete a Contract^{5.}

For a "fast-track" project, in addition to the above, the SER should:

- establish with the *client*, terms and conditions under which preliminary or partially completed *contract documents* can be issued in advance, and clearly define the requirements for partially completed *contract documents*;
- advise the *client* that no part of the designs, *specifications* or *field reviews* is complete before *contract documents*, including those of other *RPs*, have been completed; and
- ensure that scheduling will not adversely affect the quality and safety of the services of *RPs*.

4.2 BASIC STRUCTURAL ENGINEERING SERVICES (BASIC SERVICES)

The typical stages of *basic services* for a building project may include:

- conceptual or schematic design;
- ____design development;
- permitting;
- *contract documents*, including designs for the *primary structural system*, structural calculations, structural *design drawings* and *specifications*;
- tendering; and
- construction, including review of *submittals* and *field reviews*.

Each stage discussed below contains items that relate to the typical sequence of a building project. For various reasons, certain *basic services* can be performed out of typical sequence or in different stages.

4.2.1 Conceptual or Schematic Design Stage

In the conceptual or schematic design stage, the SER may:

- in conjunction with the *client* and other *RPs*:
 - o review functional, aesthetic, cost and scheduling requirements;
 - o review existing *design drawings*;
 - conduct a preliminary site visit;
 - o review applicable building codes and restrictions and other factors affecting the design;
 - o develop *sustainable goals*; and
 - o prepare a preliminary design concept.
- assist the owner, CRP and/or design/build contractor to:

⁵ "Documents No. 31, 32" prepared by the Association of Consulting Engineers of Canada or the Sample Terms of Agreement prepared by ENCON (Bulletin No. 99Q, June 1997) are recommended as a basis for a contract.

- determine the need for specialists, such as geotechnical, material testing, vibration analysis and wind tunnel testing;
- o develop or review the project schedule, including milestone dates;
- o develop channels of communication;
- determine the responsibility for showing overall and detail dimensions on the *design drawings*;
- o determine design drawing standards and *specifications* format; and
- o determine the timing of meetings during each stage of the project.
- with respect to the *primary structural system*:
 - o establish comparative information to help select a *primary structural system*;
 - o establish structural design criteria;
 - develop the structural scheme, and alternate schemes where appropriate, considering materials, systems and budgets;
 - establish the requirements of other *RPs* and establish dates that information affecting the structural design will be needed from other *RPs*;
 - establish criteria for other *RPs* and review their reports;
 - describe the *primary structural system*, detailing significant *primary structural elements* and materials;
 - report on the *primary structural system* considering economy, performance, capital cost, compatibility with other design elements and requirements of relevant codes and authorities;
 - o provide, if required, brief outline *specifications* for proposed materials;
 - explain in writing to the *client*, for his/her consideration, proposed new structural construction materials or techniques and the alternatives, including the short and long term advantages and disadvantages;
 - o recommend the primary structural system; and
 - prepare a summary report that defines the selected *primary structural system* and rationalizes its selection.

A *client* may assume responsibility for some or all of the foregoing conceptual or schematic design stage activities, provided:

- the responsibility for the conceptual or schematic design stage activities is clearly defined in writing and relieves the *SER* of responsibility for the effects of such activities on the selection of the *primary structural system*, costs, and/or scheduling;
- the SER can make appropriate decisions with regard to engineering and safety; and
- the SER can satisfy the requirements of subsequent stages of these guidelines.

4.2.2 Design Development Stage

In the design development stage, the selected preliminary design is developed in sufficient detail to enable commencement of the final design and construction documents by *RPs*. During this stage, the *SER* may:

- attend meetings with the *client* and other *RPs*;
- consider reviewing the *sustainable goals* and other strategies identified during the conceptual or schematic design stage;
- identify desired standards, such as: deflection of slabs and beams, potential vibration, lateral drift, concrete and masonry crack control, foundation settlement, soil-structure interaction, permanent seismic movements and deformations;
- review reports by specialists such as geotechnical, material testing, vibration analysis and wind tunnel testing;

- prepare preliminary structural analysis and design calculations for typical *primary structural elements*;
- prepare preliminary foundation *design drawings* based on recommendations by the geotechnical engineer;
- prepare preliminary framing design and *design drawings* showing layouts of typical areas;
- prepare or edit outline *specifications* for structural elements;
- coordinate structural design with deflection and lateral movement criteria to meet requirements of other *RPs*; and
- prepare design documentation for review and approval by the *client*.

4.2.3 Building Permitting Stage

If a building permit is required, Letters of Assurance in the forms set out in Schedule A and B of the BCBC or Vancouver Building Bylaw must be delivered to the authority having jurisdiction.

Division C Sentence 2.2.7.3.(3) of the BCBC or the Vancouver Building Bylaw requires that a professional engineer "place his or her professional seal or stamp on the plans submitted by him or her in support of the application for a building permit, after ascertaining that they substantially comply with the BC Building Code and other applicable enactments respecting safety". The professional engineer can, at their discretion, add a note that the structural drawings submitted for permitting are "Not for Construction" or similar.

The requirement for structural drawings submitted for permitting purposes is outlined in Division C Sentence 2.2.4.3.(1) of the BCBC and Vancouver Building Bylaw.

Following is a summary of the minimum level of information required on structural drawings for permitting purposes in order to meet the intent of the relevant provisions in the BCBC and Vancouver Building Bylaw:

- Name and address of the person responsible for the design.
- The date of issue of the Code and standards to which the design conforms.
- The dimensions, location and size of all structural members in sufficient detail to enable the design to be reviewed to the standard set out in the Engineers and Geoscientists BC Quality Management Guideline "Documented Independent Review of Structural Designs."
- Sufficient detail to enable the dead loads to be determined.
- All effects and loads, other than dead loads, used for the design of the structural members and exterior cladding.
- Foundation design assumptions that impact the structural design including reference to a geotechnical report, if applicable.

4.2.34 Contract Documents Stage

This stage includes designing the *primary structural system*, preparing structural calculations to support the design, preparing structural *design drawings*, and preparing *specifications*.

4.2.34.1 Primary Structural System

In conjunction with designing the *primary structural system*, the SER may:

• with respect to *primary structural elements*, such as connection details and proprietary products:

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- determine and specify in the *contract documents* which elements will be designed by *SRPs*;
- specify types of elements, their positions within the structure and methods of connecting to the *primary structural system*;
- o specify loads and design criteria for use by *SRPs* in their design; and
- review the design of *specialty structural elements* and *secondary structural elements* for conformity with the *primary structural system*.
- with respect to *non-structural elements* attached to the *primary structural system*:
 - o review the effect of the elements on the primary structural system;
 - o design the *primary structural system* to accept and support such elements; and
 - provide information regarding the supporting capability and physical attachment limitations of the *primary structural system*.

The above design responsibilities may be delegated to an assisting *member*, a less experienced *member*, and Engineer-in-Training (EIT) or a non-*member* who carries out the work under the *direct supervision* of the *SER*. Refer to Section 5.1.3 for more information.— Delegation of Responsibility.

In addition the SER may:

- attend coordination meetings with the *client* and other *RPs*;
- assist in the coordination with the authority having jurisdiction;
- assist in establishing testing and inspection requirements; and
- comply with fire resistance requirements as determined by the *CRP* or specialty consultants.

4.2.34.2 Structural Calculations

The *SER* must prepare calculations to support his/her structural designs. The structural calculations should be dated, legible and retained in the project file. A hard copy of input and output of computer analysis should be included in the project file, along with a description of the software used.

In general, structural calculations typically will include:

- design criteria, including:
 - o discussion and description of the design basis including assumptions;
 - building codes referenced, with edition dates;
 - list of live loads, environmental loads such as wind, snow and seismic criteria, and special loads and provisions greater than building code requirements, as requested by the *client* or otherwise used by the *SER*;
 - o *specifications* for materials used;
 - o geotechnical report information and design criteria; and
 - o deflection limitations of structural elements and systems
- location diagrams for structural elements;
- vertical load analysis and design of roof structures, floor structures, frames or trusses, columns, walls and foundations;
- lateral load analysis and design for seismic and wind forces;
- computer analysis and design results; and
- special analysis, such as dynamic and vibration analyses.

Documentation of in-house checks and independent reviews of the final structural design and documents, to confirm the adequacy and appropriateness of the design, must be retained. Checking of designs must meet the requirements of *APEGBC*'s Bylaw 14(b)(2), *Quality Management*. Independent review must conform to *APEGBC*'s Bylaw 14(b)(4). See Sections 5.1.5 and 5.1.7 of these guidelines for more information on these quality management requirements. The documentation for checks and independent reviews should include the names of the designers, design checkers and independent reviewers.

The project design file should contain a table of contents or index to the structural calculations.

4.2.34.3 Structural Design Drawings

Structural *design drawings* should show the locations, sizes, reinforcement and details of *structural elements* at appropriate scales, to enable the fabrication, installation, and connection of the elements in a reasonable sequence by a reasonably competent *general or sub-contractor* who is familiar with the techniques of construction for the specified materials.

As a minimum, floor levels, column spacings, structural wall locations and offsets are to be coordinated with the architectural drawings to confirm consistency of dimensions. Elevations, sections, and details should be of appropriate scale, number, and extent to portray the relationship of *structural elements* to each other and their interconnection(s). Care should be taken to determine that details noted "typical" are applicable to the condition being portrayed and that their location and extent are explicit.

Structural *design drawings* should define the complete extent and detail of the work, including sufficient detail to enable determination of dead loads, effects and loads used for the design, and sufficient information to allow the design to be checked.

Design drawings can vary depending on the complexity of the project and the materials used, but may include:

(a) structural notes:

- codes and standards, with dates of issue, to which the design conforms;
- design criteria indicating superimposed vertical and horizontal loads (designated as unfactored loads) used in the design including live loads, environmental loads and dead loads (such as landscape, partition and equipment loads) not otherwise shown on the structural *design drawings*;
- reference to the geotechnical report on which the foundation design is based;
- brief material *specifications*;
- absolute or relative deflection criteria for primary structural elements;
- where forces are shown, their clear identification as factored or unfactored;
- pertinent design standards (eg, CSA or ASTM); and
- reference to design drawings and specifications prepared by other RPs.

(b) typical details

(c) foundation plans and schedules:

- allowable soil-bearing capacity, pile capacities and lateral earth pressures for retaining structures;
- sizes, locations, dimensions and details of foundations;
- assumed bearing strata or elevation(s);
- estimated pile length(s) or source of this information;

- location of known existing services and existing foundations that conflict with structural foundations, or reference to the source where this information can be found;
- if underpinning or temporary shoring is specified to be designed by others, indication on the *design drawings* of the areas designated to be shored or underpinned; and
- if shoring or underpinning is designed by the *SER*, indication of details and construction sequences.

(d) floor and roof framing plans and details:

- general gridline dimensions and overall building dimensions;
- sizes, locations, dimensions and details of structural elements;
- elevations, including slopes and depressions;
- lateral load resisting system;
- governing forces, moments, shears or torsion required for the preparation of shop and detail *design drawings*;
- reinforcing bar sizes and details with fabrication and placing criteria;
- locations and details of control, construction, contraction and expansion joints;
- locations, sizes and reinforcement of significant openings; and
- provision for future extensions.

(e) schedules and details for columns, beams and walls:

- structural element sizes;
- elevation of bottom of columns;
- reinforcing steel and splice details for concrete columns;
- splice locations for structural steel columns;
- structural details of masonry or reinforced concrete walls including lintels, details and reinforcing of significant openings; and
- stiffeners, lateral bracing and local reinforcements for steel elements.
- (f) connections:
 - where connections are to be designed by a *specialty structural engineer*, acting as a *SRP*, *design drawings* should indicate required information and governing forces;
 - where connections are designed by the *SER*, *design drawings* should show dimensions and comprehensive connection details;
 - the *SER* should consider design of the connections when sizing the structural elements, such as HSS truss joints and post-tensioned anchorages; and
 - general arrangement and details at intersections of different structural materials.
- (g) sequence of construction, if this is critical to the functioning of the building project.

4.2.34.4 Specifications

Specifications are prepared using a format suitable for inclusion in the contract documents.

Specifications may include information on the following:

- applicable standards, building codes and/or bylaws;
- *submittals* required;
- quality control requirements;
- materials;
- workmanship and fabrication;
- tolerances;

- information of temporary works and erection information, where necessary, to ensure the intent and integrity of the design;
- testing and inspection;
- notification by the general contractor before significant segments of the work begin;
- warranties; and
- performance criteria for design by *SRPs* engaged to provide supporting structural engineering services.

Where appropriate *specifications* can be abbreviated and become part of the structural *design drawings*.

Specifications should specify that the *SER*'s review of *submittals* and *field reviews*, as well as testing and inspection by independent companies reporting to the *client*, are carried out to inform the *client* of the quality of the *general contractor's* performance, and that these reviews, tests and inspections do not relieve the *general contractor* of his/her responsibilities and are not for the benefit of the *general contractor*.

4.2.45 Tendering Stage

The role of the SER in the tendering stage, if required by the *client*, CRP and/or *design/build contractor*, is to assist to:

- prepare the contract;
- prepare pre-qualification documents;
- review bidders' qualifications;
- obtain required approvals, licences and permits; and
- analyze and evaluate tenders submitted.

The SER should:

- prepare the appropriate LOA and documents required by the *authority having jurisdiction*; and
- provide structural addenda and clarification of structural documents, as required.

4.2.56 Construction Stage

It is essential that *basic services* during the construction stage be provided for systems for which the *SER* is responsible. It is preferable that the *basic services* be provided by the *SER*, however, where practical, the *SER* can delegate these duties to others. Refer to Section 5<u>.1.3</u> for more information on direct supervision. Delegation of Responsibility.

Services by the *SER* during the construction stage should not be construed to relieve the *general contractor* of his/her responsibility for constructing the building in accordance with the *contract documents*, controlling the progress, providing safe working conditions, and/or correcting deviations from the project requirements.

Some items reviewed by the *SER* can also require review by other *RPs* on the design team or by testing and inspection companies. Such items can include piles, anchors, precast concrete elements, structural steel, welding, proprietary products, and other *secondary structural elements* or *specialty structural elements* designed by *SRP's*.

4.2.<u>56</u>.1 General Services During Construction (Field Services)

General services during construction (field services) may include, the following, but can vary depending on the complexity of the project:

• attend construction meetings;

- confirm communication channels and procedures;
- assist in confirming, reporting and scheduling procedures for testing and inspections;
- assist in confirming procedures for shop drawings and other *submittals*;
- confirm that qualifications of fabricators meet the specifications;
- advise the *CRP*, *design/build contractor* and/or *general contractor* on the interpretation of structural *design drawings* and *specifications* and, if required, issue supplementary details and instructions;
- advise the *client* on the validity of charges for additions or deletions from the contract and on the issue of change orders;
- review and comment on the general contractor's applications for progress payments;
- estimate completed work and materials on site for payment according to the terms of the construction contract;
- review reports from the testing and inspection companies to determine if the element complies with the *contract documents*;
- conduct substantial and total performance inspections of structural elements of the project, noting deficiencies and inspect and document completed corrections; and
- coordinate the preparation of and submit *final design drawings* to the *authority having jurisdiction*.

4.2.<u>56</u>.2 Review of Submittals

After being reviewed by the *general contractor*, the *SER* should review *submittals* for general compliance with the *contract documents*, excluding matters such as checking dimensions or quantities or the review of the *general contractor's* safety measures or methods of construction.

In addition, the SER should:

- review shop drawings for conformance with the *contract documents* and the intent of the design;
- confirm, when required by the *contract documents*, that shop drawings have been signed, sealed and dated by the responsible *specialty structural engineer* acting as an *SRP* (the *specialty structural engineer* may be responsible for the design of speciality structural elements and connections); and
- review shop drawings and other *submittals* of pre-engineered or proprietary structural elements for type, position, and connection to *primary structural elements* and for criteria and loads used for the design.

4.2.<u>56</u>.3 Field Reviews

Field reviews should be carried out at intervals appropriate to the stage of construction to observe the quality and the progress of the construction of those elements designed by the *SER*. When construction is complete, a final *field review* should also be carried out. The timing and number of *field reviews* are at the discretion of the *RP* having responsibility. <u>See</u> Section 5.1.6 for more information on the quality management requirement for field reviews.

At the *SER*'s discretion, *field reviews* should also be carried out on proprietary products, connections and including *secondary structural elements* and *specialty structural elements*. The *SRP* responsible for these structural elements should carry out the *field review* of the relevant structural elements he/she has designed at the appropriate stage of construction and report this in writing to the *SER* through the use of Model Schedules S-B and S-C as contained in Appendix A of AIBC/APEGBC Practice Note 16.

Field review reports should be prepared after each *field review* and should outline observations and deficiencies in the work and bring them to the attention of the *general contractor's* site representative.

Field review reports should be distributed to the *general contractor's* site representative, the *general contractor*, the *CRP* and/or the *design/build contractor*. Where the *owner* directly retains the services of the *SER*, it is recommended that the *owner* also be sent copies of *field review* reports.

4.3 Additional Structural Engineering Services (Additional Services)

In addition to the *basic services* described in Section 4.2, the *SER* can provide *additional services* if it is agreeable with both the *SER* and the *client*. Such an agreement should be in an *additional services* contract.

Additional services are typically not considered essential to the basic services, and are not part of the basic services that a SER should provide under these guidelines. Additional services can include design, preparation of documents, review, and field review.

Additional services can be related, but are not limited, to:

- changes in scope, complexity, diversity or magnitude of the original building project, or after selection of the *primary structural system*;
- imposed extended time schedules for design or construction;
- existing buildings and structures including surveys;
- preparation of documents for demolition;
- filing application for, and obtaining, permits;
- seismic analysis beyond that required to meet the requirements of the relevant building code;
- seismic restraints for non-structural elements;
- special physical model analysis such as wind-tunnel tests or shaking table tests;
- dynamic analysis beyond that required by the appropriate building codes (e.g. spectrum analysis or time-history response analysis);
- review of designs and *specifications* by other *design professionals*, not included in the *basic services*, to confirm compatibility with the *primary structural system*;
- specialty structural elements and non-structural elements not included in basic services, such as: curtain walls, building facings, cladding, antennae, elevators, storage tanks, and exterior landscape elements;
- structural fire-resistance requirements;
- alternate designs or products or substitute systems, requested by the *client* or the *general contractor*;
- preparation or assistance with cost estimates, or reviewing cost estimates prepared by others;
- translation of *contract documents*, conversion to other units, or special preparation of *design drawings* for reduction;
- preparation of documents for tendering segregated contracts, pre-tendered contracts, phased or fast-track construction;
- review of *general contractor's* design or installation for temporary loading, shoring, bracing, formwork or falsework for excavations and construction, underpinning adjacent structures, and erection sequence instructions;
- review of the general contractor's methods, procedures and construction equipment;
- changes due to construction cost over-runs outside the control of the SER;
- changes or corrections due to errors or omissions by the general contractor;

- damage as a result of natural or human-related events;
- continuous or detailed *field reviews* during construction;
- review of additional *submittals* when required because of improper or incomplete *submittals*;
- quantity take-offs and preparation of bills of materials;
- preparation of fabrication drawings, reinforcing steel bending schedules or other types of shop drawings;
- preparation of *record drawings*;
- tenant-related design services; and
- services as an expert witness.

4.4 FABRICATION, MANUFACTURER AND CONSTRUCTION DRAWINGS AND DOCUMENTS

The fabricator or manufacturer should produce drawings and documents to represent the work covered under his/her contract with the *general contractor or sub-contractor*. These drawings and documents should be prepared by the fabricator or manufacturer after reviewing the designs, *specifications* and *contract documents* supplied by the *SER* and following the resolution of requested changes or errors.

Typical fabricator or manufacturer drawings and documents may include:

- structural design drawings and documents for proprietary structural elements, such as open web steel joists;
- erection drawings and documents that specifically show the location of structural elements, connections and components to be supplied by the fabricator; and
- shop fabrication/connection drawings and documents that provide information necessary for shop personnel to fabricate and assemble the items.

When these drawings and documents incorporate designs by a *SRP*, the *design drawings* and documents must be signed, sealed and dated by the *SRP*. To clarify responsibility, the *SRP* can qualify the extent of work which he/she has designed on the Schedule S-B and Schedule S-C identified in Appendix A of AIBC/APEGBC Practice Note 16.

Construction *design drawings* and documents are produced by the *general or sub-contractor* for elements such as temporary loading, shoring, bracing, formwork or falsework for excavations and construction, underpinning adjacent structures, and erection sequence instructions. These drawings and documents must be signed, sealed and dated by a qualified *member*.

5 DELEGATION OF RESPONSIBILITY

The basic and additional structural engineering services described in Section 4 must be carried out by a SER or a SRP with appropriate training or experience, or by an individual to whom the work is delegated (a delegatee). A delegatee can be an assisting member, a less experienced member, an EIT or a non-member but must be working under the direct supervision of the member responsible. The Act (Section 1(1)) states that direct supervision means that the member responsible takes full responsibility for the control and conduct of the work he/she delegates. Taking this responsibility is noted by the member responsible signing, sealing and dating the work delegated.

The *member* responsible should exercise his/her professional judgment and due diligence in determining what work should be delegated and how it is delegated. The *member* responsible must determine that the delegated services meet the required standards.

Direct supervision typically takes the form of specific instructions on what to do, check, confirm, test, observe, record and report back to the *member* responsible, and how to carry out those tasks. Where the work is more extensive or where engineering decisions/judgments are required, the *member* responsible should make those engineering decisions/judgments, or provide further direction/instruction to the delegatee.

When delegating work, the following should be considered: circumstances surrounding the project and whether it is appropriate to delegate; level, complexity or critical nature of work; level of training and experience of the degelatee; complexity of instruction required to be provided to the delegatee; level of engineering decisions/judgments that the delegatee will be required to make; level of detail required by the delegatee when reporting back to the *member* responsible; ability of the *member* responsible to confirm the results of the delegated work; and necessity for follow-up work by the *member* responsible.

65 QUALITY ASSURANCE/QUALITY CONTROLMANAGEMENT IN PROFESSIONAL PRACTICE

The SER or SRP must adhere to the applicable quality management requirements should carry out quality assurance/quality control (QA/QC) for during all phases of his/her structural engineering work, in accordance with the Association's Bylaws. It is also important to be aware of whether additional quality management requirements exist from authorities having jurisdiction or through service contracts

65.1 APEGBC QUALITY MANAGEMENT REQUIREMENTS BYLAWS

As a minimum, a QA/QC program must satisfy the requirements of APEGBC Quality Management Bylaws 14(b) (1), (2), (3) and (4) with regards to: retention of complete project documentation for a minimum of 10 years; regular documented checking of structural engineering work using a written quality control process appropriate to the risk associated with the work; documented *field reviews* of projects during construction; and documented independent review of structural designTo meet the intent of the quality management requirements, Engineering Professionals must establish and maintain documented quality management processes for the following activities: • The application of relevant Professional Practice Guidelines • Authentication of professional documents by the 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/recommendations during implementation
 <u>or construction</u>
- <u>• Where applicable, documented independent review of structural designs prior to</u> <u>construction</u>

5.1.1 PROFESSIONAL PRACTICE GUIDELINES

Pursuant to the Act, s.4(1) and Bylaw 11(e)(4)(h), Engineering Professionals are required to comply with the intent of any applicable professional practice guidelines related to the engineering work they undertake. One of the three objectives of the Association, as stated in the Act is "to establish, maintain, and enforce standards for the qualifications and practice of its members and licensees". Practice guidelines are one means by which the Association fulfills this obligation.

5.1.2 USE OF SEAL

According to the Act, s.20(9), Engineering Professionals are required to seal all professional engineering documents they prepare or deliver in their professional capacity to others who will rely on the information contained in the documents. 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 Act.

For more information, refer to Quality Management Guidelines – Use of Seal (Engineers and Geoscientists BC 2018).

5.1.3 DIRECT SUPERVISION

According to the Act, s.1(1) and 20(9), Engineering Professionals are required to directly supervise any engineering work they delegate. The basic and additional structural engineering services described in Section 4 must be carried out by a SER or a SRP with appropriate training and experience, or by an individual to whom the work is delegated under direct supervision. When working under the direct supervision of an Engineering Professional, unlicensed persons or non-members may assist in performing engineering work, but they may not assume responsibility for it. It is the Engineering Professional who takes full responsibility for the control and conduct of the work he/she delegates. Taking this responsibility is noted by the Engineering Professional signing, sealing and dating the work delegated Engineering Professionals who are limited licensees may only directly supervise work within the scope of their license.

With regard to direct supervision, the Engineering Professional having overall responsibility should consider:

• the complexity of the project and the nature of the risks;

which aspects of the work should be delegated;

• the training and experience of individuals to whom work is delegated; and

• the amount of instruction, supervision, and review required.

<u>Direct supervision typically takes the form of specific instructions on what to do, check,</u> confirm, test, observe, record and report back to the *member* responsible, and how to carry out those tasks. Where the work is more extensive or where engineering decisions/judgments are required, the *member* responsible should make those engineering decisions/judgments, or provide further direction/instruction.

Careful consideration must be given to delegating fieldwork. Due to the complex nature of fieldwork, direct supervision is difficult and care must be taken so delegated work meets the standard expected by the Engineering Professional with overall responsibility. Typically, such direct supervision could take the form of specific instructions on what to observe, check, confirm, record, and report to the supervising Engineering Professional. Engineering Professionals with overall responsibility should exercise judgment when relying on delegated field observations, and they should conduct a sufficient level of review to have confidence in the quality and accuracy of the field observations.

For more information, refer to Quality Management Guidelines – Direct Supervision (Engineers and Geoscientists BC 2018a).

5.1.4 RETENTION OF PROJECT DOCUMENTATION

Pursuant to Bylaw 14(b)(1), 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.

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 a complete set of project documentation is retained by the organizations that employ them using means and methods that are consistent with the Association's Bylaws and guidelines.

For more information, refer to Quality Management Guidelines – Retention of Project Documentation(Engineers and Geoscientists BC 2018b).

5.1.5 DOCUMENTED CHECKS OF ENGINEERING AND GEOSCIENCE WORK

As per Bylaw 14(b)(2), Engineering Professionals are required to undergo documented quality checking and review of engineering work appropriate to the risk associated with that work.

Regardless of sector, Engineering Professionals must meet this quality management requirement. In this context, 'checking' means all professional deliverables must undergo a documented checking and review process before being finalized and delivered. This process would normally involve an internal review by another Engineering Professional within the same organization. Where an appropriate internal reviewer is not available, an external reviewer (i.e., one outside the organization) must be engaged. Where an internal or external review has been carried out, this must be documented.

Engineering Professionals are responsible for ensuring that the checks being performed are appropriate to the level of risk. Considerations for the level of review should include the type of document and the complexity of the subject matter and underlying conditions; quality and reliability of background information, field data, and elements at risk; and the Engineering Professional's training and experience.

For more information, refer to Quality Management Guidelines – Documented Checks of Engineering and Geoscience Work (Engineers and Geoscientists BC 2018c).

5.1.6 DOCUMENTED FIELD REVIEWS DURING IMPLEMENTATION OR CONSTRUCTION

As per Bylaw 14(b)(3), 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. 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.

Engineering Professionals are required to establish and maintain documented quality management processes, which include carrying out documented field reviews of their domestic projects or work during implementation or construction. Domestic works or projects include those located in Canada and for which an Engineering Professional meets the registration requirements for the engineering regulatory body that has jurisdiction.

For more information, refer to Quality Management Guidelines – Documented Field Reviews during Implementation or Construction (Engineers and Geoscientists BC 2018d).
5.1.7 DOCUMENTED INDEPENDENT REVIEW OF STRUCTURAL DESIGNS

Bylaw 14(b)(4) refers to an independent review in the context of structural engineering. 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. It is carried out by an experienced Engineering Professional qualified to practice structural engineering, who has not been involved in preparing the design.

For more information, refer to Quality Management Guidelines – Documented Independent Review of Structural Designs (Engineers and Geoscientists BC 2018e).

76 REFERENCES AND BIBLIOGRAPHY

Not all the following documents are referenced in the text. Some are related sources of useful information. Where documents are known to be on the world wide web, they are noted as [web].

APEGBC, Guideline on Shop Drawings [web]

APEGBC, Guidelines for Independent Review of Structural Designs [web]

APEGBC, Guidelines for Sustainability [web]

APEGBC/CEBC 2009, Budget Guidelines for Consulting Engineering Services [web]

APEGBC 2010, Letters of Assurance in the BC Building Code and Due Diligence, Bulletin K [web]

Association of Consulting Engineers of Canada Documents No. 31-2009, 32-2009 and 39 recommended as a basis for engineering contracts [web]

Association of Professional Engineers of Ontario 1998 Guideline for Professional Engineers Providing Structural Engineering Work in Buildings [web]

British Columbia Engineers and Geoscientists Act (RSBC 1996, Chapter 116, as amended) [web]

British Columbia Building and Safety Standards Branch 2010 Guide to the Letters of Assurance in the BC Building Code [web]

British Columbia Building and Safety Standards Branch 2006 British Columbia Building Code (Schedules B and C-B are available on the web)

City of Vancouver The City of Vancouver Building By-law

InfraGuide Best Practices for Selecting a Professional Consultant 2006 [web]

Consulting Engineers Association of BC, Qualifications Based Selection Brochure 2006 [web]

APPENDIX A: EXAMPLES OF ORGANIZATIONAL CHARTS



1. STRUCTURAL ENGINEER OF RECORD WORKING UNDER AN ARCHITECT ACTING AS THE COORDINATING REGISTERED PROFESSIONAL



NOTE: 1: The Supporting Registered Professional (SRP) can be retained by the Owner, the Structural Engineer of Record, the General Contractor and/or Sub-contractor.

2: The Coordinating Registered Professional is responsible for coordination of the other Registered Professionals engaged under the LOA.

2. DESIGN/BUILD CONTRACT



NOTE: The Supporting Registered Professional (SRP) may be retained by the Owner, the Structural Engineer of Record, and/or Sub-contractors.

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- NOTE: 1. The Supporting Registered Professional (SRP) can be retained by the Owner, the Structural Engineer of Record, the General Contractors and/or Sub-contractors.
 - 2. The *Coordinating Registered Professional* is responsible for coordination of the other *Registered Professionals* engaged under the LOA.

APPENDIX B: LETTERS OF ASSURANCE (LOAS)

LOAs were introduced in 1990 in the VBB, and in 1992 in the BCBC and continue to be referenced in the current editions of the VBB and BCBC. They were developed after discussions among the City of Vancouver, the BC Building Policy Branch, the Architectural Institute of British Columbia and *APEGBC*, and in close consultation with the Building Officials Association of BC. The LOA's were last updated in January 20180.

The intent of the LOA is to assure the *authority having jurisdiction* that for a particular building project:

- the activities of the various *RPRs* are coordinated;
- the design documents submitted in support of the application for a building permit substantially comply with the BCBC or VBB;
- building designs substantially comply with the requirements of the BCBC or VBB; and
- the *RPR* will undertake, and has undertaken, the necessary *field reviews* to determine that building construction substantially complies with the BCBC or VBB.

Schedule B identifies the various *RPRs* who acknowledge responsibility for their designs and that they substantially comply with the BCBC or VBB respecting safety, except for construction safety aspects. Schedules B also provide a commitment that the *RPRs* will be responsible for *field reviews* required for the project.

Schedule C-B confirms that the necessary *field reviews* have been completed by the *RPR*, and the finished project substantially conforms to the design, and the BCBC or VBB.

A *RPR* acting as the *SER* should only undertake design and *field review* for the items identified on the LOA for their discipline based on their competency. As such, a *RPR*, or *owner*, may require supplementary supporting engineering services for a particular structural component, or sub-component. In instances where supporting engineering services are required, it is recommended that appropriate assurances should be obtained by the relevant *RPR* from the *SRP* (who could be engaged by the *RPR*; the *owner*, a contractor, sub-trade or supplier) providing the supporting design service and/or field service. Upon receipt of assurance from such *SRP* that a particular component, or sub-component substantially complies, in all material respects, with the applicable requirements of the *BCBC*, the *RPR* can complete and submit the LOA for his or her discipline. Please refer to AIBC/APEGBC Practice Note 16 to view the model supporting LOAs Schedules S-B and S-C, that APEGBC and the AIBC have recommended for use by *registered professionals* acting as a *SRP*.

For further reference to the BCBC and VBB LOA refer to:

- British Columbia Building Code, Letters of Assurance [web]
- The City of Vancouver Building Bylaw, Letters of Assurance [web]
- Guide to the Letters of Assurance in the British Columbia Building Code [web]
- APEGBC Bulletin K Letters of Assurance in the BC Building Code and Due Diligence
- AIBC/APEGBC Practice Note 16: Professional Design and Field Review by a Supporting Registered Professional.

Where unanticipated conditions are observed, the *design professional* should provide recommendations and additional *field reviews* to achieve the design objectives. A *design*

professional has the responsibility to ensure deficiencies identified in *field reviews*, for which he/she is responsible, are addressed adequately.

Where the requirements of the *BCBC* or *VBB* are at variance with standard practice, there are provisions for "generally accepted design" or "established local practice" to satisfy the requirements.

A.1 Schedule B

Descriptions of the various items set out in Schedule B that relate to structural engineering practices are presented below.

With respect to the items under the heading of "Structural", the purpose is to clearly identify the *RP* who has the overall responsibility for these items as the *RPR* acting as the *SER*.

The SER has the responsibility for the design and *field review* of the *primary structural system*. As well, the SER has responsibility for the coordination and general conformance of the *secondary structural elements* and/or *speciality structural elements* with the *primary structural system*.

Only the *SER* acting as the *RPR* for the *primary structural system* should sign off for the structural items on Schedule B.

The following sections cover the relevant structural items within Schedule B.

A.1.1 Structural Engineer of Record (SER) or RPR for the Primary Structural System The numbers provided for each of the items discussed below are consistent with those in Schedule B.

2.1 Structural capacity of structural components of the building, including anchorage and seismic restraint.

The *SER* is responsible for the design and *field reviews* of the *primary structural elements* of the base building structure, including foundation structures, framing of base building against gravity loading, and bracing of base building against lateral forces.

The SER's responsibility for secondary structural elements and specialty structural elements is to ensure loads placed on the *primary structural system* are taken into consideration in the design of that system.

2.2 Structural aspects of deep foundations

The *SER* is responsible for the design and *field reviews* of the structural aspects of deep foundations that support the base building structure. This is opposed to the geotechnical engineer who has responsibility for the ability of the soil to support the imposed loads from the building and the deep foundation.

Structural *field reviews* are required for piles where the structural capacity of the shaft is dependent on the workmanship of the *general or sub-contractor*, such as cast-in-place reinforced concrete shafts.

2.3 Review of all applicable shop drawings

The *SER* is responsible for reviewing shop drawings to ensure suitable application to, and integration with, the overall *primary structural system*. This review does not include checking of the design of the applicable structural sub-system. Correctness of dimensions are also

excluded from such reviews; for which the applicable *general or sub-contractor* is responsible. See *APEGBC*'s *Guideline on Shop Drawings* for more details.

2.4 Structural aspects of unbonded post-tensioned concrete design and construction

The *SER* is responsible for the design and *field reviews* of unbonded post-tensioned concrete systems within the base building structure. While the *SER* usually designs the material aspects of this system, a *specialty structural engineer* providing services as an *SRP* usually designs the layout of the tendons and anchors.

Specialty structural engineers acting as an SRP working on behalf of the general contractor provide the layout of the post-tensioning tendons and anchors, and testing and inspection companies using specialty structural engineers providing full time field review of the construction workmanship. The SER is responsible to review the work of both these specialty structural engineers and by completing this item in Schedule B the SER takes overall responsibility for this aspect of the structural design.

A 1.2 Supporting Registered Professional (SRP)

The following are services commonly provided by a *SRP* and fall under other disciplines, for example architecture, mechanical, plumbing, fire suppression and electrical. In such circumstances the architect or the *RPR* for the relevant discipline typically initials the respective item, and the *SRP* completes a Schedule S-B and S-C for the secondary structural element or specialty structural element for which he/she provided design and field reviews and submits it to the *SER*, the architect or other *RPR*, and/or the *CRP*, as appropriate. The specialty SRP should ensure that the design of the secondary structural element or specialty structural with the design of the primary structural system.

Architectural 1.6 *Supporting Registered Professionals* providing supplementary structural engineering services of non-structural sub-systems

This item pertains to structural capacity of architectural components, including anchorage and seismic restraint. Anchorage and seismic restraint pertains to the itemized architectural elements only and does not include primary structural components listed in under "Structural". This work can include guardrails and handrails, wall cladding systems, non-load bearing block walls, exterior glazing, window systems, and signage.

The architect or *CRP* would sign the Schedule B. A *SRP* would typically carry out the design and *field reviews* unless the *SER* wishes to take responsibility. The *SRP* or *SER* would submit a Schedule S-B and S-C to the architect or *CRP*.

The *SRP* does not take responsibility for the structural integrity of the architectural components themselves.

Mechanical 3.5 Structural capacity of mechanical components, including anchorage and seismic restraint

This work can include anchorages, supports and restraints for heating, ventilation and air conditioning mechanical units, related ventilation ducting, and elevating devices.

The mechanical *RPR* typically initials this item. The design of the anchorage and seismic restraints is typically carried out by a *SRP* who submits a Schedule S-B and S-C to the mechanical *RPR*.

Neither the mechanical *RPR* or the *SPR* take responsibility for the structural integrity of the mechanical components themselves.

Plumbing 4.7 Structural capacity of plumbing components, including anchorage and seismic restraint

This work can include anchorages, supports and restraints for tanks, pumps, and related piping.

The plumbing *RPR* typically initials this item. The design of the anchorage and seismic restraints of the plumbing component is typically carried out by a *SRP* who submits a Schedule S-B and S-C to the plumbing *RPR*.

Neither the plumbing *RPR* or the *SRP* takes responsibility for the structural integrity of the plumbing components themselves.

Fire Suppression Systems 5.9 Structural capacity of sprinkler components, including anchorage and seismic restraint

This work can include anchorages, supports and restraints for piping or sprinkler lines.

The *RPR* for the fire suppression systems typically initials this item. The design of the anchorage and seismic restraints of sprinkler components is typically carried out by a *SRP* who submits a Schedule S-B and S-C to the *RPR* for fire suppression systems.

Neither the *RPR* for fire suppression systems or the *SRP* takes responsibility for the structural integrity of the sprinkler components itself.

Electrical 6.5 Structural capacity of electrical components, including anchorage and seismic restraints

This work can include anchorages, supports and restraints for transformers, panels, and lighting equipment.

The electrical *RPR* typically initials this item. The design of the anchorage and seismic restraints of electrical components is typically carried out by a *SRP* who submits a Schedule S-B and S-C to the electrical *RPR*.

Neither the electrical *RPR* or the *SRP* takes responsibility for the structural integrity of the electrical components themselves.

				5.6 – Appendix
				FAP #
		SCHEDULE RP-A		
		CONFIRMATION OF COMMITMENT BY APPL AND COORDINATING REGISTERED PROFESSIO	ICANT NAL (CRP)	
lote: (i (i (i	(i) (ii) (iii)	This letter must be submitted before issuance of a <i>building</i> permit. This letter is endorsed by: Architectural Institute of British Columbia, and the and Geoscientists of the Province of British Columbia. In this letter the words in italics have the same meaning as in the National B form.	Association of Prou	fessional Engineers nada or as specified on th
		Re: Design and Field Review of Construction by a Coordinating Registered Professional		
o: City	ty of	Abbotsford		
≀e : Nam	ne of	Project (Print)		
Addr	lress/	/Location of Project (Print)		
			(Professional	Seal and Signature)
				Dete

protessional to coordinate the design work and field reviews of the registered professionals of record required ' for this project. The coordinating registered professional shall coordinate the design work and field reviews of the registered professionals of record required for the project in order to ascertain that the design will substantially comply with the National Building Code of Canada and other applicable codes and standards respecting safety and that the construction of the project will substantially comply with the National Building Code of Canada and other applicable codes and standards respecting safety, not including construction safety aspects.

"field reviews" are defined to mean those reviews of the work

(a) at a project site of a development to which a *building* permit relates, and

(b) where applicable, at fabrication locations where *building* components are fabricated for use at the project site that a *registered professional of record* in his or her professional discretion considers necessary to ascertain whether the work substantially complies in all material respects with the plans and supporting documents prepared by the *registered professional of record* for which the *building* permit is issued.

The applicant and the *coordinating registered professional* each acknowledge their responsibility to notify the City of Abbotsford of the date the *coordinating registered professional* ceases to be retained by the applicant before the date the *coordinating registered professional* ceases to be retained or, if that is not possible, then as soon as possible. The *coordinating registered professional* acknowledges the responsibility to notify the addressee of this letter of the date a *registered professional of record* ceases to be retained before the date the *registered professional of record* ceases to be retained or, if that is not possible.

1 It is the responsibility of the *coordinating registered professional* to ascertain which *registered professionals of record* are required, and to initial each Schedule RP-B.

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The applicant and the *coordinating registered professional* understand that where the *coordinating registered professional* or a *registered professional of record* ceases to be retained at any time during construction, work on the above project will cease until such time as

- (a) a new coordinating registered professional or a registered professional of record, as the case may be, is retained, and
- (b) a new letter in the form set out in Schedule RP-A or in the forms set out in Schedule RP-B, as the case may be, is filed with the City of Abbotsford.

The undersigned *coordinating registered professional* certifies that he or she is a *registered professional* as defined below, and agrees to coordinate the design work and *field reviews* of the *registered professionals of record* required for the project as outlined in the attached Schedules RP-B including coordination and integration of functional testing of fire protection and life safety systems.

Coordinating Registered Professional	Applicant
Coordinating Registered Professional (Print)	Applicant's Name (Print)
Address (Print)	Address (Print)
E-mail address	E-mail address
Phone No.	Name of agent or signing officer if applicable (Print)
	Date
	Applicant's signature. (If applicant is a corporation the signature of a signing officer must be given here. If the signature is that of the agent, a copy of the document that appoints the agent must be attached).
(Professional Seal and Signature	
Date	
(If the coordinating registered professional is a membe	r of a firm, complete the following)
I am a member of the firm	(Drink normal of firms)
This letter must be signed by the applicant and by the oprimary responsibility to coordinate all design work a appointment must be attached. If the applicant is a consigning officer must set forth his or her position in the consigning officer must set forth his or her position in the construction of the applicant is a registered professional of record is a registered professional of the applicant is a set	<i>coordinating registered professional,</i> which is the <i>registered professional</i> who has nd <i>field reviews</i> of all <i>registered professionals</i> for a project. An agent's letter o rporation, the letter must be signed by a signing officer of the corporation and the corporation.
professional means (a) a person who is registered or licensed to	practise as an architect under the British Columbia Architects Act or

 (b) a person who is registered or licensed to practise as a professional engineer under the British Columbia Engineers and Geoscientist Act.

	5.6 – Appendix
	FAP #
SCHEDULE RP-CA	A
ASSURANCE OF COORDINA PROFESSIONAL FIEL REVIEW	ATION OF LD
This letter must be submitted after completion of the project bu final inspection is made, by the City of Abbotsford.	ut before the occupancy permit is issued, or
This letter is endorsed by: Architectural Institute of British Colu Engineers and Geoscientists of the Province of British Columb	umbia, and the Association of Professional bia.
In this letter the words in italics have the same meaning as in t this form.	the National Building Code or as specified on
Abbotsford	
f Project (Print)	
or location of Project (Print)	
ting registered professional shall complete the following.	.) (Professional Seal and Signature)
	Date
ssurance that	
I have fulfilled my obligations for coordination of <i>field review</i> the project as outlined in this letter and in the previously sub OF COMMITMENT BY OWNER AND BY COORDINATING	v of the <i>registered professionals</i> required for bmitted Schedule RP-A, "CONFIRMATION BREGISTERED PROFESSIONAL"
 I have coordinated the functional testing of the fire protection they substantially comply in all material respects with (i) the National Building Code of Canada and other age not including construction safety aspects, and (ii) the plane and supporting documents in support of the s	pplicable codes and standards respecting safety, the application for the <i>building</i> permit,
(ii) the plans and supporting documents in support of the	
<i>I</i> am a <i>registered professional</i> as defined below. <i>d professional</i> is a member of a firm, complete the following)	
	SCHEDULE RP-C/ ASSURANCE OF COORDINA PROFESSIONAL FIEL REVIEW This letter must be submitted after completion of the project be final inspection is made, by the City of Abbotsford. This letter is endorsed by: Architectural Institute of British Colum In this letter the words in italics have the same meaning as in this form. Abbotsford f Project (Print) a or location of Project (Print) a or location of Project (Print) ating registered professional shall complete the following ssurance that I have fulfilled my obligations for coordination of <i>field review</i> the project as outlined in this letter and in the previously sul OF COMMITMENT BY OWNER AND BY COORDINATION I have cordinated the functional testing of the fire protection I have substantially comply in all material respects with

Page 1 of 2

August 2018

Schedule RP-CA - Continued

FAP #

Note: This letter must be signed by the coordinating registered professional, which is the registered professional who has primary responsibility to coordinate all design work and field reviews of all registered professionals for a project.

A registered professional of record is a registered professional retained to undertake design work and field review. A registered professional means

- (a) a person who is registered or licensed to practise as an architect under the British Columbia Architects Act, or
- (b) a person who is registered or licensed to practise as a professional engineer under the British Columbia Engineers and Geoscientist Act.

"field reviews" are defined to mean those reviews of the work

(a) at a project site of a development to which a *building* permit relates, and

(b) where applicable, at fabrication locations where *building* components are fabricated for use at the project site that a *registered professional of record* in his or her professional discretion considers necessary to ascertain whether the work substantially complies in all material respects with the plans and supporting documents prepared by the *registered professional of record* for which the *building* permit is issued.

		SCHEDULE RP-B		FAP #
		ASSURANCE OF PROFESSION AND COMMITMENT FOR FIEL	IAL DESIGN .D REVIEW	
Note:	(i) (ii) (iii)	This letter must be submitted prior to the commencement of const separate letter must be submitted by each <i>registered professional</i> . This letter is endorsed by: Architectural Institute of British Columb Engineers and Geoscientists of the Province of British Columbia. In this letter the words in italics have the same meaning as in the I form	ruction activities of the compo <i>I of record</i> . ia, and the Association of Prof National Building Code or as s	nents identified below. A ressional pecified on this
To:	City	of Abbotsford		
Re:	Name	of Project (Print)		
	Addre	ss or location of Project (Print)		
			(Professional Sea	al and Signature)
The u (Initial 1 of reco	ndersi hose of rd. All th	gned hereby gives assurance that the design of the the items listed below that apply to this <i>registered professional</i> e disciplines will not necessarily be employed on every project.)		Date
	-	ARCHITECTURAL		
	-	STRUCTURAL		
	-	MECHANICAL		
	-	EIRE SUPPRESSION SYSTEMS		
	-	ELECTRICAL		
	-	CIVIL - airside		
	-	GEOTECHNICAL – temporary		
	-	GEOTECHNICAL – permanent		
	-	OTHER		

components of the plans and supporting documents prepared by this *registered professional of record* in support of the application for the *building* permit substantially comply with the National Building Code of Canada and other applicable codes and standards respecting safety except for construction safety aspects.

The undersigned hereby undertakes to be responsible for *field reviews* of the above referenced components during construction, as indicated on the "SUMMARY OF DESIGN AND FIELD REVIEW REQUIREMENTS" below.

CRP's Initials

5.6 – Appendix C

Project name

Discipline

The undersigned also undertakes to notify the City of Abbotsford in writing as soon as possible if the undersigned's contract for *field review* is terminated at any time during construction.

I certify that I am a *registered professional* as defined below.

	:	
Devictore d Dreference of Development News (Drivet)	:	
Registered Professional of Record's Name (Print)	:	
	:	
	:	
	:	
	:	
Address (Print)	:	
	:	
	:	
	:	
	:	
E-mail Address (Print)	:	
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Phone No.	:	
	:	
	:	
	:	
	:	(Professional Seal and Signature)
	:	(i folessional ocal and olgitatale)
	:	
		Detr
		Date
(If the registered professional of record is a member of a firm, complete the following)		
(in the registered professional of record is a member of a limit, complete the following)		

I am a member of the firm _____ and I sign this letter on behalf of the firm.

(Print name of firm)

Note: The above letter must be signed by a *registered professional of record*, which is a *registered professional* retained to undertake design work and *field review*.

A registered professional means

- (a) a person who is registered or licensed to practise as an architect under the British Columbia Architects Act, or
- (b) a person who is registered or licensed to practise as a professional engineer under the British Columbia Engineers and Geoscientist Act.

"field reviews" are defined to mean those reviews of the work

(a) at a project site of a development to which a *building* permit relates, and

(b) where applicable, at fabrication locations where *building* components are fabricated for use at the project site that a *registered professional of record* in his or her professional discretion considers necessary to ascertain whether the work substantially complies in all material respects with the plans and supporting documents prepared by the *registered professional of record* for which the *building* permit is issued.

CRP's Initials

August 2018

Project name

Discipline

SUMMARY OF DESIGN AND FIELD REVIEW REQUIREMENTS

(Initial applicable discipline below and cross out and initial only those items not applicable to the project)

		<i>,</i>
	ARCHITECTURAL	
1.1	Fire resisting assemblies	
1.2	Fire separations and their continuity	
1.3	Closures, including tightness and operation	: :
14	Egress systems, including access to exit within suites and floor areas	
15	Performance and physical safety features (quardrails, handrails, etc.)	
1.0	Structural capacity of architectural components, including anchorage	
1.0	and seismic restraint	
17	Sound control	
1.7	Sound control	
1.8	Landscaping, screening and site grading	
1.9	Provisions for fire fighting access	
1.10	Access requirements for persons with disabilities	
1.11	Elevating devices	(Drefessional Seal and Signature)
1.12	Functional testing of architecturally related fire emergency systems	(Professional Seal and Signature)
	and devices	
1.13	Development permit and conditions therein	
1.14	Interior signage, including acceptable materials, dimensions and locations	Date
1.15	Review of all applicable shop drawings	
1.16	Interior and exterior finishes	
1.17	Dampproofing and/or waterproofing of walls and slabs below grade	
1.18	Roofing and flashings	
1.19	Wall cladding systems	
1.20	Condensation control and cavity ventilation	
1.21	Exterior glazing	
1.22	Integration of building envelope components	
1.23	Environmental separation requirements (Part 5)	
1.24	Building envelope, ASHRAE, or NECB requirements	
	STRUCTURAL	
2.1	Structural capacity of structural components of the building, including anchora	ige and seismic restraint
2.2	Structural aspects of deep foundations	
2.3	Review of all applicable shop drawings	
2.4	Structural aspects of unbonded post-tensioned concrete design and construct	ion
	_MECHANICAL	
3.1	HVAC systems and devices, including high building requirements where appli	cable
3.2	Fire dampers at required fire separations	
3.3	Continuity of fire separations at HVAC penetrations	
3.4	Functional testing of mechanically related fire emergency systems and device	S
3.5	Maintenance manuals for mechanical systems	
3.6	Structural capacity of mechanical components, including anchorage and seisr	nicrestraint
37	Review of all applicable shop drawings	
3.8	Mechanical systems, ASHRAE, or NECB requirements	
0.0		
11	Poof drainage systems	
4.1 10	Site and foundation drainage systems	
4.2	Site and foundation drainage systems	
4.3	Prumping systems and devices	
4.4	Continuity of fire separations at plumbing penetrations	
4.5	Functional testing of plumping related fire emergency systems and devices	
4.6	iviaintenance manuals for <i>plumbing systems</i>	
4./	Structural capacity of plumbing components, including anchorage and seismic	restraint
4.8	Review of all applicable shop drawings	
4.9	Plumbing systems, ASHRAE, or NECB requirements	CRP's Initials

August 2018

Project	name Disciplir	ne
5 1	FIRE SUPPRESSION STSTEMS	,
5.1	Suppression system classification for type of occupancy	
0.Z	Competibility and leastion of electrical supervision ensillary electric	
5.5	and control devices	
51	Evaluation of the canacity of city (municipal) water supply versus	
5.4	Evaluation of the capacity of city (municipal) water supply versus	05
	where necessary	
55	Qualification of welder, quality of welds and material	
5.6	Review of all applicable shop drawings	
57	Acceptance testing for "Contractor's Material and Test Certificate"	"
0.1	as per NFPA Standards	
5.8	Maintenance program and manual for suppression systems	
5.9	Structural capacity of sprinkler components, including anchorage	
0.0	and seismic restraint	
5.10	For partial systems – confirm sprinklers are installed in all areas w	vhere (Professional Seal and Signature)
	required	
5.11	Fire Department connections and hydrant locations	
5.12	Fire hose standpipes	
5.13	Freeze protection measures for fire suppression systems	Date
5.14	Functional testing of fire suppression systems and devices	
	ELECTRICAL	
6.1	Electrical systems and devices, including high building requirement	nts where applicable
6.2	Continuity of fire separations at electrical penetrations	
6.3	Functional testing of electrical related fire emergency systems and	d devices
6.4	Electrical systems and devices maintenance manuals	
6.5	Structural capacity of electrical components, including anchorage	and seismic restraint
6.6	Clearances from <i>buildings</i> of all electrical utility equipment	
6.7	Fire protection of wiring for emergency systems	
6.8	Review of all applicable shop drawings.	
6.9	Electrical systems, ASHRAE, or NECB requirements	
	CIVIL - Airside	
7.1	Performance, geometry and integrity of apron, taxiway and runwa	av paving
7.2	Airside traffic markings and lead-in lines	
7.3	Aircraft gate capabilities	
7.4	Review of all applicable shop drawings	
-	GEOTECHNICAL – temporary	
8.1	Excavation	
8.2	Shoring	
ŏ.3 ∘ ₄	Underpinning Temperature construction devictoring	
0.4	remporary construction dewatering	
	GEOTECHNICAL – permanent	
9.1	Bearing capacity of the soil	
9.2	Geotechnical aspects of deep foundations	
9.3	Compaction of engineered fill	
9.4	Structural considerations of soil, including slope stability and seisr	mic loading
9.5	Backfill	-
9.6	Permanent dewatering	
8.7	Permanent underpinning	
	OTHER (Provide Full Particulars)	
		UKP'S INITIAIS

				5.6 – Appendix I
				FAP #
		SCHEDULE R	P-CB	
		ASSURANCE OF PROFESSIONAL FIE	LD REVIEW AND COMPI	LIANCE
Note:	(i)	This letter must be submitted after completion of the proje A separate letter must be submitted by each <i>registered pr</i>	ct but prior to the final inspection by ofessional of record.	the City of Abbotsford.
	(ii)	This letter is endorsed by: Architectural Institute of British	Columbia, and the Association of Pr	ofessional
	(iii)	In this letter the words in italics have the same meaning as this form.	s in the National Building Code or as	specified on
То:	City c	fAbbotsford		
Re:				
	Discipl	ine (e.g. Architectural, etc) (print)	_	
	Name	of Project (Print)	-	
	Addres	es or location of Project (Print)	_	
Each	registe	ered professional of record shall complete the followin	g:)	
	Name	(Print)	 (Professional Seal a	nd Signature)
	Addres	ss (Print)		Date
			_	
	Dhana	N	_	
hereb	v dive	assurance that:		
	(a)	I have fulfilled my obligations for <i>field review</i> as outlined	l in the previously submitted Schedu	ıle RP-B,
	(b)	"ASSURANCE OF PROFESSIONAL DESIGN AND CC Those components of the project opposite my initials in	MMITMENT FOR FIELD REVIEW, Schedule RP-B substantially compl	' and y in all material respects
		with (i) the applicable requirements of the National Bu	ilding Code of Canada and other ap	plicable codes and
	(c)	standards respecting safety, not including cons (ii) the plans and supporting documents submitted I am a <i>registered professional</i> as defined below.	struction safety aspects, and d in support of the application for the	<i>building</i> permit,
If the <i>i</i>	register	ed professional of record is a member of a firm, complete th	ne following)	
am a	membe	er of the firm		
and I s	ign this	letter on behalf of the firm. (Print	name of firm)	

Schedule RP-CB - Continued

FAP #

Note: The above letter must be signed by a *registered professional of record*, which is the *registered professional* retained to undertake design work and *field review*. A *registered professional* means

(a) a person who is registered or licensed to practise as an architect under the Architects Act, or

(b) a person who is registered or licensed to practise as a professional engineer under the Engineers and Geoscientist Act.

"field reviews" are defined to mean those reviews of the work

(a) at a project site of a development to which a building permit relates, and

(b) where applicable, at fabrication locations where *building* components are fabricated for use at the project site that a *registered professional of record* in his or her professional discretion considers necessary to ascertain whether the work substantially complies in all material respects with the plans and supporting documents prepared by the *registered professional of record* for which the *building* permit is issued.

Agenda Item 7.8 APEGBC Council –Open April 18, 2013



BACKGROUND

APEGBC has had regular interaction with the BC government regarding natural hazards issues. In particular, APEGBC has encouraged development of a natural hazards policy, and to augment the current hazard-based approach with a risk-based approach. Key actions are summarized below.

- January 1976: three articles appeared in the BC Professional Engineer (the journal of the Association of Professional engineers of BC) recommending the development of a natural hazards policy for BC (attached).
- December 1976: an ad-hoc committee of leading experts in the field presented a brief to APEBC Council on establishment of a natural hazards policy in BC and appointment of a Natural Hazards Policy Board (attached).
- April 1, 1977: the President of APEBC (Art McLaren, P.Eng.), supported by a group of experts, met with Minister of Environment Jim Neilsen to explain why the BC government should adopt a natural hazards policy.
- 2005: Following submission of a proposal by APEGBC, the BC government funded development of the APEGBC Guidelines for Legislated Landslide Assessment for Proposed Residential Development in BC. Representatives from three BC ministries (Ministry of Environment, Ministry of Transportation and Ministry of Forests) and local governments participated in the review and development of this guideline which was approved by APEGBC Council.
- In March 2006 APEGBC submitted the APEGBC *Guideline for Legislated Landslide* Assessment for Proposed Residential Development in BC to the province in completion of the contract. This guideline included a provision for risk assessments to consider both hazard and consequence. The covering letter submitted to government with the completed guideline included a recommendation that a strategy be developed for the BC Government to adopt a defined level of landslide safety (landslide risk tolerance).
- October 2008: At the coroner's request, APEGBC responded to recommendations following the death of Eliza Kuttner, who was killed when her North Vancouver home was destroyed by a landslide (attached).

- 2009: APEGBC was asked by government to assist in amending the *BC Building Code* to implement a requirement for seismic slope stability.
- 2010: As a result of APEGBC's proposal, government funded revisions to the APEGBC *Guidelines for Legislated Landslide Assessments for Residential Development in BC* to address seismic slope stability assessments.
- 2010: With the introduction of the APEGBC landslide guidelines and with APEGBC's support, government amended the *BC Building Code* to specify the same design earthquake for structures and seismic slope stability.
- 2011: As a result of APEGBC's proposal, the BC Ministry of Transportation and Infrastructure funded an effort to revise its 2009 guidance document on subdivision approvals in areas of natural hazards. With the submission of their recommended re-draft of the MoTI document, APEGBC took the opportunity to reinforce the need to adopt a defined level of landslide safety.
- 2011: APEGBC submitted a proposal to the BC government to fund development of
 professional practice guidelines for flood assessments. This proposal was accepted, and
 the APEGBC Guidelines for Legislated Flood Assessments in a Changing Climate in BC
 were submitted to government in 2012. These guidelines include provision for risk
 assessments.
- 2013: With government funding, APEGBC developed the Seismic Retrofit Guideline. This guideline uses a risk-based approach to assess the potential seismic impact in retrofitting existing school buildings.

As a result of the above activities, APEGBC has earned a good reputation in working with government to improve public protection against natural hazards. However, APEGBC members continue to struggle in preparing professional assessments due to the lack of clear regulatory direction.

In response to the motion at the APEGBC 2012 AGM, APEGBC staff formed an advisory group of experienced practitioners to review previous work and submit an updated recommendation to government on natural hazards. The advisory group included:

- Mike Currie, P.Eng., President, Kerr Wood Leidal Associates Ltd.
- Matthias Jakob, P.Geo., Ph.D., Senior Geoscientist, BGC Engineering Inc.
- Mike Church, P.Geo., Ph.D. Professor Emeritus at UBC

The advisory group members worked closely with APEGBC staff in preparing this report.

DISCUSSION

The current regulatory framework for natural hazards in BC is inconsistent, does not adequately cover the full range of natural hazards, and does not always provide clear direction to practitioners and regulators. Provincial legislation focuses on requiring APEGBC members to certify that land is "safe for the intended use". Neither the legislation nor other regulatory documents define "safe", or provide the necessary direction for natural hazard assessments to be performed consistently. This situation has created significant confusion amongst government, developers and APEGBC members. As a result, individual local governments may independently develop natural hazard regulations. While recent guidelines by APEGBC and others have significantly improved guidance for professional practice, the higher level regulatory framework for natural hazard risk management remains fragmented and incomplete.

Due to the above considerations, the advisory group suggests that APEGBC assume a leadership role in working with government to develop a consistent approach to dealing with natural hazards in BC. Additional considerations that make this initiative timely include the following.

- Developed nations are moving towards natural hazard risk management because a hazardbased approach does not characterize potential losses.
- The number, density and value of elements at risk are increasing in areas subject to natural hazards, which is the case in most of BC.
- The maps produced under the federal/provincial floodplain mapping program are now mostly outdated, and the program has been discontinued. All natural hazards (floods, earthquakes, landslides, snow avalanches, tsunamis, wildfires) warrant improved characterization through inventory and mapping since development continues to occur in areas which are exposed to natural hazards.
- Climate change significantly influences the frequency and magnitude of natural hazards. The consequences are best examined within a framework that evaluates the risks of climate change and land use change.
- Natural Resources Canada has adopted from the United States the HAZUS tool for natural hazard risk assessment. The federal government has recommended HAZUS for implementation across Canada.
- The BC government continues to devolve responsibility for natural hazards matters to local governments in the absence of a comprehensive regulatory framework.
- Ongoing project-specific decisions on natural hazards issues sometimes evolve into new standards of care without being embedded into regulatory documents.

RECOMMENDATION

As described in the Background section of this report APEGBC has approached the BC government several times on natural hazards issues. In the 1970's, the government was encouraged to develop a natural hazards policy for BC. More recently the government was requested to adopt "a defined level of landslide safety which could be implemented province wide". Government has not responded to these requests.

In response to the AGM motion, the advisory group recommends that APEGBC formally request the BC government to act on the following recommendations.

- Establish a high level government advisory body on natural hazard issues with multi-ministry involvement and broad representation from industry and the professions. The mandate of this advisory body should include reviewing relevant government legislation, regulation and precedents, and advising government on development of natural hazard policy and regulations.
- 2. Develop a more robust inventory of land subject to natural hazards. This should extend to standardizing approaches for natural hazard and risk mapping.
- 3. Develop additional tools to assist in the implementation of a risk-based approach in dealing with natural hazards and establish thresholds for natural hazard risk tolerance and acceptability.

If Council approves these recommendations, this report would evolve into a letter that would be submitted from APEGBC to the BC Government. Senior government officials would be requested to meet with an APEGBC delegation to discuss APEGBC's concerns and recommendations.

Motion: That the APEGBC Council approve the above three recommendations developed in response to the motion passed at APEGBC's October 2012 AGM "that Council consider working with the provincial government to establish a level of acceptable landslide risk".



POLICY & PROCEDURE	Assignment of Confirmatory Examinations
DATE OF POLICY & PROCEDURE	July 14, 1994
APPROVED BY	Council
REVIEW DATE	September 7, 2007

POLICY & PROCEDURE STATEMENT

This policy outlines the minimum academic requirements for application to Engineers and Geoscientists BC.

POLICY

To satisfy the minimum academic requirements for application, candidates who:

- 1. Graduated from:
 - a) an accredited engineering program or
 - b) a Mutually Recognized Agreement engineering program; or
 - c) an engineering program from a university whose names appears in the list of Foreign Engineering Degrees and Qualifications, endorsed by Engineers Canada AND membership in another constituent association of Engineers Canada

will normally not be assigned any confirmatory examinations, unless the applicant has uncleared failures on his/her academic record.

2. Graduated from an engineering program from a university whose name appears in the list of Foreign Engineering Degrees and Qualifications, endorsed by Engineers Canada may demonstrate that they are academically qualified by successfully completing examinations.

Such candidates will have the options of

- a) writing and passing the Fundamentals of Engineering Examination and the Engineering Economics Examination (if assigned); or
- b) writing and passing three confirmatory examinations and the Engineering Economics Examination (if assigned).

The three confirmatory examinations consists of two of the candidate's own choosing from "Group A Compulsory Subjects" from the Uniform Syllabus of Examinations and one of the candidate's choosing from "Group B Elective Subjects".

 Graduated from an engineering or related program from a university whose name does not appear in the list of Foreign Engineering Degrees and Qualifications endorsed by Engineers Canada may demonstrate that they are academically qualified by successfully completing examinations.

Such candidates will have the options of

- a) writing and passing the Fundamentals of Engineering Examination and the Engineering Economics Examination (if assigned); or
- b) writing and passing five confirmatory examinations and the Engineering Economics Examination (if assigned).

The five confirmatory examinations consists of three of the candidate's own choosing from "Group A Compulsory Subjects" from the Uniform Syllabus of Examinations and two of the candidate's choosing from "Group B Elective Subjects".

Complementary Studies Examinations are not to be assigned as part of Confirmatory Examinations and are to be assigned only if a detailed assessment by the Board of Examiners of the applicant's academic background determines that there is a gap in the academic knowledge of the applicant in a specific syllabus topic.

Registration staff has the authority to assess confirmatory examinations to applicants who graduated with an undergraduate degree in engineering; assignments are subject to 'non-contentious' approval by the Registration Committee.

Furthermore, in the spirit of the Engineers Canada Inter-Association Mobility Agreement, Engineers-in-Training of other Engineers Canada associations/ordres will be accepted as academically qualified for registration without further review of their academic background.

CROSS REFERENCES

Uncleared Failures policy

APEGBC Registration Manual 1994

Canadian Engineering Qualifications Board, Interpretive statement on section 2.3 of G01-92 Admission to the Practice of Engineering in Canada (Sept. 28-29, 1994)

Engineers Canada Guideline on Admission to the Practice of Engineering in Canada

Engineers Canada Inter-Association Mobility Agreement for Engineers

Terms of Reference, Registration Committee

Academic Transcripts and Assignment of Confirmatory Examinations

REVIEW DATES

July 14, 1994 (CO 94-91)

December 8, 1994 (CO 95-01)

October 24, 2002 (CO 02- 141)

December 3, 2002 (RG 03-306)

January 14, 2005 (CO 05-11-1)

September 7, 2007 (CO 07-83)



Assignment of Confirmatory Examinations
July 14, 1994
Council
September 7, 2007

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will normally not be assigned any confirmatory examinations, unless the applicant has uncleared failures on his/her academic record.

2. Graduated from an engineering program from a university whose name appears in the list of Foreign Engineering Degrees and Qualifications, endorsed by Engineers Canada may demonstrate that they are academically qualified by successfully completing examinations.

Such candidates will have the options of

- a) writing and passing the Fundamentals of Engineering Examination; or
- b) writing and passing three confirmatory examinations.

The three confirmatory examinations consists of two of the candidate's own choosing from "Group A Compulsory Subjects" from the Uniform Syllabus of Examinations and one of the candidate's choosing from "Group B Elective Subjects".

 Graduated from an engineering or related program from a university whose name does not appear in the list of Foreign Engineering Degrees and Qualifications endorsed by Engineers Canada may demonstrate that they are academically qualified by successfully completing examinations.

Such candidates will have the options of

- a) writing and passing the Fundamentals of Engineering Examination; or
- b) writing and passing five confirmatory examinations.

The five confirmatory examinations consists of three of the candidate's own choosing from "Group A Compulsory Subjects" from the Uniform Syllabus of Examinations and two of the candidate's choosing from "Group B Elective Subjects".

Complementary Studies Examinations are not to be assigned as part of Confirmatory Examinations and are to be assigned only if a detailed assessment by the Board of Examiners of the applicant's academic background determines that there is a gap in the academic knowledge of the applicant in a specific syllabus topic.

Registration staff has the authority to assess confirmatory examinations to applicants who graduated with an undergraduate degree in engineering; assignments are subject to 'non-contentious' approval by the Registration Committee.

Furthermore, in the spirit of the Engineers Canada Inter-Association Mobility Agreement, Engineers-in-Training of other Engineers Canada associations/ordres will be accepted as academically qualified for registration without further review of their academic background.

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Engineers Canada Inter-Association Mobility Agreement for Engineers Terms of Reference, Registration Committee

Academic Transcripts and Assignment of Confirmatory Examinations

REVIEW DATES

July 14, 1994 (CO 94-91) December 8, 1994 (CO 95-01) October 24, 2002 (CO 02- 141) December 3, 2002 (RG 03-306)

January 14, 2005 (CO 05-11-1)

September 7, 2007 (CO 07-83)

September 7, 2007



POLICY	Academic Qualifications of Graduates of the BCIT Bachelor of Technology in Electronics Part-Time Program
DATE OF POLICY	December 7, 2004
APPROVED BY	Registration Committee

POLICY STATEMENT

PURPOSE

The BCIT Bachelor of Technology in Electronics is intended for graduates who wish to pursue a degree whilst working. <u>Reviews of the program were conducted in 2004 and 2017/18 18 relative to the program's purpose, level of instruction and content; and with respect to treatment of its graduates with respect to the association bylaw and policies on academic qualification for registration as a professional engineer. The program is not considered to be the equivalent of a four year full time university level Bachelor's in Engineering or Applied Science.</u>

APPLICATION AND SCOPE

Graduates of the BCIT Bachelor of Technology in Electronics Part-Time Program will-be considered to be academically qualified for registration as a professional engineer after meeting the following requirements:

Program Graduates Registered in the Program after the January 2019 Intake:

Graduates of the program who do not hold additional academic credentials or a professional engineer qualification that allows alternate assessment of their qualifications; and who submit proof that they entered the program after completing a Technology diploma from BCIT that includes a common first year with the CEABaccredited Bachelors of Engineering program will be assigned five Confirmatory Examinations as follows:

Professional Electrical Group A Any 3 examinations Group B Any 2 examinations:

Two of the five examinations will be waived if a candidate scores 70% or higher in the first writing of each of the first three examinations he or she attempts.

December 7, 2004September 7, 2018

Engineers and Geoscientists BC Council | September 7, 2018



Engineers and Geoscientists BC Council | September 7, 2018

At the time of its development, BCIT investigated the possibility of pursuing CEAB accreditation for the program, but the institution was not in a position at that time to follow this route. Instead, the course content and level was designed so that a graduate would have completed the topics at the required 'university level' for academic qualification as specified in the combined CCPE Basic Studies, Electrical Engineering and Complementary Studies syllabi.

- In establishing the Bachelor of Technology in Electronics, BCIT considered:

- Engineers and Geoscientists academic requirements for graduates of other nonaccredited, non-listed engineering programs;
- The requirements of the then CCPE 'Foreign List' and whether the BCIT program would be eligible for inclusion on the list;

 The fact that the program is a Canadian program designed to meet the CCPE syllabi requirements, although CCPE/APEGB has not performed an on site in depth examination of the program, faculty and facilities such as would be done if it were applying for accreditation;

- The mobility of the program's graduates and acceptance of their academic credentials
 by other Canadian associations/ordre.
- It was concluded that:
 - i. BCIT has done a constructive analysis of the program's course offerings as they correlate to the Associations syllabus requirements;
 - graduates must prove their academic capability, as the program is not accredited by the CEAB;
 - i. the program would not meet the requirements for the CCPE 'Foreign List' (graduates of 'non-listed' programs are normally assigned discipline specific confirmatory examinations: 3 from Group A; 2 from Group B.)
 - iv. It is recommended that:
 - the first graduates should be assigned confirmatory examinations;
 the recommended assignment is:

 - Professional Electrical
 - Group A
 - Any 3 examinations
 - Group B
 - Any 2 examinations
 - This procedure is in line with that followed by the majority of the other Canadian jurisdictions and is in line with the CCPE Guideline to the Admission to the Practice of Engineering in Canada.

CROSS REFERENCES

CCPE Guideline to the Admission to the Practice of Engineering in Canada

Engineers and Geoscientists Act s.13 Admission to Membership

I.

December 7, 2004 September 7, 2018

Engineers and Geoscientists BC Council | September 7, 2018

Bylaws of the Association s.11(e) Registered Members

Policy on Minimum Academic Requirements for Application

Policy on Minimum Academic Requirements for Registration

Policy on Fundamentals of Engineering (FE) Examination as an Alternative to Confirmatory Examinations

Policy on Determining an Equivalency basis of Academic Qualification for Applicants with Alternative Educational Backgrounds

Policy on Developing and Implementing Registration Policy

Engineers Canada Syllabus

REVIEW DATES

I

December 7, 2004 (RG 05-22)

September 7, 2018 (CO 18-XX)

December 7, 2004 September 7, 2018



POLICY	Academic Qualifications of Graduates of the BCIT Bachelor of Technology in Electronics Part-Time Program
DATE OF POLICY	December 7, 2004
APPROVED BY	Registration Committee

POLICY STATEMENT

PURPOSE

The BCIT Bachelor of Technology in Electronics is intended for graduates who wish to pursue a degree whilst working. Reviews of the program were conducted in 2004 and 2017/18 18 relative to the program's purpose, level of instruction and content; and with respect to treatment of its graduates with respect to the association bylaw and policies on academic qualification for registration as a professional engineer. The program is not considered to be the equivalent of a four year full time university level Bachelor's in Engineering or Applied Science.

APPLICATION AND SCOPE

Graduates of the BCIT Bachelor of Technology in Electronics Part-Time Program willbe considered to be academically qualified for registration as a professional engineer after meeting the following requirements:

Program Graduates Registered in the Program after the January 2019 Intake:

i. Graduates of the program who do not hold additional academic credentials or a professional engineer qualification that allows alternate assessment of their qualifications; and who submit proof that they entered the program after completing a Technology diploma from BCIT that includes a common first year with the CEABaccredited Bachelors of Engineering program will be assigned five Confirmatory Examinations as follows:

Professional Electrical Group A Any 3 examinations Group B Any 2 examinations:

Two of the five examinations will be waived if a candidate scores 70% or higher in the first writing of each of the first three examinations he or she attempts.

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The policy on the *Fundamentals of Engineering (FE) Examination as an Alternative to Confirmatory Examinations* does <u>not</u> apply, i.e. program graduates may <u>not</u> write the e Fundamentals of Engineering (FE) Examination established by the National Council of Examiners for Engineering and Surveying (NCEES) in the United States, in lieu of completing the assigned set of confirmatory examinations.

- ii. All other graduates of the program who do not hold additional academic credentials or a professional engineer qualification that allows alternate assessment of their qualifications will be assessed in accordance with the policies on *Minimum Academic Requirements for Application* and *Minimum Academic Requirements for Registration* clause; currently:
 - a. Successful completion of a program of qualifying examinations assigned by the Association following a detailed examination of academic credentials relative to the Engineers Canada Syllabus.

Transition Provisions for Program Graduates Registered in the Program Prior to the January 2019 Intake:

To provide for fair treatment of current program participants and in accordance with the association's *Policy on Developing and Implementing Registration Policy*,

 Graduates of the program who were registered in the program before the January intake instruction start date of January 7, 2019*, will be assigned Confirmatory Examinations as follows:

> Professional Electrical Group A Any 3 examinations Group B Any 2 examinations:

Two of the five examinations will be waived if a candidate scores 70% or higher in the first writing of each of the first three examinations he or she attempts; and

 The Fundamentals of Engineering (FE) examination will not be permitted in lieu of confirmatory examinations for graduates of the program who apply after January 1, 2019** for enrolment as an Engineer-in-Training or registration as a Professional Engineer.

** this will allow for graduates for the winter convocation to complete the FE examination, as they may have done so already as part of the program.

CROSS REFERENCES

Engineers and Geoscientists Act s.13 Admission to Membership

Bylaws of the Association s.11(e) Registered Members

Engineers and Geoscientists BC Council | September 7, 2018
Policy on Minimum Academic Requirements for Application

Policy on Minimum Academic Requirements for Registration

Policy on Fundamentals of Engineering (FE) Examination as an Alternative to Confirmatory Examinations

Policy on Determining an Equivalency basis of Academic Qualification for Applicants with Alternative Educational Backgrounds

Policy on Developing and Implementing Registration Policy

Engineers Canada Syllabus

REVIEW DATES

December 7, 2004 (RG 05-22)

September 7, 2018 (CO 18-XX)

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Registration Admissions Report

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Engineers and Geoscientists BC Council | September 7, 2018

Applications

New Applications*

	Fiscal 2016	Fiscal 2017	Fiscal 2018	% Increase
Application Type	June 30, 2016	June 30, 2017	June 30, 2018	Fiscal 2018 vs - Fiscal 2017
First Time Applying in Canada				
Professional Engineer ¹	1105	1019	1072	5%
Professional Geoscientist ¹	63	85	71	-16%
Engineer-in-Training	1339	1580	1675	6%
Geoscientist-in-Training	94	123	137	11%
Limited Licence	29	41	34	-17%
Total First Time Applying in Canada	2630	2848	2989	5.0%
National Mobility Transfers (not including reinstatements)				
Professional Engineer	938	941	990	5%
Professional Geoscientist	45	49	47	-4%
Engineer-in-Training	132	179	161	-10%
Geoscientist-in-Training	10	11	12	9%
Limited Licence	19	21	21	0%
Total National Mobility Transfers	1144	1201	1231	2.5%
Other				
Designated Structural Engineer	6	5	10	100%
Total New Applications	3780	4054	4230	4.3%
Increase over Prior Year	-4%	7%	4%	
	Average 3 year a	pplication growth	2.3%	

¹ Includes Non-Resident Licence Applicants *does not include reinstatement/ return to practice and Life Member application

Application Type	Fiscal 2016 June 30, 2016	Fiscal 2017 June 30, 2017	Fiscal 2018 June 30, 2018	% Increase Fiscal 2018 vs Fiscal 2017
Sub-Total New Applications	3780	4054	4230	4.3%
Reinstatements/Return to Practice - all categories	380	401	431	7.5%
Competency-Based Assessment Pilot	0	13	2	-84.6%
Life Membership ((conversion)	279	220	0	-100.0%
TOTAL ALL APPLICATIONS	4439	4675	4663	-0.3%

Total Applications including Conversions and Reinstatements

First Time in Canada P.Eng. and P.Geo. Applicants - Canadian vs Internationally Trained*

(*Trained = first degree origin)

First time making this type of application in Canada: Excludes transfers from other Provinces

Application Type	Total	Internationally Trained		Canadia	n Trained
Professional Engineer	1072	491	46%	581	54%
Professional Geoscientist	71	17	24%	54	76%

Top 5 Source Countries of First-Time in Canada Internationally Trained Applicants

Professional Engineer Applicants

		Fiscal 2017		Fiscal 2018			
Country	Applicants	Ranking	% Total Applicants	Applicants	Ranking	% Total Applicants	
Iran, Islamic Republic of	88	1	9	95	1	9	
United States	73	2	7	75	2	7	
India	44	3	4	46	3	4	
China	38	4	4	37	4	3	
United Kingdom	34	5	3	33	5	2	

Professional Geoscientist Applicants

		Fiscal 2017		Fiscal 2018			
Country	Ranking	Applicants	% Total Applicants	Ranking	Applicants	% Total Applicants	
United States	1	5	6	1	4	6	
Australia	3	2	2	2	2	3	
Iraq	-	0	0	2	2	3	
South Africa	3	2	2	2	2	3	
Dominican Republic	-	0	0	3	1	1	
Germany	2	3	4	3	1	1	
Ghana	-	0	0	3	1	1	
Iran, Islamic Republic of	3	2	2	3	1	1	
Israel	-	0	0	3	1	1	
Syrian Arab Republic	-	0	0	3	1	1	
United Kingdom	1	5	6	3	1	1	

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Participating Employers	EITs in BC	P.Eng. Registered through the Program
AES Engineering	10	5
Aplin and Martin Consultants	14	4
Associated Engineering	29	1
Binnie	21	4
City of Burnaby	1	0
City of Kelowna	3	0
City of Richmond	6	1
COWI Bridge North America	10	3
Dynamic Structures	15	3
Fast + Epp	4	6
Glotman Simpson Consulting Engineers	12	4
Golder	61	0
Hemmera	10	2
Herold Engineering	9	0
Integral Group	20	5
JRS Engineering	5	1
Ministry of Transportation and Infrastructure	24	2
Omicron	6	4
TOTAL	260	45

Accredited Employer Engineer-in-Training Program – Participating Employers

New Registrants/Licensees – First Licence in Canada

Canadian vs Internationally Trained

Licence ¹ Type	Total	Interna Tra	ationally ined	Cana Traiı	dian ned
Professional Engineer	855	335	39%	520	61%
Professional Geoscientist	58	9	16%	49	84%

¹ Includes Non-Resident Licences

Processing Times: Documents Complete to a Decision

Applicant Type	Council Target Time to a decision	Fiscal 2018 Result*
First Time P.Eng. – Canadian Trained	Average: 35 days	Average: 41 days
First time P.Eng. – Internationally Trained	Average: 40days	Average: 88 days
EIT to P.Eng All	Average: 30 days	Average: 41 days
EIT to P.Eng. – Accredited Employer Program	No target set	Average: 26 days
Mobility Applicants with confirmed registration or licence in another Canadian jurisdiction		
- Professional Engineers	95% within 3 business days	95% within 7 business days Average: 2.5 days
- Professional Geoscientists	95% within 3 business days	95% within 11 business days Average: 2.2 days

* For applicants registered in Fiscal 2018

Membership Growth June 2014 to June 2018

	June 2014	June 2015	June 2016	June 2017	June 2018	2018 vs 2017	Average 5 year Growth
Professional Members							• •
Professional Engineer	21,750	22,532	23,266	23933	24444	2.1%	3%
Professional Geoscientist	1,663	1,706	1,753	1816	1830	0.8%	2%
Dual Registrant	85	87	91	91	92	1.1%	2%
Non-Resident Licence (PEng)	540	585	608	619	634	2.4%	4%
Non-Resident Licence (PGeo)	40	40	42	40	39	-2.5%	-1%
Provisional Member	7	5	3	3	1	-66.7%	-34%
Members-in-Training							
Engineer-in-Training	4,161	4,445	4,892	5432	5975	10.0%	9%
Geoscientist-in-Training	275	304	326	354	488	37.9%	16%
Limited Licensees							
Limited Licence (EngL)*	109	126	140	171	193	12.9%	15%
Limited Licence (GeoL)	7	9	9	9	9	0.0%	7%
Total Membership	28,637	29,839	31,130	32,468	33,705	3.8%	4.2%

*does not include 19 P.Geo.s who also hold an Eng.L. licence



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DATE	August 15, 2018
REPORT TO	Council for Information
FROM	Jennifer Cho, CPA, CGA Chief Financial and Administration Officer
SUBJECT	Summary of Financial Results for the Fiscal Year ended June 30, 2018

BACKGROUND

Over the past fiscal year ended June 30, 2018, Engineers and Geoscientists British Columbia has an excess of revenue over expenses of \$281K. The following is an explanation of the financial results for the fiscal year.

DISCUSSION

A. FY2018 Actuals vs. FY2017 Actuals

The FY2018 surplus is \$394K less than the last fiscal year surplus due to revenue growth of \$147K offset by an increase in expenses of \$541K.

Revenue:

Most of the \$147K revenue increase is mainly due to steady membership growth at 4%, with strong increase in the engineers and geoscientists in training members. There is also some moderate growth in professional development, organizational quality management fees and investment income. The table below is an analysis of the major difference between prior year to current year revenues in (\$'000).

Annual membership fees	511	increase due to average membership growth of 4%, with strongest growth of 12% in Engineer and Geoscientist-in- training membership
Miscellaneous	69	settled 3 significant cases adding up to \$105K of legal recovery offset by lower Geoscientist Canada overhead recovery
Professional development	64	higher number of sessions rolled out in current year with full team of CPD staff
Investment Income	50	higher in relation to a higher principle balance by \$1.2Mill from prior year's investment balance (total of short term and long term)
Organization quality management, Exams, Affinity, Registration	32	increase due to volume growth in OQM certification and OQM training courses, offset by moderate decrease in Affinity and Registration fees
Annual conference	(27)	changes due to venue difference (Whistler vs. Victoria)
Innovation magazine and other advertising	(40)	prior year's exceptional advertisement revenue at \$570K. Otherwise, FY2018 has an increase of \$30K above the average of advertisement revenue \$500K.
Grant and project administration	(513)	decrease due to completion of registration project (Working in Canada) and grant project progress
	147	

Engineers and Geoscientists BC Council |September 7, 2018

Expenses:

The table below is an analysis of the difference between prior year to current year expenses in (\$'000):

Salaries and employee benefits	541	about \$219K from merit increase plus \$320K increase due to 4 new full year positions (two practice advisors, practice support and OQM admin)
Legal	259	increase due to higher discipline cases and related investigation legal fees
Advertising	242	current year major initiate in rebranding APEGBC to EGBC. Approximately \$200K spent on rebranding in variety of marketing and publishing channels
Amortization	76	increase from full year of amortization from prior year's renovation
Premises and operating costs	40	increase due to signage replacement from rebranding and interior lighting changes
Office, general and miscellaneous	25	increase mainly due to increased staff training and IT business continuity related hardware and supplies
Printing, publication and distribution costs, room rentals, travel and others	(66)	savings in registration postage, AGM and government relation related hotel rentals, PNWER and Council travel
Contract and consulting services	(198)	savings in investigation consulting, working in Canada project consulting and decreased branding consulting in the rebrand implementation stage
Contract and consulting services on grants	(379)	changes due to project progress
	541	

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B. FY2018 Budget vs Actuals

The FY2018 surplus is \$330K higher than the budgeted deficit of (\$49K) mainly due to savings in payroll and membership revenue growth.

Revenue:

Some unanticipated revenue increases such as membership revenue in engineers and geoscientists in training, legal cost recovery, professional development and strong web ad revenue contributed to the \$238K revenue variance. The table below is a more detailed analysis of the difference between budget to actual revenues in (\$'000).

Annual membership fees	154	stronger than average growth in Engineer and Geoscientist-in-training membership
Professional development	57	online law and ethics and distance education had a higher than expected volume
Investment Income	50	variance due to higher rate of return from prime rate increases in current year
Miscellaneous	31	settled 3 significant cases adding up to \$105K of legal recovery, offset by other reduction misc. revenues
Professional and academic examinations	31	higher PPE and academic exam volume than expected
Annual conference	28	stronger than expected attendees volume and sponsor revenue
Organization quality management, Advertisement and others	(25)	variance mainly due to unlaunched OQM national program offset by strong growth in web advertising
Application, registration and certification Fees	(90)	lower than expected application and certificate revenue offset by strong transfer volume
	238	

Engineers and Geoscientists BC Council |September 7, 2018

Expenses:

There were substantial savings in salary and benefits. The savings were due to timing of hires and vacant positions. The table below is a more detailed analysis of the difference between budget to actual expenses in (\$'000).

Legal	260	variance due to higher number of discipline cases and related investigation legal fees
Premises and operating costs	129	variance due to signage replacement from rebranding and interior lighting replacement
Amortization	87	increase from full year of amortization from prior year's renovation
Office, general and miscellaneous	85	variance mainly due to increased staff training and IT business continuity related hardware and supplies
Advertising	82	extra resources spent in public relation initiatives, related to the rebranding campaign
Contract and consulting services	37	overage due to higher spending in recruitment and compensation consulting fees
Telecommunications, Travel and others	(52)	decrease due to savings in office land line from renewed contracts, and savings in PNWER and council travel
Examinations and examination books	(25)	savings in exam marking fees
Annual conference - facilities and meals	(27)	savings in hotel rentals and equipment rental
Contract and consulting services on grants	(44)	variance due to timing of project progress, total grant project result met budgeted target
Printing, publication and distribution costs	(70)	decrease due to savings in registration postage
Salaries and employee benefits	(556)	savings (\$102K) from staff transition and timing of hiring for publication manager and mentor support, savings (\$127K) from changes in senior management position plus delayed hiring (\$147K) in investigation support and paralegal, plus savings from maternity leave (\$113K) of an associate director position
	(92)	

6.1 - Appendix B FINAL DRAFT

The Association of Professional Engineers and Geoscientists of the Province of British Columbia

Non-consolidated Financial Statements June 30, 2018

August____, 2018

Independent Auditor's Report

To the Members of

The Association of Professional Engineers and Geoscientists of the Province of British Columbia

We have audited the accompanying non-consolidated financial statements of The Association of Professional Engineers and Geoscientists of the Province of British Columbia, which comprise the non-consolidated balance sheet as at June 30, 2018 and the non-consolidated statements of revenue and expenses, changes in net assets and cash flows for the year then ended, and the related notes, which comprise a summary of significant accounting policies and other explanatory information.

Management's responsibility for the non-consolidated financial statements

Management is responsible for the preparation and fair presentation of these non-consolidated financial statements in accordance with Canadian accounting standards for not-for-profit organizations, and for such internal control as management determines is necessary to enable the preparation of non-consolidated financial statements that are free from material misstatement, whether due to fraud or error.

Auditor's responsibility

Our responsibility is to express an opinion on these non-consolidated financial statements based on our audit. We conducted our audit in accordance with Canadian generally accepted auditing standards. Those standards require that we comply with ethical requirements and plan and perform the audit to obtain reasonable assurance about whether the non-consolidated financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the non-consolidated financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the non-consolidated financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the non-consolidated financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by management, as well as evaluating the overall presentation of the non-consolidated financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Opinion

In our opinion, the non-consolidated financial statements present fairly, in all material respects, the financial position of The Association Professional of Engineers and Geoscientists of the Province of British Columbia as at June 30, 2018 and the results of its operations and its cash flows for the year then ended in accordance with Canadian accounting standards for not-for-profit organizations.

Chartered Professional Accountants

FINAL DRAFT The Association of Professional Engineers and Geoscientists of the Province of British Columbia

Non-consolidated Balance Sheet As at June 30, 2018

	2018 \$	2017 \$
Assets		
Current assets Cash and cash equivalents (note 3) Short-term investments (note 4) Interest receivable Accounts receivable (note 5) Prepaid expenses Inventory	1,292,447 10,497,346 40,270 605,423 384,307 21,655	1,348,905 8,893,175 17,134 356,250 420,888 26,119
	12,841,448	11,062,471
Intangible assets (note 6)	357,171	319,537
Property and equipment (note 7)	3,148,485	3,377,517
Investments (note 4)	650,113	974,850
	16,997,217	15,734,375
Liabilities and Net Assets		
Current liabilities Accounts payable and accrued liabilities (note 8) Deferred fees (note 9) Deferred revenue	1,382,052 5,306,144 1,092,196	1,106,088 5,090,018 602,701
	7,780,392	6,798,807
Net assets (note 2) General fund		
Invested in property and equipment and intangible assets	3,556,328 4 715 347	3,747,726 4 492 692
Property, equipment and systems replacement fund	445,150	195,150
	0.040.005	0.005.500
2/	9,216,825	8,935,568
-	16,997,217	15,734,375
Commitments (note 10)		

Approved on behalf of the Council

The accomp**FOR DISCUSSION NOT TO BE FURTHER COMMUNICATED**

The Association of Professional Engineers and Geoscientists of the Province of British Columbia

Non-consolidated Statement of Revenue and Expenses

For the year ended June 30, 2018

	2018 \$	2017 \$
Revenue		
Fees		
Annual membership fees Application, registration and certification fees Professional and academic examinations	10,486,007 1,304,513 505,862	9,974,525 1,308,314 492,903
	12.296.382	11.775.742
Other revenue Affinity programs Annual conference Grant and project administration Innovation magazine and other advertising Investment income Miscellaneous (note 14) Organization quality management Professional development	409,029 301,915 1,139,075 530,419 104,068 301,046 209,738 1,077,256 4,072,546	410,107 329,180 1,652,829 570,956 53,478 231,219 185,194 1,012,901 4,445,864
Total revenue	16.368.928	16,221,606
Expenses Advertising Annual conference - facilities and meals Contract and consulting services on grants Engineers Canada assessment Examinations and examination books Geoscientists Canada assessment Grants and awards Innovation magazine printing Legal Meetings, seminar room rentals and special events Office, general and miscellaneous (note 15) Premises and operating costs Printing, publication and distribution costs Salaries and employee benefits Secondary professional liability insurance premiums Telecommunications Travel Total expenses before amortization	276,503 166,025 1,807,615 872,965 299,755 360,217 67,705 100,292 90,651 607,952 462,302 1,022,257 479,407 384,496 7,870,044 143,775 67,786 390,070	34,085 156,450 2,005,931 1,252,219 288,800 357,437 66,854 98,942 97,262 348,569 482,139 997,245 438,923 409,582 7,328,391 150,436 82,539 409,589
Excess of revenue over expenses before amortization	899 111	1 216 213
	033,111	1,210,213
Amortization Intangible assets Property and equipment	219,843 398,011	204,966 335,997
Total amortization	617,854	540,963
Excess of revenue over expenses for the year	281,257	675,250

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The Association of Professional Engineers and Geoscientists of the Province of British Columbia

Non-consolidated Statement of Changes in Net Assets For the year ended June 30, 2018

				<u> </u>	2018	2017
	Invested in property and equipment and intangible assets \$	Operating	Property, equipment and systems replacement fund \$	Legal and insurance fund \$	Total \$	Total \$
Net assets - Beginning of year	3,747,726	4,492,692	195,150	500,000	8,935,568	8,260,318
Excess of revenue over expenses for the year	(617,854) (1)	899,111 (2)		-	281,257	675,250
Investment in intangible assets	257,478	(257,478) (3)	2/-	-	-	-
Investment in property and equipment	168,978	(168,978)		-	-	-
Transfer to property, equipment and systems replacement fund		(250,000)	250,000	-		<u> </u>
Net assets - End of year	3,556,328	4,715,347	445,150	500,000	9,216,825	8,935,568
\sim						

Note:

(1) Amortization for the year

(2) Excess of revenue over expenses before amortization, building repairs and maintenance

(3) To fund intangible assets and property and equipment purchases

The accompanying notes are an integral part of these non-consolidated financial statements.

The Association of Professional Engineers and Geoscientists of the Province of British Columbia

Non-consolidated Statement of Cash Flows For the year ended June 30, 2018

	2018 \$	2017 \$
Cash flows from operating activities Excess of revenue over expenses for the year Items not affecting cash	281,257	675,250
Amortization	617,854	540,963
Change in working capital accounts	899,111 750,321	1,216,213 567,193
	1.649.432	1.783.406
Cash flows from investing activities		.,,
Investment in intangible assets	(257,478)	(218,686)
Change in short-term investments and investments	(168,978)	(1,238,601) (583,404)
	(1,705,890)	(2,040,691)
Decrease in cash and cash equivalents	(56,458)	(257,285)
Cash and cash equivalents - Beginning of year	1,348,905	1,606,190
Cash and cash equivalents - End of year	1,292,447	1,348,905
Supplementary information		
Change in working capital accounts	(2/0 173)	10 503
Interest receivable	(23,136)	(1,090)
Prepaid expenses	36,581	(70,097)
Inventory	4,464	(10,529)
Accounts payable and accrued liabilities	275,964	44,150
Deferred revenue	210,120 189 195	220,320 373 936
	JUJ, TUJ,	010,000
-	750,321	567,193

The accompanying notes are an integral part of these non-consolidated financial statements.

The Association of Professional Engineers and Geoscientists of the Province of British Columbia

Notes to Non-consolidated Financial Statements **June 30, 2018**

1 Mandate

The Association of Professional Engineers and Geoscientists of the Province of British Columbia doing business as Engineers and Geoscientists British Columbia (the Association) is incorporated under the provisions of the Engineers and Geoscientists Act. The Association's mandate is to protect public safety, health and well-being through the application of engineering and geoscience, as well as to ensure the responsible self-governance and vitality of the professions.

The Association is a tax exempt organization as described in the Income Tax Act and, as such is exempt from federal and provincial income taxes.

2 Significant accounting policies

These non-consolidated financial statements include the financial activities of the Association exclusive of the net assets of Engineers and Geoscientists BC Foundation, Engineers and Geoscientists BC Benevolent Fund Society and member-supported branches and divisions (note 12).

Net assets

The "General fund" comprises two components. "Operating" represents funds used in the general operating and business activities including any extraordinary circumstances that may arise and "Invested in property and equipment and intangible assets" represents the investment in property and equipment and intangible assets used in those activities.

The "Property, equipment and systems replacement fund" represents an appropriation by Council, which serves the long-term objective of setting aside funds to replace and improve property, equipment and systems when required. Any repairs, maintenance and improvement associated with the building are deducted from this fund. Council reviews the method and the amount appropriated to ensure that the appropriation provides a reasonable basis for property, equipment and systems replacement. All repairs, maintenance and improvement deducted from the fund and property, equipment and systems acquisitions are approved by Council as part of the annual budgeting process.

The "Legal and insurance fund" relates to an appropriation by Council to set up a legal and insurance reserve to allow for extraordinary cases and situations over and above annual expectations. This allows the Association to be prepared for future contingencies. The amount appropriated for legal and insurance is reviewed by Council annually.

Managing capital

The Association defines its capital as the amount included in its net asset balances. The Association's objective when managing its capital is to safeguard its ability to continue as a going concern so that it can continue to fulfill its mandate as described in note 1. While there are no external restrictions on any of the net assets, Council has appropriated certain of the funds for specific purposes as described in net assets.

The Association of Professional Engineers and Geoscientists of the Province of British Columbia

Notes to Non-consolidated Financial Statements **June 30, 2018**

General fund

As at June 30, 2018, the General fund comprises \$3,556,328 (2017 - \$3,747,726) that is invested in the property and equipment and intangible assets and is not available for other future operating activities and \$4,715,347 (2017 - \$4,492,692) that is available for future operating activities including any extraordinary circumstances that may arise. Council has set a target of a minimum of three months operating expenses or \$3,800,000 to be held in the "Operating" net asset fund as a general reserve given the stability of annual membership fee revenues and the Association's ability to access a pre-approved line of credit.

Appropriated funds

As at June 30, 2018, the property, equipment and systems replacement fund balance is \$445,150 (2017 - \$195,150).

As at June 30, 2018, the legal and insurance fund balance is \$500,000 (2017 - \$500,000). Council estimates this amount to cover two consecutive years of extraordinary legal and/or insurance costs.

Revenue recognition and deferred fees

The Association follows the deferral method of accounting for annual fees and other revenues which are received, but for which services have not yet been performed. Membership and other fees are billed and received in advance on a calendar-year basis. Accordingly, a portion of these fees received prior to June 30, 2018, have been deferred for financial reporting purposes and will be recognized as revenue over the remainder of the current calendar year.

The Association enters into certain contracts for which it subcontracts the required services. These contracts are accounted for using the deferral method of accounting.

All other revenues are recognized when earned if the amount to be received can be reasonably estimated and collectability is reasonably assured.

Amortization

Amortization is recorded by using the following annual rates calculated on a straight-line basis:

Building	3.3%
Intangible assets (software and development)	33.3%
Computer	10% - 33.3%
Electronic equipment	20%
Furniture, fixtures and office improvements	10%

FOR DISCUSSION WITH MANAGEMENT ONLY – SUBJECT TO AMENDMENT NOT TO BE FURTHER COMMUNICATED

(2)

The Association of Professional Engineers and Geoscientists of the Province of British Columbia

Notes to Non-consolidated Financial Statements **June 30, 2018**

Donated services

The Association and its members benefit from donated services in the form of volunteer time for various committees. Donated services are not recognized in these non-consolidated financial statements.

Cash and cash equivalents

Cash and cash equivalents consist of cash on deposit and high interest savings accounts with banks.

Investments

Investments may consist of federal and provincial government bonds, T-bills and guaranteed investment certificates consistent with the Association's investment policy. The investments are designated as held-to-maturity and are recorded at amortized cost. Interest income is recognized over the lives of the instruments using the effective interest rate method. Short-term investments consist of treasury bills, and guaranteed investment certificates maturing within one year. Long-term investments consist of guaranteed investment certificates maturing between one to two years.

Inventory

Inventory relates to exam books. Inventory is recorded at the lower of cost and net realizable value. Cost is determined on a specific item, actual cost basis.

Controlled funds

Engineers and Geoscientists BC Foundation (the Foundation)

The Foundation provides financial support to fund, facilitate and promote activities and programs related to education in engineering and geoscience. The Foundation was incorporated on May 11, 1993 under the British Columbia Society Act and is a registered charity under the Income Tax Act.

The Association controls the operations of the Foundation through its ability to appoint the Directors, who direct all activities of the Foundation. The Association does not consolidate the financial results of the Foundation.

In 2007, a fund was created and restricted to be held as enduring property for no less than 10 years. The income from the property was used to fund the operations of the Foundation. These funds were invested in financial institution guaranteed securities. In 2017, the donor-imposed restriction expired and the contribution was recorded in investments and recognized in the statement of revenue, expenses and fund balance.

The Association of Professional Engineers and Geoscientists of the Province of British Columbia

Notes to Non-consolidated Financial Statements **June 30, 2018**

Engineers and Geoscientists BC Benevolent Fund Society (the Society)

The Society provides financial assistance to members of the Association and their dependants who qualify for the assistance. The Society was incorporated on November 1, 2010 under the British Columbia Society Act and is a registered charity under the Income Tax Act.

The Association controls the operations of the Society through its ability to appoint the Directors, who direct all activities of the Society. The Association does not consolidate the financial results of the Society.

Member-supported branches and divisions

The member-supported branches and divisions provide local support to the members of the Association throughout the region of British Columbia. The member-supported branches and divisions are unincorporated entities.

The Association controls the operations of the member-supported branches and divisions as it holds a significant economic interest and shares complementary objectives with the member-supported branches and divisions. The Association does not consolidate the financial results of the member-supported branches and divisions. Bank accounts and cash flows for all member-supported branches and divisions are managed and recorded by the Association's Finance department.

Financial information for the controlled funds is provided in note 12.

Use of estimates

The preparation of financial statements in accordance with Canadian generally accepted accounting principles requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities at the date of the financial statements and revenues and expenses during the year. Significant areas requiring the use of estimates relate to determining the useful lives of property and equipment and the amount of membership fees received in advance to be deferred. Financial results, as determined by actual events, may differ materially from those estimates.

Financial instruments

The Association applies Chartered Professional Accountants of Canada (CPA Canada) Handbook Section 3861, *Financial Instruments - Disclosure and Presentation* (note 13).

FOR DISCUSSION WITH MANAGEMENT ONLY – SUBJECT TO AMENDMENT NOT TO BE FURTHER COMMUNICATED

(4)

The Association of Professional Engineers and Geoscientists of the Province of British Columbia

Notes to Non-consolidated Financial Statements **June 30, 2018**

3 Cash and cash equivalents

	2018	2017
	\$	\$
Cash on hand High interest savings accounts	892,688 399,759	953,602 395,303
	1,292,447	1,348,905

The Association has access to a pre-approved line of credit, secured by the building and land, with a limit of \$500,000 of which \$nil was drawn on at year end (2017 - \$nil).

4 Investments

	2018	2017 \$
		Ŷ
Guaranteed investment certificates	1,497,613	1,494,900
Government of Canada treasury bills	9,649,846	8,373,125
	11,147,459	9,868,025
Short-term	10.497.346	8.893.175
Long-term	650,113	974,850
	11,147,459	9,868,025
5 Accounts receivable		
j meesums receivable		
	2018	2017
	\$	\$
Government grants	421.549	60.000
Project grants (UBC and other associa	tion) 57,938	137,224
Innovation magazine	24,887	33,376
Due from CCPG	55,366	60,056
GST	28,196	19,688
Other	17,487	45,906
	605,423	356,250

The Association of Professional Engineers and Geoscientists of the Province of British Columbia

Notes to Non-consolidated Financial Statements **June 30, 2018**

6 Intangible assets

7

_			2018	2017
	Cost \$	Accumulated amortization \$	Net \$	Net \$
Internally generated	1 100 017	833 746	357 171	316 100
Externally acquired	1,130,317	000,740	557,171	510,103
software	849,664	849,664	<u> </u>	3,428
	2,040,581	1,683,410	357,171	319,537
Property and equipment	\sim			
			2018	2017
	Cost \$	Accumulated amortization \$	Net \$	Net \$
Land Building Computer	874,011 3,251,167 1.961.681	2,492,803 1.895.938	874,011 758,364 65,743	874,011 866,791 88.296
Electronic equipment	246,447	67,187	179,260	114,720
improvements	2,380,885	1,109,778	1,271,107	1,433,699
	8,714,191	5,565,706	3,148,485	3,377,517

8 Government payables

Government payables include provincial sales and payroll taxes. The following government remittances were payable at year-end:

	2018 \$	2017 \$
PST payable WCB payable	115	21 1,552
	115	1,573

FOR DISCUSSION WITH MANAGEMENT ONLY – SUBJECT TO AMENDMENT NOT TO BE FURTHER COMMUNICATED

(6)

\$

64,581 15,280

79,861

The Association of Professional Engineers and Geoscientists of the Province of British Columbia

Notes to Non-consolidated Financial Statements **June 30, 2018**

9 Deferred fees

	2018 \$	2017 \$
Professional Engineers and Geoscientists members fees Engineer and Geoscientist-in-training membership fees Non-resident licence and limited licence Member advantage program for student membership fees Other	4,193,221 694,667 230,867 43,044 144,345	4,045,689 621,534 225,979 39,857 156,959
	5,306,144	5,090,018

10 Commitments

The Association has operating lease commitments for office equipment for the next two years requiring the following minimum payments:

Year ending June 30	
2019	
2020	

11 Defined contribution plan

The Association has established a defined contribution plan for its employees, under which employees contribute 5% of their qualifying gross earnings and the Association contributes 7.85% of qualifying employees' gross earnings. Defined contribution plan expense for the year was \$462,024 (2017 - \$439,254).

The Association of Professional Engineers and Geoscientists of the Province of British Columbia

Notes to Non-consolidated Financial Statements **June 30, 2018**

12 Controlled funds

The Association controls the operations and provides accounting and administration services to the Benevolent Fund Society, the Foundation and member-supported branches and divisions. The results and net assets of these operations are not consolidated in the financial statements of the Association.

Summary financial information on each of the controlled funds is as follows:

	2018 \$	2017 \$
Benevolent Fund Society		
Total assets	311,748	294,218
Revenue - contributions and investment income	38,828	39,702
Expenses and grants	23,077	39,613
Cash flows from operating activities Cash flows from investing activities	19,217 (13,877)	(1,472) (3,664)
Foundation		
Total assets Total liabilities	697,727 179,414	662,611 161,238
Net assets	518,313	501,373
Revenue - contributions and investment income	97,881	112,525
Expenses and grants	80,941	77,117
Cash flows from operating activities Cash flows from investing activities	30,536 (59,176)	23,910 (206,277)

Member supported branches and divisions

The Association has a number of special interest divisions that allow members with common technical background or other interests to share and disseminate information and to review and develop policy in that area.

All the Association members are assigned to one of the 20 regional branches and divisions. Branches are led by an executive group composed of volunteers who serve as the members' regional representatives and link back to the Association leadership.

FOR DISCUSSION WITH MANAGEMENT ONLY – SUBJECT TO AMENDMENT NOT TO BE FURTHER COMMUNICATED

(8)

The Association of Professional Engineers and Geoscientists of the Province of British Columbia

Notes to Non-consolidated Financial Statements **June 30, 2018**

			2018 \$	2017 \$
E	Branches and divisions	~		
-	Total assets Total liabilities		253,388 27,245	242,332 31,959
1	Net assets		226,143	210,373
F	Revenue		156,861	168,157
E	Expenses		143,130	159,172
(Cash flows from operating activities		13,731	8,266
13 I	Financial instruments and risk manag	ement)/	

Currency risk

Currency risk is the risk that the value of a financial instrument will fluctuate due to changes in foreign exchange rates. The Association is not exposed to significant currency risk.

Interest rate risk

Interest rate risk is the risk that the value of a financial instrument will fluctuate due to changes in market interest rates. The Association is exposed to interest rate risk on short-term deposits and investments. Management frequently reviews the interest rates to mitigate risk and uses professional investment management services.

Market risk and other price risk

Market risk and other price risk is the risk that the value of a financial instrument will fluctuate as a result of changes in market prices. The Association is not exposed to significant market risk and other price risk.

Credit risk

Credit risk is the risk that one party to a financial instrument will fail to discharge an obligation and cause the other party to incur financial loss. The Association does not have a significant concentration of credit risk in any single party or group of parties. Accounts receivable are due primarily from government.

Liquidity risk

Liquidity risk is the risk that an entity will encounter difficulty in raising funds to meet commitments associated with financial instruments. The Association is not exposed to significant liquidity risk.

The Association of Professional Engineers and Geoscientists of the Province of British Columbia

Notes to Non-consolidated Financial Statements **June 30, 2018**

There have not been any significant changes in risk exposure from prior years.

14 Miscellaneous revenue

		2018 \$	2017 \$
	Discipline recoveries	141,500	47,500
	Other	68,261	80,195
	Return to Practice/Reinstatement	38,550	30,350
	Certified Professional Program	52,735	73,174
		210 100	004 040
		301,046	231,219
15	Office, general and miscellaneous	\sim	
		Ť	
		2018 \$	2017 \$
	Bank and credit card processing fees	2018 \$ 437,436	2017 \$ 425,711
	Bank and credit card processing fees Office and general (courier, copier, office supplies, storage, training	2018 \$ 437,436 362,624	2017 \$ 425,711 396 589
	Bank and credit card processing fees Office and general (courier, copier, office supplies, storage, training and regalia)	2018 \$ 437,436 362,624 136,625	2017 \$ 425,711 396,589 103,250
	Bank and credit card processing fees Office and general (courier, copier, office supplies, storage, training and regalia) Information technology licensing Insurance	2018 \$ 437,436 362,624 136,625 40,967	2017 \$ 425,711 396,589 103,250 39,994
	Bank and credit card processing fees Office and general (courier, copier, office supplies, storage, training and regalia) Information technology licensing Insurance Dues and subscriptions	2018 \$ 437,436 362,624 136,625 40,967 13,282	2017 \$ 425,711 396,589 103,250 39,994 11,987
	Bank and credit card processing fees Office and general (courier, copier, office supplies, storage, training and regalia) Information technology licensing Insurance Dues and subscriptions Other	2018 \$ 437,436 362,624 136,625 40,967 13,282 31,323	2017 \$ 425,711 396,589 103,250 39,994 11,987 19,714
	Bank and credit card processing fees Office and general (courier, copier, office supplies, storage, training and regalia) Information technology licensing Insurance Dues and subscriptions Other	2018 \$ 437,436 362,624 136,625 40,967 13,282 31,323 1,022,257	2017 \$ 425,711 396,589 103,250 39,994 11,987 19,714 997,245

Engineers and Geoscientists British Columbia			
Balance Sheet			
Assets	2018	2017	
Current assets			
Cash and cash equivalents	1,292,447	1,348,905	Cash and cash equivalents
Short-term investments	10,497,346	8,893,175	Short-term investments such as T-bills and GICs.
Interest receivable	40,270	17,134	Interest receivable from investments
Accounts receivable	605,423	356,250	Project receivable, GST ITC receivable and CCPG receivable
Prepaid expenses	384,306	420,888	(1) Software licenses (2) AGM deposits/prepayments (3) Insurance (4) Property tax
Inventory	21,655	26,119	Exam text books
	12,841,447	11,062,471	
Intangible assets	357,171	319,537	Externally acquired and internally developed IT software
Property and equipment	3,148,485	3,377,517	Building, land, furniture fixtures, electronics and computer items
Investments	650,113	974,850	Investments maturing between one or two years
	16,997,216	15,734,375	
Liabilities and Net Assets			
Current liabilities			
Accounts payable and accrued liabilities	1,382,052	1,106,088	(1) Trade accounts payable (2) Vacation payable (3) Accrued liabilities
Deferred fees	5,306,144	5,090,018	(1) Members (2) EIT/GIT (3) Reduced Fee (4) NRL & LL & (5) Student membership
Deferred revenue	1,092,196	602,701	(1) Conference sponsors (2) Exam unearned (3) CPD seminar unearned (4)Advertising unearned revenue (5)
	7,780,392	6,798,807	
Net assets			
General fund			
Invested in property and equipment and			
intangible assets	3,556,328	3,747,726	
Operating	4,715,345	4,492,692	
Property, equipment and systems			
replacement fund	445,150	195,150	
Legal and insurance fund	500,000	500,000	
	9,216,823	8,935,568	
	16,997,216	15,734,375	

Item 6.1 – Appendix C

Jnearned grants revenue

Engineers and Geoscientists British Columbia					
Balance Sheet					
Assets	2018	2017	\$ changes	% changes	notes
Current assets					
Cash and cash equivalents	1,292,447	1,348,905	(56,458)	-4%	less cash held as more funds are invested in investement portfolio
Short-term investments	10,497,346	8,893,175	1,604,171	15%	more short term investment in GIC and T Bills invested in current year due to recent prime rate
	40.070	17 10 1	22.426	= = = = = = = = = = = = = = = = = = = =	higher in relation to a higher principle balance by \$1.2Mill from prior year's investment balance
Interest receivable	40,270	17,134	23,136	5/%	long term)
Accounts receivable	605,423	356,250	249,173	41%	AR increased due to two major Ministry of Education grant project's receivables
Dropaid evpances	284 206	420.000		100/	decrease because of lower conference/AGIVI event deposit, lower deposit due to venue differen
	384,306	420,888	(30,582)	-10%	location
Inventory	21,055	26,119	(4,464)	-21%	
	12,841,447	11,062,471	1,//8,9/6	14%	
Intangible accote	257 171	210 527	27 624	110/	driven by the national CPA program, more internal staff resources invested in MPM and WCM
	557,171	519,557	57,054	11/0	decrease because of two main factors: no repovation in current year, and higher amortization i
					prior year's reportion assets are now amortized with full year amortization rate (accounting n
Broparty and aquipment	2 1 1 0 1 9 5	2 277 517	(220.022)	70/	the first year of access addition)
	5,146,465	074 850	(229,032)	-7%	ine first year of assets addition).
	16 997 216	15 73/ 375	1 262 8/1	-30%	
	10,557,210	15,754,575	1,202,041	770	
Liabilities and Net Assets					
Current liabilities					
					increase because of higher accrual of practice review (due to volumeof files), office lighting rep
Accounts payable and accrued liabilities	1,382,052	1,106,088	275,964	20%	end of year, CPD related accruals for hotel rentals, and advertising costs related to rebranding
					increase due to average membership growth of 4%, with strongest growth of 12% in Engineer a
Deferred fees	5,306,144	5,090,018	216,126	4%	training membership
					increase due to two main factors: Approx. \$100K of unearned OQM member fees collection due
Deferred revenue	1,092,196	602,701	489,495	45%	Approx. \$300K of new grant projects of seismic assessment and SMP development
	7,780,392	6,798,807	981,585	13%	
Net assets					
General fund					
Invested in property and equipment and					
intangible assets	3,556,328	3,747,726	(936,364)	-26%	please see statement of net assets for fund's continuity
Operating	4,715,345	4,492,692	967,619	21%	please see statement of net assets for fund's continuity
Property, equipment and systems					
replacement fund	445,150	195,150	250,000	56%	proposed transfer of \$250K from operating fund to replenish the property, equipment and syst
Legal and insurance fund	500,000	500,000	-	0%	
	9,216,823	8,935,568	281,255	3%	difference is the net result of current year's operating surplus
	16,997,216	15,734,375	1,262,841	7%	

ent prime rate increase

stment balance (total of short term and

venue difference from prior year's

RM and WCM development amortization in current year because (accounting practice is 1/2 year rate in

recent prime rate increase

ce lighting replacement work done at to rebranding

% in Engineer and Geoscientist-in-

s collection due to timing of billing. nt

ment and systems replacement fund

Engineers and Geoscientists British Columbia			
Statement of Revenue and Expenses			
	FY2018	FY2017	
Revenue			
Fees			
Annual membership fees	10,486,007	9,974,525	
			(1) Examination of credentials (2) Administration/certificate fee (3) Transfer fee (4) SER application fee (5) Limited license application fee
Application, registration and certification Fees	1,304,513	1,308,314	certificate revenue (7) Certified professional program (8) Structural qualifications (9) Reinstatement/Return to Practice
Professional and academic examinations	505,862	492,903	(1) Professional Practice Exam (2) Academic Exam (3) IStructE/SER Exams & (4) Professional Practice Exams Book Sales
	12,296,382	11,775,742	
Other revenue			
Affinity programs	409,029	410,107	Affinity program rebates (Manulife, Marsh, Lombard)
Annual conference	301,915	329,180	(1) Attendee (2) Sponsor & (3) Exhibitor Revenue
Grant and project administration	1,139,075	1,652,829	Seismic Assessments for Schools, Seismic Mitigation Program, Water Operator Competency Framework and CBA Engineer Canada Progr
Innovation magazine and other advertising	530,419	570,956	(1) Magazine advertising revenue (2) Web advertising revenue
Investment Income	104,068	53,478	(1) Interest earned on investments & (2) Interest earned on bank balances
Miscellaneous	301,046	231,219	(1) Miscellaneous Revenues & (2) Student Sponsor Revenue (3) other one off revenues
Organization quality management	209,738	185,194	OQM membership and training revenue
Professional development	1,077,256	1,012,902	Revenue from professional development seminars and distance education product sales
	4,072,546	4,445,864	
Total revenue	16,368,928	16,221,606	
Expenses			
			(1) Communications dept public/government relations, student programs (2) Administration dept employment advertising & (3) PPE
Advertising	276 503	34 085	advertising
Annual conference - facilities and meals	166 025	156 450	Annual conference - facilities and meals
	100,025	130,130	
Contract and consulting services	1 807 615	2 005 931	(1) Professional practice review (2) Continuing professional development seminars & workshops (3) Information technology & (4) Other
Contract and consulting services on grants	872 965	1 252 219	Seismic Assessments for Schools Seismic Mitigation Program. Water Operator Competency Framework and CBA Engineer Canada Progr
Engineers Canada Assessment	299 755	288 800	Engineers Canada Assessment
Examinations and examination books	360 217	357 437	(1) Exam marking & (2) Exam invigilation
Geoscientists Canada Assessment	67 705	66 854	Geoscientists Canada Assessment
Grants and awards	100 292	98 9/2	(1) Branches grants (2) Career awareness (3) Student program
Innovation magazine printing	90.651	97 262	Innovation magazine printing
	607 952	348 569	
Meetings, seminar room rentals and special events	462 302	482 139	(1) CPD seminars & workshops & (2) Other program meeting expenses
Office, general and miscellaneous	1 022,552	997 245	(1) Bank fees (2) Computer hardware and software (3) Office supplies (3) Staff training (4) Property insurance (5) Conier and mail equipm
Premises and operating costs	479 407	438 923	Premises and operating costs
			(1) Postage (2) Photocopy (3) Mail house services (4) Printing (annual conference, program brochures, CPD, annual reports, annual invoi
Printing nublication and distribution costs	384 496	409 582	membership cards) (5) Letterheads, envelopes, business cards (6) Certificates & stamps & (7) others
Salaries and employee benefits	7 870 044	7 328 301	Salaries and employee benefits
Secondary professional liability insurance premiums	143 775	150 436	Secondary professional liability insurance premiums
	67 786	87 520	(1) Telenhone (2) Long distance & (3) T1 Internet access
Travel	390 072	409 520	(1) Staff (2) President (3) Council committee (4) Practice reviewer (5) CPD sneaker & branch rens travel
	330,072		
Total expenses before amortization	15 469 818	15 005 392	
	13,409,010	13,003,393	
Amortization	617 854	540 963	Amortization expense of capital assets
Excess of revenue over expenses for the year	281 256	675 250	
	201,200	5, 5,250	
			1

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/Job interview (6) Stamp and seal and
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ient lease
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Base of Space Part Part Part Part Part Part Part Part	Engineers and Geoscientists British Columbia									
Maxa PR30 PR30 Shape Integer Price Pric Price Price P	Statement of Revenue and Expenses									
math Wints Submys Submys Wints Wints Refs -									\$ budget	% budget
Store Image Image <th< td=""><td></td><td>FY2018</td><td>FY2017</td><td>\$ changes</td><td>% changes</td><td></td><td>FY2018</td><td>FY2018 Budget</td><td>variance</td><td>variance</td></th<>		FY2018	FY2017	\$ changes	% changes		FY2018	FY2018 Budget	variance	variance
Inter Inter <th< td=""><td>Revenue</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></th<>	Revenue									
detauline decembly has Add 620 675.53 111.443 Operation of a to except when here years (p.46.50) 1333,46 455.38 -155.300 (The sector of a to except when here years) (p.46.50) 1333,46 (p.45.30) 1333,46 (p.45.30) 1333,46 (p.45.30) 1333,46 (p.45.30) 1333,46 (p.45.30)	Fees									
Annual Annual Section 2007 Exc. (2017) Control Control Control Section 2007 Exc. (2017) Control Control Section 2007 Exc. (2017) Control Contro						increase due to average membership growth of 4%, with strongest growth of				
pictors 130:13	Annual membership fees	10,486,007	9,974,525	511,482	5%	12% in Engineer and Geoscientist-in-training membership	10,486,007	10,331,659	154,348	1% stronger than averag
Auditors, regranded and confliction for de significant changes 1154.33 1.344.33 1.344.33 1.344.34										
Introduction 155.40 42.20 1.22 1.0 100 monocol 10.00 7.0.0 10.00 7.0.0 10.00 7.0.0 10.00 7.0.0 10.00	Application, registration and certification Fees	1,304,513	1,308,314	(3,801)	0%	no significant changes	1,304,513	1,394,750	(90,237)	-6% lower than expected
Interview 12,200,000 12,107,000 20,000,000 12,000,000,000 12,000,000,000 12,000,000,000 12,000,000,000 12,000,000,000,000 12,000,000,000,000,000 12,000,000,000,000,000,000,000,000,000,0	Professional and academic examinations	505,862	492,903	12,959	3%	no significant changes	505,862	474,528	31,334	7% higher PPE and acade
Dest retroit 102/800										
Other Data 440.00 1.0.01 0.00 opportant 440.00 4.		12,296,382	11,775,742	520,640	4%	,	12,296,382	12,200,937	95,445	1%
Althory properties Althory Althor Althory Althory	Other revenue									
Admain Admain Display Description Display	Affinity programs	409,029	410,107	(1,078)	0%	no significant changes	409,029	408,000	1,029	0% no significant varianc
Operature 1,23,07 1,35,201 193,764 Arriter the project server and regulation project (Working Forder Sproff Construct) 113,07 1,13,178 112,081 1,13,178 112,081 1,13,178 112,081 1,13,178 112,081 1,13,178 1,13,128 1,13,	Annual conference	301,915	329,180	(27,265)	-9%	changes due to venue difference (Whistler vs. Victoria)	301,915	273,000	28,915	11% stronger than expect
Crime device simulation 11.06.01 10.10.02 10.10.02 11.00.				/-·· ··		decrease due to completion of registration project (Working in Canada) and				
Intervision regarant and starts observisions Jung bit year's negroid absorbing error provide (1) Jung bit year's negroid absorbing error provide (1) Jung bit year's negroid absorbing error provide (1) Jung bit year	Grant and project administration	1,139,075	1,652,829	(513,754)	-45%	grant project progress	1,139,075	1,151,769	(12,694)	-1% variance due to timin
Interaction magnetine and table subsertioning 53.0.10 53.0.00 6.0.00 6.0.00 6.0.00										
monotening 100/19 100						prior year's exceptional advertisement revenue at \$570K. Otherwise, FY2018				
Intervent income 194.09 53.78 63.78	Innovation magazine and other advertising	530,419	570,956	(40,538)	-8%	has a increase of \$30K above the average of advertisement revenue \$500K.	530,419	510,000	20,419	4% stronger than budget
material cond 100,08 5,148 20,470 94,70						higher in relation to a higher principle balance by \$1.2Mill from prior year's				
Matchines Solution Control Solution Solution <td>Investment Income</td> <td>104,068</td> <td>53,478</td> <td>50,590</td> <td>49%</td> <td>investment balance (total of short term and long term)</td> <td>104,068</td> <td>53,598</td> <td>50,470</td> <td>94% variance due to highe</td>	Investment Income	104,068	53,478	50,590	49%	investment balance (total of short term and long term)	104,068	53,598	50,470	94% variance due to highe
Material condition 90.046 233.13 69.27 236 Booteness of contrast or construction and a low in training construction 200.738 <						settled 3 significant cases adding up to \$105K of legal recovery offset by lower				settled 3 significant c
Organization quality rangement 2007 185,194 245,455 198 crease due to solume growth in certification and allow in training caurus 200,015 244,000 (44,50) $\cdot \cdot \cdot$ trade-scional diverbagnent 1,077,245 2,422,020 64,535 $\cdot \cdot \cdot$ $\cdot \cdot \cdot \cdot \cdot$ $\cdot \cdot \cdot \cdot$ $\cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot$ $\cdot \cdot \cdot$ $\cdot \cdot \cdot$ $\cdot \cdot $	Miscellaneous	301,046	231,219	69,827	23%	Geoscientist Canada overhead recovery	301,046	269,694	31,352	12% misc. revenues
Organization quality management 207.78 185.79 244.00 (34.22) -1.05 (and the mathy dual growth in clarent year with full team of CPD staff 207.78 1.000.000 (34.22) -1.05 (and the mathy dual growth in clarent year with full team of CPD staff 1.077.255 1.050.002 57.231 (est on the law and the mathy dual growth in clarent year with full team of CPD staff 1.077.256 1.050.002 57.231 (est on the law and the mathy dual growth in clarent year with full team of CPD staff 1.077.256 1.050.002 57.231 (est on the law and the law of team										
Professional development 1,077,264 1,020,005 67,211 0.00 online law and this 1 4,072,546 4,465,644 (127,238) 9.8 1,027,256 1,020,005 542,460 0.8 1 6,060,008 16,272,256 4,465,644 (127,238) 9.8 1,027,256 3,200,008 542,460 0.8 Caparises 1 1,000,008 16,213,007 32,008 342,458 0.8	Organization quality management	209,738	185,194	24,545	12%	increase due to volume growth in certification and also in training courses	209,738	244,000	(34,262)	-14% variance mainly due t
Performance 1077,256 1077,256 1077,256 1077,256 1077,256 1077,256 1000,256 0.000,200,200 0.000,200 <th< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></th<>										
4.072.54 4.472.54 4.472.54 4.372.54 3.393.085 1.42.460 48 Total revenue 10.536.572 10.273.052 147.421 23 1.5 1.5 2.77.541 1.8 Egenes 1 1.5	Professional development	1,077,256	1,012,902	64,355	6%	higher number of sessions rolled out in current year with full team of CPD staff	1,077,256	1,020,025	57,231	6% online law and ethics
L 4072.548 4372.548 (373.348) -94 4072.548 (373.348) 2072.548 (350.096) 124.480 48 Teal revenue 16.38.6928 16.31.023 227.600 126.300 227.600 <td< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>										
Total revenue 16,368,928 16,211,020 1227,000 143 Copenses Common Section Sectin Sectin Sectin Section Section Sectin Sectin Section Section Se		4,072,546	4,445,864	(373,318)	-9%		4,072,546	3,930,086	142,460	4%
Total revenue 18,980,78 18,131,02 279,054 1% Expenses Image: Contract and consulting services 18,980,78 18,131,02 279,054 1% Sharefiling 276,553 240,455 222,418 8855 (5205) (pert to refurciently of marketing and publishing channels 775,553 194,200 832,033 42% entranceurs spannels Annual conference -facilities and meals 18,007,055 200,551 (19,017) 21,005 01,007 21,005 21,005 21,005 44,007 21,005 194,200 832,033 42% entranceurs spannels 106,005 194,200 832,033 42% entranceurs spannels 106,005 194,400 23,005 23,005 44,000										
Segments Image: Control of the second s	Total revenue	16,368,928	16,221,606	147,321	1%		16,368,928	16,131,023	237,904	1%
Expenses Image: Contract and consulting services and register of the service of the se										
Advertising 34,085 242,418 Season of the relaxed major initiate in rebranding AFGBC to G6R. Approximately 276,03 194,200 83,33 429 extra resources program Advertising 276,503 136,055 220,418 5888 500% sport on rebranding in variety of markeding and publishing chunnels 166,025 191,137 (77,162) -344 Sais in investigation consulting, working in Canada project consulting and publishing chunnels 1807,615 1769,055 37,920 278 ownerge due to high season consulting, working in Canada project consulting and project consulting and consulting season consulting in the rebrard implementation stage 1807,615 1769,055 37,920 278 ownerge due to high season consulting in the rebrard implementation stage 1807,615 1769,055 37,920 278 Season consulting in the rebrard implementation stage 1807,615 1769,055 37,920 278 Season consulting in the rebrard implementation stage 1807,055 177,920 34,845 180,050 176,056 176,056 176,057 176,056 176,057 176,056 176,057 176,056 176,057 176,056 176,057 176,056 177,057 176,056 176,057	Expenses									
Advertising Current year major Current year major Current year major Control the manuful pAPCBC to FGBC. Approximately Procession Procession <th< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></th<>										
Advertising 276,533 344,850 242,418 888/\$2000 spent or retroking and publishing channels 276,533 349,200 82,303 4272 extra resources.yee Annual conference - facilities and meals 166,025 156,450 9,575 66 in soligificant changes 166,025 1,769,069 37,920 24/4 extra resources.yee Contract and consulting services 1,807,615 2,005,931 (198,317) -110 decreased branding consulting in the rebrand implementation stage 1,807,615 1,769,069 37,920 24/4 overage due to high Contract and consulting services on grants 872,965 1,252,219 (379,253) 44% changes due to project consulting and membership increase is approx 1,076,055 295,932 34,823 14% no significant changes 207,153 364,410,410,410,410,410,410,410,410,410,41						current year major initiate in rebranding APEGBC to EGBC. Approximately				
Annual conference - facilities and meaks 166,025 126,429 126,459 9,575 0 % in significant changes 166,025 129,187 (27,162) -1.45 savings in hord ref Contract and consulting services 1,807,615 2,005,331 (139,317) 1121X decreases branding consulting in the rebrand ingenentation tage 1,807,615 1,769,095 37,920 2K overage due to high Contract and consulting services 0,807,615 2,805,331 (139,337) 43% changes due to project progress 3872,965 917,000 (44,033) -5% variance due to high Engineers Ganada Assessment 290,755 288,800 10.955 (47,93,97) 7% 387,707 7%,331 (15,07) 7% 387,707 7%,331 (75,07) 7%,331 (75,07) 7%,331 (75,07) 7%,331 (75,07) 7%,331 (75,07) 7%,331 (75,07) 7%,331 (75,07) 7%,331 (75,07) 7%,331 (75,07) 7%,331 (75,07) 7%,331 (75,07) 7%,331 (75,07) 7%,331 (75,07) 7%,331 (75,07) <td>Advertising</td> <td>276,503</td> <td>34,085</td> <td>242,418</td> <td>88%</td> <td>\$200K spent on rebranding in variety of marketing and publishing channels</td> <td>276,503</td> <td>194,200</td> <td>82,303</td> <td>42% extra resources spen</td>	Advertising	276,503	34,085	242,418	88%	\$200K spent on rebranding in variety of marketing and publishing channels	276,503	194,200	82,303	42% extra resources spen
Contract and consulting services 1,807,615 2,005,931 (198,317) 1.1% servings in investigation consulting, working in Canada project consulting, and in returned implementation stage 1,807,615 1,769,605 37,920 2% overage due to high Contract and consulting services on grants 872,965 1,252,219 (379,253) 4.3% changes due to project progress 872,965 377,920 444,033 ->% variance due to thigh Engineers Canada Assessment 299,755 288,800 1.055 4/4 (46 299,755 362,217 357,210 1% no significant varian Geoscientitiss Canada Assessment 0.705 66,854 651 1% no significant changes 677,051 100,000 120,801 ->% variance dura varian 1000,200 02,800 02,800 02,801 ->% variance dura varian 100,200 101,000 101,030 101,030 101,030 101,030 101,030 101,030 101,030 101,030 101,030 101,030 101,030 101,030 101,030 103,42 9,49,42 1,481,33 incretes dura frage dura frage dura dura	Annual conference - facilities and meals	166,025	156,450	9,575	6%	no significant changes	166,025	193,187	(27,162)	-14% savings in hotel renta
Contract and consulting services 1,807,611 2,005,931 (198,317) -11% decrease therading consulting, working in Canada project consult, working in										
Contract and consulting services 1,807,615 2,005,931 (198,317) -11% (decreased branding consulting in the rebrand implementation stage 1,076,055 37,920 278, (overage due to high Contract and consulting services on grants 872,965 1,252,219 (379,233) -43% (changes due to project progress 872,965 917,000 (44,035) -5% (variance due to high Engineers Canada Assessment 299,755 288,800 10,955 4% 4% -11% (oo significant changes 299,755 295,932 382,31 1% no significant varia Genesicatistis Canada Assessment 67,075 66,884 851 1% no significant changes 67,076 75,121 (P.416) -10% oa significant varia Innovation magazine printing 90,651 97,625 348,569 293,384 43% (ncrease thank) due to higher disciplin cases and related investigation legal fless 607,952 347,424 260,528 75% wariance due to high Increase and miscellaneous 1,022,275 99,745 25,012 48 43% (rarease marihy due to increases and related investigation legal fless 479,						savings in investigation consulting, working in Canada project consulting and				
Contract and consulting services on grants 872,965 1,252,219 (379,253) -4.3% changes due to project progress 872,965 917,000 (44,035) -5.8% variance due to tur Engineers Canada Assessment 299,755 288,800 10.095 44% 4%	Contract and consulting services	1,807,615	2,005,931	(198,317)	-11%	decreased branding consulting in the rebrand implementation stage	1,807,615	1,769,695	37,920	2% overage due to highe
Contract and consulting services on grants 872,965 972,965 972,965 972,965 972,965 972,965 972,965 972,965 972,965 972,965 972,965 972,965 972,965 972,965 972,965 972,965 972,965 982,965 972,965 982,965 972,965 982,965										
Engineers Canada Assessment 299,755 288,800 10,955 44,4% Adv Commend of the segment segme	Contract and consulting services on grants	872,965	1,252,219	(379,253)	-43%	changes due to project progress	872,965	917,000	(44,035)	-5% variance due to timin
Enginesic Canada Assessment 299,755 288,800 10,955 4%,4% 299,755 299,755 298,932 3,823 13% no significant varian Geoscientists Canada Assessment 67,705 66,854 851 11% no significant varian 66,705 75,121 (74,164) 1-000,290 100,292 98,942 1,255 1,255,937 -7% is significant varian Geoscientists Canada Assessment 67,705 66,854 851 11% no significant changes 100,292 100,0200 (10,248) -2% no significant varian Innovation magazine printing 99,651 97,262 (6,610) -7% no significant changes 90,651 101,000 (10,349) -40% swings in AdM and governments 66,302 47,424 260,528 75% variance due to higher discipline cases and related investigation legal fees 607,952 347,424 260,528 75% variance mainly due Office, general and miscellaneous 1,022,257 997,245 25,012 2% related hardware and supplies 1,022,257 936,420 85,837 9% and supplies Printing, publication and distribution costs						assessment billed based on member count, and membership increase is approx.				
Examinations and examination books 380,217 337,437 2,779 1%, no significant changes 360,217 388,84 (25,597) 7%, is avings in exam in a significant changes Gravits and avards 100,292 98,942 1,349 11% no significant changes 67,705 57,121 (25,08) 7% no significant varian Innovation magazine printing 99,651 97,282 (6,610) 7% no significant changes 90,651 100,292 102,800 (2,508) 7% no significant varian Innovation magazine printing 99,651 348,599 259,384 43%, increase due to higher discipline cases and related investigation legal fees 607,952 347,424 260,528 75%, variance due to higher discipline cases and related investigation legal fees 607,952 474,24 29,950 2% more meetings helf Meetings, seminar room rentals and special events 462,302 482,192 2,912 2,012 2% related hardware and supplies 1,022,257 9,950 2% wariance due to significant variance d	Engineers Canada Assessment	299,755	288,800	10,955	4%		299,755	295,932	3,823	1% no significant varianc
Geoscientists Canada Assessment 67,05 67,05 7,2,21 (7,416) -1,0% no significant changes Grants and awards 100,292 98,942 1,340 1% no significant changes 100,292 102,020 (2,508) -2% in o significant changes Innovation magazine printing 90,651 97,262 (6,610) -7% in o significant changes 90,651 101,000 (2,508) -2% in o significant changes Legal 607,952 348,969 259,384 43% increase due to higher discipline cases and related investigation legal fees 607,952 347,424 260,528 75%, variance due to higher discipline cases and related investigation legal fees 607,952 347,424 260,528 75%, variance due to higher discipline cases and related investigation legal fees 607,952 347,424 280,528 75%, variance due to higher discipline cases and related investigation legal fees 607,952 347,424 280,528 75%, variance due to high chances and supplies Office, general and miscellaneous 1,022,57 97,045 25,121 2%, fetated hardware and supplies 10,022,157 98,6420 85,837 9% and supplies Premises and operating costs	Examinations and examination books	360,217	357,437	2,779	1%	no significant changes	360,217	385,814	(25,597)	-7% savings in exam mark
Grants and awards 100,292 98,942 1,349 1,840 in no significant changes 100,292 100,000 (2,508) 2% no significant changes Innovation magazine printing 90,651 97,262 (6,610) -7% no significant changes 90,651 90,652 347,424 260,528 -75% variance due to high Meetings, seminar room rentals and special events 462,302 482,139 (11,837) -4% savings in AGM and government relation related hotel rentals 462,302 452,342 29,050 2% more meetings helt Office, general and miscellaneous 1,022,257 997,245 2,502 2% related hardware and supplies 1,022,557 956,420 88,837 9% and supplies Premises and operating costs 479,407 438,923 40,484 8% changes change replacement from rebranding and interior lighting 479,407 349,741 129,666 37% variance due to significant changes Printing, publication and distribution costs 384,496 409,582 (25,087) -7% loe significant changes 1,022,57 956,420 85,837 9% Salaries and employee benefits 7,870,044 7,328,391 541,653 7% loo significant changes 10	Geoscientists Canada Assessment	67,705	66,854	851	1%	no significant changes	67,705	75,121	(7,416)	-10% no significant varianc
Innovation magazine printing 90,651 97,62 (6,610) -7% ho significant Changes 90,651 101,000 (10,349) -10% sowings due to train the print of the p	Grants and awards	100,292	98,942	1,349	1%	no significant changes	100,292	102,800	(2,508)	-2% no significant varianc
Legal 607,952 348,569 259,384 43% increase due to higher discipline cases and related investigation legal fees 607,952 347,424 260,528 75% variance due to high Meetings, seminar room rentals and special events 462,302 482,139 (19,837) -4% savings in AGM and government relation related hotel rentals 462,302 452,342 9,960 2% more meetings held Office, general and miscellaneous 1,022,257 97,245 25,012 2% related hardware and supplies 1,022,257 936,420 85,837 9% and supplies Premises and operating costs 479,407 438,923 40,484 8% changes 77% 426,738 (70,302) -15% decrease due to savings in registration postage 384,496 454,798 (70,302) -15% decrease due to savings in registration postage 384,496 454,798 (70,302) -15% decrease due to savings in free advisors, practice advisors	Innovation magazine printing	90,651	97,262	(6,610)	-7%	no significant changes	90,651	101,000	(10,349)	-10% savings due to transit
Legal 607,952 348,569 259,384 4.3% increase due to higher discipline cases and related investigation legal related 607,952 347,424 260,528 7/5% variance due to higher discipline cases and related investigation legal related 607,952 347,424 260,528 7/5% variance due to higher discipline cases and related investigation legal related 607,952 347,424 260,528 7/5% variance due to higher discipline cases and related investigation legal related 607,952 347,424 260,528 7/5% variance due to higher discipline cases and related investigation legal related 607,952 347,424 260,528 7/5% variance due to higher discipline cases and related investigation legal related 607,952 347,424 260,528 7/5% variance due to to ign and interior lighting 462,302 452,342 9,960 2% more meetings held investigation legal related i							607.050			
Meetings, seminar room rentals and special events 462,302 482,139 (19,837) -4% is avings in AGM and government relation related hotel rentals 462,302 462,302 9,960 2% more meetings heted Office, general and miscellaneous 1,022,257 997,245 25,012 2% related hardware and supplies 1,022,257 936,420 85,837 9% and supplies Premises and operating costs 479,407 438,923 40,484 8% changes 479,407 349,741 129,666 37% variance due to sign sign sergistration postage Printing, publication and distribution costs 384,496 409,582 (25,087) -7% decrease due to savings in registration postage 384,496 454,798 (70,302) -15% decrease due to savings (102X) from merit increase puls \$320K increase due to 4 new full year savings (102X) from merits upport, sa delayed hiring (\$14) savings (102X) from merit support, sa delayed hiring (\$14) -7% leave (\$113K) of an Secondary professional liability insurance premiums 143,775 150,466 (556,103) -7% leave (\$113K) of an Secondary professional liability insurance premiums 143,775 150,468 (14,753) -22% decrease due to savings in office land line from renewed contracts 67,786 82,559 (14,753)	Legal	607,952	348,569	259,384	43%	increase due to higher discipline cases and related investigation legal fees	607,952	347,424	260,528	75% variance due to highe
Office, general and miscellaneous 1,022,257 997,245 25,012 22% related hardware and supplies 1,022,257 996,202 85,837 997,a45 997,245 997,245 25,012 22% related hardware and supplies 1,022,257 936,202 85,837 997,a45 997,a45 25,012 22% related hardware and supplies 1,022,257 936,420 85,837 997,a45 997,a45 25,012 22% related hardware and supplies 1,022,257 936,420 85,837 997,a45 997,a45 240,484 8% changes 479,407 349,741 129,666 37% variance mainly due to increase due to savings in registration postage 384,496 454,798 (70,302) -15% decrease due to savings in registration postage 384,496 454,798 (70,302) -15% decrease due to savings in registration postage 384,496 454,798 (70,302) -15% decrease due to savings in registration postage 384,496 454,798 (70,302) -15% decrease due to savings in registration postage 384,496 454,798 (70,302) -15% decrease due to sav	Meetings, seminar room rentals and special events	462,302	482,139	(19,837)	-4%	savings in AGM and government relation related hotel rentals	462,302	452,342	9,960	2% more meetings held i
United and miscellaneous 1,022,25 396,420 85,837 956,420 856,51 120,513 956,420	0.00	4 000 057	007.045	25.042	200	Increase mainly due to increased staff training and IT business continuity	1 000 057	000 400	05 007	variance mainly due
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Premises and operating costs 479,407 349,741 129,666 37% Variance due to sign Printing, publication and distribution costs 384,496 409,582 (25,087) -7% decrease due to savings in registration postage 384,496 454,798 (70,302) -15% decrease due to savings in registration postage Printing, publication and distribution costs 384,496 409,582 (25,087) -7% decrease due to savings in registration postage 384,496 454,798 (70,302) -15% decrease due to savings in registration postage Salaries and employee benefits 7,870,044 7,328,391 541,653 7% positions (two practice advisors, practice support and OQM admin) 7,870,044 8,426,146 (556,103) -7% leave (\$113K) of an Secondary professional liability insurance premiums 143,775 150,436 (6,661) -5% no significant changes 143,775 158,287 (14,512) -9% savings due to volu Telecommunications 67,786 82,539 (14,753) -22% decrease due to savings in office land line from renewed contracts 67,786 85,552 (17,766) -21% decrease due to savings in PNWER and Council travel Total expenses before amortization 15,469,818 15,069,281 <td></td> <td>470 407</td> <td>120.022</td> <td>40.404</td> <td></td> <td>increase due to signage replacement from rebranding and interior lighting</td> <td>470 407</td> <td>240 744</td> <td>120.000</td> <td>270</td>		470 407	120.022	40.404		increase due to signage replacement from rebranding and interior lighting	470 407	240 744	120.000	270
Printing, publication and distribution costs 384,496 409,582 (25,087) -7% decrease due to savings in registration postage 384,496 454,798 (70,302) -15% decrease due to savings (\$102K) from mention support, sa delayed hiring (\$14 Salaries and employee benefits 7,870,044 7,328,391 541,653 7% positions (two practice advisors, practice support and OQM admin) 7,870,044 8,426,146 (556,103) -7% leave (\$113K) of an devised due to savings in originificant changes Secondary professional liability insurance premiums 143,775 150,436 (6,661) -5% no significant changes 143,775 158,287 (14,512) -9% savings due to volu Telecommunications 67,786 82,539 (14,753) -22% decrease due to savings in office land line from renewed contracts 67,786 85,552 (17,766) -21% decrease due to savings in PNWER and Council travel 390,072 403,826 (13,754) -3% savings in PNWER and Council travel 390,072 403,826 (13,754) -3% savings in PNWER and Council travel 390,072 403,826 (13,754) -3% savings in PNWER and Council travel 390,072 403,826 (13,754) -3% savings in PNWER and Council travel 390,072	Premises and operating costs	479,407	438,923	40,484	8%	changes	479,407	349,741	129,666	37% Variance due to signa
Salaries and employee benefits7,870,0447,328,391541,65377% 541,653positions (two practice advisors, practice support and OQM admin)7,870,0448,426,146(556,103)-7% eleaved hiring (\$14Salaries and employee benefits7,870,0447,328,391541,6537% positions (two practice advisors, practice support and OQM admin)7,870,0448,426,146(556,103)-7% ileave (\$113X) of an delayed hiring (\$14Salaries and employee benefits7,870,0447,328,391541,6537% positions (two practice advisors, practice support and OQM admin)7,870,0448,426,146(556,103)-7% ileave (\$113X) of an osavings due to voluTelecommunications67,78682,539(14,753)-22% decrease due to savings in office land line from renewed contracts67,78685,552(17,766)-21% osavings due to voluTravel390,072409,589(19,517)-5% savings in PNWER and Council travel390,072403,826(13,754)-3% savings in PNWER andTotal expenses before amortization15,469,81815,069,81815,649,285(17,66)-1% counceAmortization617,854540,96376,89112% increase from full year of amortization from prior year's renovation617,854530,82787,02716% increase from full year of amortization from prior year's renovation617,854530,82787,02716% 	Printing, publication and distribution costs	384,496	409,582	(25,087)	-7%	decrease due to savings in registration postage	384,496	454,798	(70,302)	-15% decrease due to savin
Salaries and employee benefits7,870,0447,328,391541,6537%positions (two practice advisors, practice support and OQM admin)7,870,0448,426,146(556,103)Salvings (\$102K) from merit increase plus \$320K increase due to 4 new full yearSalaries and employee benefits7,870,0447,328,391541,6537%positions (two practice advisors, practice support and OQM admin)7,870,0448,426,146(556,103)delayed hiring (\$14Secondary professional liability insurance premiums143,775150,436(6,661)no significant changes143,775158,287(14,512)leave (\$113K) of anTelecommunications67,78682,533(14,753)<										(¢102)() (
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becondary processional naturity insurance premiums 143,775 158,287 (14,512) 9% isavings due to volu Telecommunications 67,786 82,539 (14,753) 2% decrease due to savings in office land line from renewed contracts 67,786 85,552 (17,766) 21% decrease due to savings in office land line from renewed contracts 67,786 85,552 (17,766) 21% decrease due to savings in office land line from renewed contracts 67,786 85,552 (17,766) 3% savings in PNWER and Council travel 390,072 403,826 (13,754) 3% savings in PNWER and Council travel 390,072 403,826 (13,754) 3% savings in PNWER and Council travel 390,072 403,826 (13,754) 3% savings in PNWER and Council travel 390,072 403,826 (13,754) 3% savings in PNWER and Council travel	Salaries and employee benefits	/,870,044	/,328,391	541,653	7%	positions (two practice advisors, practice support and UQM admin)	/,870,044	8,426,146	(556,103)	-/% lieave (\$113K) of an a
Travel 57,786 85,552 (17,766) -21% decrease due to savings in ottice land line from renewed contracts 67,786 85,552 (17,766) -21% decrease due to savings in ottice land line from renewed contracts Travel 390,072 409,589 (19,517) -5% savings in PNWER and Council travel 390,072 403,826 (13,754) -3% savings in PNWER and Council travel Total expenses before amortization 15,469,818 15,005,393 464,425 3% 15,469,818 15,649,285 (179,468) -1% -1 Amortization 617,854 540,963 76,891 12% increase from full year of amortization from prior year's renovation 617,854 530,827 87,027 16% increase from full year of amortization from prior year's renovation 617,854 530,334 -673% Excess of revenue over expenses for the year 281,256 675,250 (393,994) -140% 281,256 49,089 330,344 -673%	Secondary professional liability insurance premiums	143,775	150,436	(6,661)	-5%	no significant changes	143,775	158,287	(14,512)	-9% savings due to volum
Iravel 390,072 409,589 (19,517) 5% savings in PNWER and Council travel 390,072 403,826 (13,754) 3% savings in PNWER and Council travel Image: Contract of the pear Im	1 elecommunications	67,786	82,539	(14,753)	-22%	decrease due to savings in office land line from renewed contracts	67,786	85,552	(17,766)	-21% decrease due to savir
Total expenses before amortization 15,469,818 15,005,393 464,425 3% Contract of the provided of the	Iravel	390,072	409,589	(19,517)	-5%	Isavings in PNWER and Council travel	390,072	403,826	(13,754)	-3% savings in PNWER and
Instant 15,469,818 15,649,818 15,649,818 15,649,285 (179,468) -1% Image: Instant		45 450 045	45.005.005				45 460 015	45.000.00-	(470.400)	40/
Amortization 617,854 540,963 76,891 12% increase from full year of amortization from prior year's renovation 617,854 530,827 87,027 16% increase from full year of amortization from prior year's renovation Excess of revenue over expenses for the year 281,256 675,250 (393,994) -140% -140% 281,256 (49,089) 330,344 -673%	I otal expenses before amortization	15,469,818	15,005,393	464,425	3%		15,469,818	15,649,285	(1/9,468)	-1%
Amount 01/,034 540,305 70,031 12% increase non-number of anomalian increase nono-number of anomalian increa	Amortization	C17 0F4	E40.062	76 004	1.20/	increase from full year of amortization from prior year's reported	617 05 4	520.027	57.07	16% increase from full use
201,230 (43,003) 330,344 -0/3%	Freess of revenue over expenses for the year	281 256	540,903	/0,891	_1409/	increase from run year or amortization from prior year's renovation	2017,854	550,827	220 244	
	Excess of revenue over expenses for the year	201,230	073,230	(333,394)	-140%	1	201,230	(49,089)	550,544	-07370

age growth in Engineer and Geoscientist-in-training membership
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demic exam volume than expected
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getu performance in web auvertising
gher rate of return from prime rate increases in current year
t cases adding up to \$105K of legal recovery, offset by other reduction
ie to unlaunched OQM national program
ics and distance education had a higher than expected volume
ent in public relation inititiave, related to the rebranding campaign
ntals and equipment rental
her spending in recruitment and compensation consulting fees
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FY2018 Statement of Revenue and Expenses

Revenue	
Fees	
Annual membership fees	10,486,007
Application, registration and certification Fees	1,304,513
Professional and academic examinations	505,862
	12,296,382
Other revenue	
Affinity programs	409,029
Annual conference	301,915
Grant and project administration	1,139,075
Innovation magazine and other advertising	530,419
Investment Income	104,068
Miscellaneous	301,046
Organization quality management	209,738
Professional development	1,077,256
	4,072,546
Total revenue	16,368,928

Advertising Annual conference - facilities and meals Contract and consulting services Contract and consulting services on grants Engineers Canada assessment Examinations and examination books	276,503 166,025 1,807,615 872,965 299,755 360,217 67,705 100,292
Annual conference - facilities and meals Contract and consulting services Contract and consulting services on grants Engineers Canada assessment Examinations and examination books	166,025 1,807,615 872,965 299,755 360,217 67,705 100,292
Contract and consulting services Contract and consulting services on grants Engineers Canada assessment Examinations and examination books	1,807,615 872,965 299,755 360,217 67,705 100,292
Contract and consulting services on grants Engineers Canada assessment Examinations and examination books	872,965 299,755 360,217 67,705 100,292
Engineers Canada assessment Examinations and examination books	299,755 360,217 67,705 100,292
Examinations and examination books	360,217 67,705 100,292
	67,705 100,292
Geoscientists Canada assessment	100,292
Grants and awards	
Innovation magazine printing	90,651
Legal	607,952
Meetings, seminar room rentals and special events	462,302
Office, general and miscellaneous	1,022,257
Premises and operating costs	479,407
Printing, publication and distribution costs	384,496
Salaries and employee benefits	7,870,044
Secondary professional liability insurance premiums	143,775
Telecommunications	67,786
Travel	390,070
Total expenses before amortization 1	5,469,817
Amortization	
Intangible assets	219,843
Property and equipment	398,011
Total amortization	617,854
Excess of revenue over expenses for the year	281,257

GENERAL	NCE	FINA	IONS	OPERAT			REGULATORY		
General	Finance &	Human Resources	Member Services	Communications	Council &	Information	Legislation, Ethics	Professional Practice, Standards	Registration
	Administration				Executive Office	Systems	& Compliance	& Development	5
10,443,068	-	-	-	-	-	-	-	-	42,939
-	-	-	-	-	-	-	-	-	1,304,513
-	-	-	-	-	-	-	-	-	505,862
10,443,068	-	-	-	-	-	-	-	-	1,853,314
-	-	-	409,029	-	-	-	-	-	-
-	-	-	301,915	-	-	-	-	-	-
187,016	-	-	-	-	-	-	-	937,059	15,000
-	-	-	-	530,419	-	-	-	-	-
- 60.022	104,008	-	- 1 200	- 7.040	-	-	- 141 500	- 52 735	- 38 550
	-	-	-		-	-	-	209.738	-
-	-	-	1.067.706	9.550	-	-	-	-	-
247,038	104,068	-	1,779,850	547,009	-	-	141,500	1,199,532	53,550
10,690,106	104,068	-	1,779,850	547,009	-	-	141,500	1,199,532	1,906,864
								Professional	
	Finance &	Human	Member		Council &	Information	Legislation,	Practice, Standards	
General	Administration	Resources	Services	Communications	Executive Office	Systems	Ethics &	& Development	Registration
							Compliance		
	-	-	-	275,007	-	-	1,496		-
	-	-	166,025	-	-	-	-		-
	2,909	113,114	418,596	246,854	199,072	237,518	70,866	508,305	10,380
	-	-	-	-	-	-	-	872,965	-
299,755	-	-	-	-	-	-	-		-
	-	-	-	-	-	-	-	-	360,217
67,705	-	-	-	-	-	-	-		-
	-	-	14,743	85,549	-	-	-		-
	-	-	-	90,051	-	-	-		-
	24 286	32 554	213 906	47 743	79 802	238	11 902	27 667	24 205
437.436	209.229	114.136	21.364	62.853	9,770	136.625	2.764	21.801	6.278
479,407	-	-	-		-	-	-	· -	-, -
	81,609	-	67,236	132,223	5,920	-	4,023	8,246	85,238
	889,778	276,503	857,682	867,587	808,019	859,416	707,717	1,099,655	1,503,686
143,775	-	-	-	-	-	-	-		-
	-	-	-	-	-	67,786	-		-
	689	28	155,857	12,210	102,036	1,288	2,706	90,270	24,989
1,428,078	1,208,500	536,335	1,915,409	1,820,678	1,204,619	1,302,871	1,409,427	2,628,910	2,014,992
						210 012			
398 011	-	_	-	-	-	219,043	-		-
398.011	-	-	-	-	-	219.843	-		
,,,									
8,864,017	(1,104,432)	(536,335)	(135,558)	(1,273,670)	(1,204,619)	<u>(</u> 1,522,714)	<u>(</u> 1,267,927)	(1,429,378)	(108,129)
	÷								

Goal and Outcomes	Strategies	Activities and Accomplishments	Key Progress Indicators	KPI Status		
		• Updated contacts with Authorities Having Jurisdiction ("AHJs") to ensure that disciplinary notices are disseminated to those that are most directly affected.	 Member and public surveys indicate improved awareness of and alignment with Engineers and Geoscientists BC's responsibilities. 73% of members who participated in the engagement sessions 			
		 Disciplinary notices publicized through Innovation, eNews, and through print newspaper ads in the relevant regions. 	indicated an improved understanding of the association's role and mandate.			
		Improved website layout to ensure that when searching	Public Opinion Survey Results:			
	Clarify the association's regulatory role and responsibilities through	the member directory, the disciplinary notice is directly accessible resulting in an increase to page views of 216%.	• Awareness of the association increased to 32% (up from 27% last year).			
Goal 1: To uphold and protect the public interest through the regulation of the professions.		• Offered five free webinar sessions focused on learnings from our regulatory programs, drawing 1,522 participants.	• 90% think it is important that we develop guidelines and standards of practice for members (increase from 88% last year).			
	engagement with members and	• 85 OQM certifications, 37% growth from last year.	• 85% think it is important that we require members to keep up-to-			
	other stakeholders.	• 57 registration seminars to employers of members-in- training and applicants.	date through a mandatory continuing education program (up from 77% from last year).			
		• Added seven employers added to accredited member-in- training program for a total of 18	• 73% think it is important that we advise the public of disciplinary actions (up from 66% last year).			
1. Engineers and Geoscientists BC's role as a regulator is broadly understood.		 As part of the member Engagement Strategy: held a focus group with key volunteer leaders; conducted seven branch engagement sessions; published a feature article in Innovation; Developed a whiteboard video (fall release). 	Overall, this KPI is on track.			
2. Stakeholders embrace efforts to		• 12 formalized and documented submissions / consultations to relevant stakeholders on policies and/or	A legislative renewal plan is formulated, approved and implemented that has stakeholder support.			
enhance professional standards.		practice overlap issues with other professional associations.	Significant engagement with government has occurred in support of this KPI, however, much of this activity has been focused on familiarizing the			
	 Published one new, and updated five existing, professis practice guidelines. Identified and initiated developme of two new practice guidelines for emerging fields of practice. Completed five contracts with government on professis practice related issues. Developed and published focused registration and practice for emerging practitioners. Participated in a total of 24 engagements (meetings, events, conferences) with government. 	 Published one new, and updated five existing, professional practice guidelines. Identified and initiated development 	new government with EGBC priorities.			
3. The Act is modernized to reflect the evolution of the professions and the regulatory mandate of the association.		Identify and implement practices,	dernized to reflect the professions and nandate of the Identify and implement practices,	of two new practice guidelines for emerging fields of practice.	More recently, this engagement has focused on the professional reliance review and the implementation of key recommendations.	
		• Completed five contracts with government on professional practice related issues.	While the Professional Reliance review may result in most, if not all, of EGBC's priority legislative amendments, they may come in a format that			
		effectively carry out its duty and objects.	effectively carry out its duty and objects. • Developed and published focused registration and prac information for software engineering practitioners.	is less than optimal.		
		 Participated in a total of 24 engagements (meetings, events, conferences) with government. 	This KPI may need to be adjusted in the coming year to focus on engaging government to ensure any new Office of Professional Oversight is appropriately implemented.			
		• Met one-on-one with 11 Ministers/MLAs/Government officials and engaged with 35 more at events we hosted				
		throughout the year, including our annual Government Days event, where we hosted 43 Ministers and MLAs.	 Overall, this KPI is lagging. May require adjustment in the year ahead to better reflect the operating environment. 			

6.5 – Appendix A

Goal and Outcomes	Strategies	Activities and Accomplishments	Key Progress Indicators	KPI Status
		 155 professional development (PD) sessions were offered this year, including 25 webinars and 3 mobile audio sessions. 	1. Availability and awareness of practice resources increases.	
		• A total of 24 sessions are now available online.	• 6,176 CPD session attendees (including free events), 75% increase.	
		• 12 CPD seminars on professional practice matters.	 Increased the number of professionals who use digital certificates (seals) to 471 – 300% above target. 	
	Enhance members' awareness and use of professional practice	 Various communication and website updates made to improve accessibility and awareness of PD resources. 	• Page views for Practice Resources have gone up by 206%.	
	resources.	 Mobile audio app specifically designed for on-the-go professionals now available. 	• Page views for Complaints and Discipline have gone up by 216%.	
Goal 2: Establish, maintain and enforce gualifications and		• PD sessions offered with 10 partner organizations.	Overall, this KPI is on track.	
professional standards.		• 12 supplemental communications (advisories, FAQs, articles) to members on practice and ethical issues.		
		• 102 practice reviews completed.		
1. Members and organizations		New processes for tracking status of enforcement files, milestones and accountabilities.	2. Demonstrate that improvements have been achieved for the timely management of complaints against members and enforcement against unauthorized practice and/or use of title.	
 practice to high professional ethical standards. 2. Engineers and Geoscientists BC standards are broadly utilized by all stakeholders. 3. All engineering and geoscience in BC is practiced by professionals licensed by Engineers and Geoscientists BC. 	Deliver timely, outcomes-focused complaints and enforcement processes. Develop a system for corporate regulation that demonstrates enhanced public protection.	 Dedicated enforcement@egbc.ca email address created to streamline receipt of enforcement files. Established a new document management system for enforcement files to improve consistency and responsiveness. Information sharing with Director of Enforcement for APEGA, including learning about structured enforcement procedure - involves multiple stages of escalating communication, with precedents for simple initial communication that can be handled by non-legal staff. Phase two of corporate practice completed and approved by Council in June. 	 As a result of improved investigation practices and processes, 17 files currently with Discipline Committee for adjudication or resolution (highest ever). Opened 117 enforcement files (highest ever). Resolved 87 enforcement files (highest ever). All aging enforcement files (prior to 2016) closed. Overall, this KPI is on track. Overall, this KPI is on track. Overall, this KPI is on track.	
	Participate in initiatives that improve national harmonization of regulatory processes.	 Pan-Canadian Competency-Based Assessment (CBA) for engineering launched. Canadian Environment Experience Competencies and Assessment Scheme confirmed for piloting. In support of development of OQM as a national program, conducted meetings with two provincial associations: APEGA and OIQ. 	 4. Pan-Canadian programs that address evolving issues in admissions and professional practice standards are advanced. Six jurisdictions either confirming participation or expressing interest in joining Pan-Canadian CBA. Overall, this KPI is on track. 	

Goal 3: Promote and protect the professions of engineering and geoscience (subject to goals 1 & 2).Assess and improve admission processes and tools to facilitate robust and timely assessment of applicants.• "Feasibility Study on Employer Perspectives and Focused Connection of Employers to Internationally Trained Engineers and Geoscientists" in partnership with the Ministry of Jobs, Trade and Technology (JTT).Application processing times are reducedGoal 3: Promote and protect the professions of engineering and geoscience (subject to goals 1 & 2).Assess and improve admission processes and tools to facilitate robust and timely assessment of applicants.• "Feasibility Study on Employer Perspectives and Focused Connection of Employers to Internationally Trained Professionals during the recruitment process.Documents Complete to First Milestone Decision2017/2018 (2016/2017) % reduction (increase)Goal 3: Promote and protect the professions of engineering and geoscience (subject to goals 1 & 2).Assess and improve admission processes and tools to facilitate robust and timely assessment of applicants.• Updated eight policies that support more efficient and streamlined application process.Internationally trained P.Eng. applicants88 days 98 days98 days• Risk-based processing of Limited Licence applicants.• Risk-based processing of Limited Licence applicantsEITs applying to become professional members41 days59 days30%	trategies Activities and Accomplishments	Key Progress Indicators	
Goal 3: Promote and protect the professions of engineering and geoscience (subject to goals 1 & 2).Assess and improve admission processes and tools to facilitate robust and timely assessment of applicants.Assess and improve admission processing of Limited Licence applicantsDocuments Complete to First Ministry of Jobs, Trade and Technology (JTT).Documents Complete to First Milestone Decision2017/2018 (2016/2017)(2016/2017) (increase)Goal 3: Promote and protect the professions of engineering and geoscience (subject to goals 1 & 2).Assess and improve admission processes and tools to facilitate robust and timely assessment of applicants.Updated eight policies that support more efficient and streamlined application process.Internationally trained P.Eng. applicants88 days 98 days98 days10%Internationally trained P.Eng. applicants80 days99 days10%Internationally trained P.Eng. applicants99 days30%Internationally trained P.Eng. applicants41 days59 days30%	"Feasibility Study on Employer Perspectives and Focused Connection of Employers to Internationally Trained	g times are reduced	
Goal 3: Promote and protect the professions of engineering and geoscience (subject to goals 1 & 2).Assess and improve admission processes and tools to facilitate 	Ministry of Jobs, Trade and Technology (JTT).	o First 2017/2018 (2016/2017) % reduction (increase)	
Goal 3: Promote and protect the professions of engineering and geoscience (subject to goals 1 & 2).Assess and improve admission processes and tools to facilitate robust and timely assessment of applicants.Updated eight policies that support more efficient and streamlined application process.Internationally trained P.Eng. applicants88 days98 days10%Internationally trained P.Eng. applicantsAssess and improve admission processes and tools to facilitate robust and timely assessment of applicants.Internationally trained P.Eng. applicants88 days98 days10%Internationally trained P.Eng. streamlined application process.Risk-based processing of Limited Licence applicants implemented.EITs applying to become professional members41 days59 days30%	Resources and tools developed to assist employers in identifying skilled Internationally Trained Professionals during the recruitment process. Canadian applican	z. 41 days 57 days 28%	
geoscience (subject to goals 1 & 2).processes and tools to facilitate robust and timely assessment of applicants.• Risk-based processing of Limited Licence applicantsEITs applying to become professional members41 days59 days30%	• Updated eight policies that support more efficient and streamlined application process.	P.Eng. 88 days 98 days 10%	
	ely assessment of implemented. EITs applicants	e 41 days 59 days 30%	
Accredited Employer Member-in-Training Program Average time to process 3 days 3 days 3 days No change applications by professionals in	Accredited Employer Member-in-Training Program Average applicati	is 3 days 3 days No change	
1. Membership is diverse and inclusive. New dashboard developed for quick identification of issues and priorities; Intra-Process Baseline KPI established Intra-Process efficiency <li< td=""><td>New dashboard developed for quick identification of issues and priorities; Intra-Process Baseline KPI established to drive process efficiency.</td><td>itions</td><td></td></li<>	New dashboard developed for quick identification of issues and priorities; Intra-Process Baseline KPI established to drive process efficiency.	itions	
Currently 66 mentors are trained as registration mentors.	Currently 66 mentors are trained as registration mentors.	track.	
2. The supply of skilled engineering and geoscience professionals meets• Conducted two free webinars to assist applicants (328 attendees).	 Conducted two free webinars to assist applicants (328 attendees). 		
the needs of BC's labour demand. Return to Practice Policy modifications and fees approved to better align with maternity and parental leave time Gender balance improves.	Return to Practice Policy modifications and fees approved to better align with maternity and parental leave time	ives.	
 a. Stakeholder trust in the b. This is maintained. c. The state of the	 needs. Initiated development of a 30 by 30 action plan. Initiated development of a 30 by 30 action plan. 	g and active members are women (includes scientists, members in training and licensees) – up r.	
 30 by 30 Champions Group established. 18.5% of new members are female (new registrants from July 1, 	30 by 30 Champions Group established. 18.59	nbers are female (new registrants from July 1,	
4. Member satisfaction is improved. Implement processes that support Engineers Canada's 30 by 30 program	• New name, new look, new executive and new plan for 2017 ada's 30 by 30 program Division.	ng and licensees) – up from 17.6% last year.	
for improving the number of women in the professions. • Developed a full-day diversity stream to be delivered at the 2018 annual conference. • 50% of volunteer career awareness presentations delivered by women.	he number of women ons. • Developed a full-day diversity stream to be delivered at the 2018 annual conference. • 50%	career awareness presentations delivered by	
Sponsorship of approx. \$25K for various camps, events and research in support of underrepresented groups. Overall, this KPI is on track, but under review.	• Sponsorship of approx. \$25K for various camps, events and research in support of underrepresented groups.	track, but under review.	
 This KPI is focused on 30 by 30 and promoting gender diversity. Reviewed Truth and Reconciliation Commission Report and identified priority actions. Action Plan in development. This KPI is focused on 30 by 30 and promoting gender diversity. There is no KPI that deals with the emerging focus on engaging indigenous communities. As this area of focus develops, an additional KPI for year three may be warranted. 	Reviewed Truth and Reconciliation Commission Report and identified priority actions. Action Plan in development. <i>indig addi</i>	t on 30 by 30 and promoting gender diversity. at deals with the emerging focus on engaging unities. As this area of focus develops, an year three may be warranted.	
Clarify the association's regulatory role and responsibilities through ongoing communication and engagement with members and other stakeholders.	 Updated contacts with Authorities Having Jurisdiction ("AHJs") to ensure that disciplinary notices are disseminated to those that are most directly affected. Disciplinary notices publicized through Innovation, eNews, and through print newspaper ads in the relevant regions. Improved website layout to ensure that when searching the member directory, the disciplinary notice is directly accessible resulting in an increase to page views of 216%. Five free webinar sessions on the topic of our regulatory role were offered drawing 1,522 participants. As part of the member Engagement Strategy, held a focus group with key volunteer leaders, conducted seven engagement sessions across the province, published a feature article in Innovation and developed a whiteboard video. 	 Member survey indicates improved alig Geoscientists BC's responsibilities and n 73% of members who participated in indicated an improved understandin mandate. Note: Member survey currently in fir Updated statistics will be provided a Overall, this KPI is on track. 	
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Implement the new brand and increase awareness of the high standards that engineers and geoscientists in BC must meet.	 The association's rebrand was honoured as one of the most effective rebrands in the 2018 REBRAND 100[®] Global Awards, along with some of the world's biggest brands, including Cadillac, Hewlett-Packard, Siemens, Merck, McAfee, SAP, and GE. We were one of two Canadian brands recognized, and the only one from British Columbia. 	 No KPI Specified Advertising Effectiveness: One in three BC residents recalls see 87% said the ads communicated that the public safe. 75% said the ads helped them under geoscientists do. Awareness of the association increasive year). 	



6.6 – Appendix A



Audience Public

Why this Group is Important

Parents, teachers, career counsellors, coaches, aunts and uncles will be the ones who first explain to kids "what an engineer does" and eventually encourage young men and women to consider engineering when they apply to post-secondary education. It's important that they be informed in the diverse options as much as the students who will be applying.

What We Heard	• Need to enhance public perception of engineering and address stereotypes
	 Show how engineering is a helping profession
	• Create more awareness of the diversity of professions within engineering
	• In previous public opinion survey (2011), the perceived barriers to teens
	pursuing engineering were: requiring a high aptitude in mathematics, education
	tuition costs, profession is too academically challenging, lack of awareness, and
	difficulty to get into educational institutions
	 2018 public opinion survey asked the likelihood of recommending engineering as
	a career choice for young women: 33% indicated Very Likely, 47% indicated
	Somewhat Likely, 16% indicated Not Very Likely and 4% indicated Not at all Likely
Our Current	 National Engineering and Geoscience Month campaign (includes media)
Activities	 International Women in Engineering Day (full page ad in Vancouver Sun and
	opinion editorial)
	 New brand and marketing material showcasing diversity of profession and
	diversity of disciplines
Potential New	• Enhance public perception of engineering and the diversity of disciplines within
Activities	the profession (through media)
	 Raise the profile of engineering as a career of choice (media)
	 Create short videos of women in STEM (heroes)
	 Target social media campaigns / videos at teenaged girls
	Partner with others
Potential	Engineers Canada
Partners	Sister Associations
	Girl Guides
Potential	Public Opinion Survey
Metrics	



Audience Girls, Parents, Teachers, Counsellors, Public

Why this Group is Important

Our "target" 30 by 30 group for the year 2030 will be starting grade 8 in the fall of 2018, so we need to reach these kids as part of our strategy.

What We Heard	Need more media to support outreach efforts (for when a female presenter is		
	not available)		
	 Need formal training for career awareness volunteers 		
	 Need to form partnerships with other organizations 		
	 Need to educate teachers, parents and counsellors 		
	 Need to work with school districts 		
	 How can we adapt the curriculum? 0 	Can we work with the Ministry of Education?	
	 What more could we do at the high 	school level?	
	 Increase scholarship opportunities (s 	imilar to Nova Scotia program)	
	 Participate in Parent's Nights at school 	ols	
Our Current	 Career outreach visits reach 8,000 ki 	ds each year with active participation at	
Activities	branch level		
	 Career Awareness resources & tools include a presentation template, video, 		
	activity kits, promotional items, and	a career brochure for high school students	
	 Hold an Annual Science Games 		
	 Sponsor events and provide grants t 	o various science camps	
	Coordinate participation at various of the second sec	ommunity and special events throughout	
	the province (Around the Dome, GU	EST, Ranger Revolution, Science Literacy	
	vveek)	nue linking diageth, to new DC Curriculum	
	New tesson plan development under	way linking directly to new BC curriculum	
	New tracking tools in development opportunities	to better assess impact of engagement	
Potential New	 Increase the total number of career 	awareness volunteers (include MIT's)	
Activities	 Increase the number of female caree 	awareness volunteers	
	Fnhance career awareness resource	s and tools	
	 Increase high school level engageme 	nt	
	 Develop key messages for varying au 	idiences	
	 Introduce a training program for car 	eer outreach volunteers	
	 Partner on a Train the Teacher Progr 	am (e.g. UBC)	
Potential	Universities	Science Teacher Association	
Partners	Science World	• BCTF	
	 Other groups (camps) 	• Girl Guides	
	Sister associations	• YWCA	
	Volunteers		
Potential	• # of career outreach visits by female presenters (and total #)		
Metrics	 # of clicks on career related web pages 		
	• New tracking tool for engagement a	ctivities	



Audience Students, Professors, Counsellors, Public

Why this Group is Important

With a noticeable drop between 1st and 4th year in the percentage of women studying engineering, we want to find out why and see if there are ways we can help these young women stay with engineering and find a meaningful career upon graduation.

What We Heard	 There is a drop off of female engineering students from 1st year to 4th year Student survey from Canadian Federation of Engineering Students revealed that female engineering students experienced a higher level of stress than males Are there opportunities for co-op programs to pair female students with female role models? Can we develop a career map to show young women the career progression and the different paths to engineering (consulting, industry, your own company)? Need to better support transition to EIT / how can we work with universities to do this? Need to better communicate the benefits of becoming a MIT
Our Current	 Student Membership category
Activities	Host Student Industry Nights
	Presentations to University Students
	Student Advisory Group
Potential New	Participate in university orientations
Activities	 Increase support for transition from Student Member to Member in Training
	• Explore ways to simplify transition process from student to MIT
	• Explore mentorship opportunities for students with young MIT's
	Consider student member volunteer incentives to build up networks
	Evaluation collaboration with caroor councellors and universities
Dotontial	
Potential	• Universities
Partners	• Industry
	Alumni groups
Potential	 # of female students enrolled in engineering (and total #)
Metrics	 Conversion rate of Student membership to EIT
	 Retention rates from 1st year enrollment and 4th year
	 # of presentations to students
	 # of scholarships to female students (and total #)



Audience Students, Employers / Industry

Why this Group is Important

Much of our feedback has shown that women thrive in a supportive environment with peer relationships and networks, many of which can be formed during this early stage in their careers.

What We Heard	 Develop resources such as "When You're ready to Apply for Professional
	Licensure" so that women don't wait until they are 120% prepared
	 Create peer meetups (ex. Coffee chats) to establish support groups
	• Work with other STEM groups to offer discounts for MITs so they can try out a
	range of groups and find peers that resonate with them
	 Explore new mentoring relationship formats
	 Incentivize volunteering to help MITs establish networks (e.g. free division
	membership)
Our Current	 Member in Training Program
Activities	 Accredited Employer Training Program
	Mentoring Program
	 Professional Development Events
	Branch & Division Events
	Annual Conference
Potential New	 Develop a Women focused stream for the mentoring program
Activities	 Establish new mentoring formats such as one-to-many or many-to-many
	 Explore opportunities to work with other STEM groups
	 Offer more professional development opportunities targeted to MITs
	 Explore ways branches or divisions can help support peer meetups
Potential	Branches
Partners	• Divisions
	• 30 by 30 Champions Group
	 Women in STEM groups such as:
	○ WWEST
	○ CCW
	○ ACEC-BC
	○ U40 (local groups)
	o iWIST
	 Women in Mining
	○ Geeky girls
Potential	 # of female EITs (and total #)
Metrics	 # of PD events targeted to MIT's
	# of female EIT's enrolled in mentoring program (and total #)



Audience Members, Employers / Industry

Why this Group is Important

These women will be the role models, mentors, outreach volunteers and inspiration for those following behind them. They will also face their own challenges whether related to workplace culture, or returning to the profession after a leave of absence and it is important to support them in their chosen career while also setting an example for future generations.

What We Heard	Need to address workplace culture
	o work life balance
	o parental leave (managing transitions, the stigma attached to taking leaves)
	o pay equity (pay transparency)
	 Improving on ramps back to profession
	o tools for employers
	• Create a CEO pledge to support diverse and inclusive work places, similar to the
	Minerva Foundation
	Advocate for gender equity in senior leadership and boards
	• Look into why women make the same as men until the 500 level of experience
	and how we could address that
	• Need a better web presence with tools, resources and regular updates
	Collaborate with other organizations
	 Recognize organizations that support diversity
	• More communication on the importance of diversity (cultural/ societal benefit
	and business benefit)
	Consider running a BC survey like OSPE
	 Look at how corporate regulation can potentially be used as a conversation
	starter
	• In OSPE's survey, mentoring, networking and professional development were the
	top resources sought by women in support of their career
	 More research on why women leave the profession
	Learn from the experience and success of other professions
Our Current	 Human Rights & Diversity Guideline
Activities	Mentoring Program
	 Professional Development Events
	Branch & Division Events
	Annual Conference
	 Women in Engineering and Geoscience Division
	 30 by 30 Champions Group
	 Engendering Success Research Project (7 year study with UBC and SFU)
	Volunteer program
Potential New	 Women focused stream for mentoring program and recruit more female
Activities	mentors
	 Explore opportunities with WIEG division in providing support to members
	• Expand professional development offerings related to diversity and inclusiveness

	 Strengthen communication on the importance of diversity and the real and
	perceived barriers that exist through frequent articles in association publications
	• Enhance web presence by sourcing and developing tools and resources for
	organizations to improve diversity and improve workplace culture
	Recognize organizations that support diversity by profiling them in publications
	• Explore opportunities with OOM (raising awareness of hest practices in support
	of diversity and inclusion)
	Defending and inclusion)
	• Raise the profile of women engineers (through publications and speaking
	opportunities)
	 Proactive outreach to other organizations for collaborative opportunities
	 Improve "on ramps" to the profession (fee structure for maternity and parental
	leaves or extended leaves and return to practice provisions)
Potential	• Division
Partners	• Engineers Canada
	Sister associations
	• ACEC-BC
	Employers
	Women in STEM groups
Potential	 # of tools and resources available
Metrics	 # of clicks on diversity section of website
	• # of articles
	• # of female mentees
	• # of female mentors
	• Retention #'s
	• # of female members