

# Guide to Professional Practice

## *Electrical Technology Services for Building Projects*

Applied Science Technologists and Technicians of BC (ASTTBC)

*Approved by ASTTBC Council, September 24, 2015*

*(ASTTBC Council Resolution 15-71)*

*Comment on Rights to Independent Practice: ASTTBC is defining, with this Guide, the services that are within the competencies of ASTTBC members. ASTTBC acknowledges and reminds its members and others that while ASTTBC members may be fully competent to perform these services, the regulatory framework such as the BC Building Code and the Vancouver Building Bylaw may not fully recognize ASTTBC members' competencies. ASTTBC has managed to achieve for its members many areas of Qualified Professional recognition and will be seeking QP recognition for the areas of practice defined in this Guide. This guide will be updated when the regulatory framework is amended to provide further recognition of ASTTBC members as Qualified Professionals (QP).*

## 1. DEFINITIONS

**AScT** means a person who is certified and registered an Applied Science Technologist member of ASTTBC.

**Members** means Persons regulated under the Applied Science Technologists and Technicians Act of BC as an Applied Science Technologist or a Certified Technician.

**CTech** means a person who is registered as a Certified Technician member of ASTTBC.

**Direct Supervision** (as defined in the Engineers and Geoscientists Act) means the responsibility for the control and conduct of the engineering or geoscience work of a subordinate

**Registered Professional** (as defined in the BC Building Code) means “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.”. A similar definition is provided in the National Building Code and the City of Vancouver Building Bylaw.

## 2. PURPOSE

This Guide to Professional Practice to outline Electrical Technology Services for Building Projects (the “Guide”) has been adopted to assist ASTTBC members understand and provide services and take professional responsibility within their field, the definition of scope of practice and legal limitations. While not exhaustive, the Guide provides a context for the type of technical functions, which a member may be qualified to carry out. The carrying out of additional professional services is permitted under this Guide provided the services are consistent with the requirements of each project and this Guide.

This Guide recognizes that members have attained, by virtue of a combination of education, training and experience, competencies which enables them to apply known engineering technology principles and techniques to the solution of practical engineering technology problems of varying complexity within the ASTTBC definition of scope of practice, this Guide, and other applicable laws.

Members are required to comply with the ASTTBC *Code of Ethics*, any Guide to Professional Practice approved by Council, the Professional Engineers and Geoscientists Act, the BC Building Code and the Vancouver or other applicable local Building Bylaw. It is important to note that Letters of Assurance assigning professional responsibility and accountability for electrical design and field review services for buildings covered under the BC Building Code and the City of Vancouver Building Bylaw can only be signed and sealed by a Registered Professional as defined in the BC Building Code, the National Building Code and the City of Vancouver Building Bylaw.

A member generally works within a team of professionals, which may include technologists, technicians, engineers, building officials, architects or other technical and administrative staff. The role of the member will vary depending on the size and complexity of the facilities being designed in the project. There is no restriction on who may ‘manage’ professional services, with the understanding that the appropriate registered professionals are involved in carrying out the work.

A member may be the team leader of a project, which is more complex than the scope of practice contemplated by this Guide when responsibility is assumed by an appropriately qualified and registered professional.

A member must be able to recognize any unique characteristics, which, due to their complexity or other issues, are beyond their field of expertise and require the involvement of another qualified professional. Consideration of such matters is especially critical when the risk to the public is increased by factors related to the type and size of project and the degree of impact on public health, safety and the environment.

### **3. AREA OF PROFESSIONAL PRACTICE**

A member may provide professional services for the electrical design and field review of buildings that is carried out within the terms of this Guide. The Canadian Electrical Code and the BC Building Code are examples of a range of codes and standards related to electrical design services for building projects that can be used as resources in the carrying out of such services. A member may carry out, and take professional responsibility for their services in one or more of the technical functions listed below. Currently, if a member provides services within Part 3 of the BC Building Code or Vancouver Building Bylaw, they must only provide these services while under the “direct supervision’ of a Professional Engineer, Licensee, or limited licensee as defined in the Engineers and Geoscientists Act. This applies to renovations as well as new building projects.

A member will normally provide services in one or more of the following building types:

- Commercial
- Health Care
- Industrial
- Institutional
- Municipal
- Residential

The member providing electrical design services may also be involved in other project related activities such as:

- preparation, evaluation and adjudication of tenders
- appointment of contractors
- project field review, supervision and contract administration
- management of a project, or aspects of a project
- planning and scheduling
- teaching and mentoring

A member shall take note of practice restrictions incorporated in other professional legislation and govern themselves accordingly. The Professional Engineers and Geoscientists Act is of particular importance. Take note of Section 1 (definition of “practice of professional engineering”), Section 2 (exemptions from the Act where working under direct supervision of a Professional Engineer or Engineering Licensee) and Section 22 (prohibitions on practice)

## **4. ELECTRICAL TECHNOLOGY DESIGN SERVICES**

This Guide recognizes the services that ASTTBC members have traditionally carried out in the provision of electrical design and field review services for building projects. Under the authority of the *ASTT Act and Regulations* and this Guide, a member may carry out one or more of the services itemized under Section 3.

A member can apply judgement in the selection of the applicable code or standard to be used.

The application of an appropriate code or standard to one component of a service does not permit completion of other components if there are not the appropriate codes or standards in place which can be referenced. The member is advised to identify, in their design, the code and/or standard used in carrying out the relevant service(s). When working under the supervision of a Professional Engineer or Engineering Licensee, the member must identify the code and/or standard so that the supervising professional can determine its applicability.

Depending on the size and complexity of the facilities being designed, the member may be called upon as the designer of a particular technical function as in those listed in Section 3, or might alternately work as a member of a team.

This Guide does not deal with electrical technology design services outside of those required as part of the electrical services for a building. For example, electrical services for industrial processes or controls are not covered by this Guide.

ASTTBC members usually complete building design services up to distribution voltage levels as provided by the electrical utility (usually no greater than 35kV). The services a member may provide include:

- a) Design of distribution boards for three phase power requirements, which includes the sizing of busbars and the correct selection of equipment based on fault level calculations.
- b) Selection of fuse and protective switchgear to be installed in distribution equipment, including characteristic tests, the selection of the correct operating characteristics to meet with particular applications and determination of characteristic time and current operational curves.
- c) Design and specification of switchgear and panels for distribution.
- d) Service entrance design.
- e) Design of lighting systems including, for example, the calculation of illumination levels and visual comfort probability.

- f) Design of power cable networks, calculation of load levels, voltage drops and diversity factors including correct selection and sizing of cables to meet particular applications and fault levels.
- g) Design of motor control centres including motor control systems, the sizing of busbars and the correct selection of insulation and equipment based on load and fault level calculations.
- h) Design of under-floor heating which includes the specification and evaluation of the control system.
- i) Design/selection of energy management systems and energy metering including the evaluation of metering systems and tariffs.
- j) Design and selection of power failure automatic generating plant.
- k) Selection of Surge protection and Harmonic equipment.
- l) Lightning protection and grounding system design.
- m) Design and specification of control, network and communication systems.
- n) Design and specification of fire protection, security and alarm systems and emergency lighting equipment
- o) Field reviews of electrical installations to determine that the constructed works are in general compliance with the design intent.

## 5. STAMPING

An ASTTBC member must affix their stamp, with signature and date, to all designs and reports in a manner consistent with the current ASTTBC policy on stamping. Where such work is a part of a total service or product, the member will qualify the application of the stamp with respect to which portions of the work have been undertaken without supervision.

Where a member has completed work under direct supervision, the member will affix their stamp only for those aspects of the work completed by the member. The supervising Professional Engineer, Engineering Licensee or other supervising professional will affix their stamp clearly noting their role as the professional providing the direct supervision and taking responsibility for the work.

## 6. PROFESSIONAL LIABILITY

ASTTBC members shall hold paramount the safety, health and welfare of the public, the protection of the environment and the promotion of health and safety within the workplace. Recognizing that errors and omissions do occur, members are encouraged to carry errors and omissions and general liability or other insurance appropriate to the circumstances. Members may access the ASTTBC group plan or seek third party coverage. The onus is always on the member to make the decision as to what best serves the interests of the public and protects the member. At all times the member will disclose to their client as to whether or not they have errors and omissions insurance and if insurance is in place the limits of that insurance.

## 7. ASTT ACT AND REGULATIONS & THE PROFESSIONAL ENGINEERS AND GEOSCIENTISTS ACT

The *Applied Science Technologists and Technicians Act (ASTT Act)* regulating members of the Applied Science Technologists and Technicians of BC (ASTTBC) calls on the association, in the statement of ‘Objects’, to ***“regulate standards of training and practice of and for its members and to protect the interests of the public”***.

The *ASTT Act* protects the titles Applied Science Technologist (AScT) and Certified Technician (CTech) and in this way informs the public as to those registered with, and governed by, ASTTBC.

The *ASTT Regulations* (S4.1(a)) pursuant to the *ASTT Act* defines a member’s scope of practice, as follows:

*A certified member may, in accordance with his or her academic qualifications, training and experience, provide services, carry on work and accept responsibility in an approved discipline for: inspecting, sampling, evaluating, testing, measuring, troubleshooting, servicing, repairing, maintaining, designing, manufacturing, installing, implementing, reporting on, preparing plans and specifications for, or directing the construction, technical inspection, maintenance or operation of, any structure, work or process, that,*

- i) safeguards life, health, property, environment, public interest or economic welfare, and,*
- ii) which is accomplished through the application of codes, standards and generally recognized procedures and practices appropriate to the endeavour.*

The *ASTT Regulations* (S4.1(b)) defines the disciplines in which members are registered:

*A certified member shall be registered and is entitled to practice in the following approved applied science technology disciplines:*

*Biological Science, Biomedical Engineering, Building, Chemical, Civil, Electrical, Electronics, Environmental, Forest Engineering, Gas and Petroleum, Geomatics, Information, Metallurgical, Mechanical, Mining, and any other discipline approved by Council. Specialties within each discipline may be approved by Council.*

The *ASTT Regulations* (S4.3) references a Code of Ethics and Professional Practice Guide:

- a) In the provision of work and services a certified member or certified registrant must comply with the Code of Ethics approved by Council.*
- b) A certified member or certified registrant shall also comply with any Professional Practice Guide as may be approved by Council.*

Section 2(7) of the Professional Engineers and Geoscientists Act permits a person to assist in the performance of any professional service or work of the kind described in the definition of ‘professional engineering’ if a Professional Engineer or Engineering Licensee directly supervises and assumes full responsibility for the service or work.

## **8. REFERENCES**

The following documents are suggested as reference material:

- *ASTT Act & Regulations*
- *ASTTBC Code of Ethics*
- *Professional Engineers & Geoscientists Act*
- *Codes and Standards appropriate to the circumstances, eg BC Building Code and Vancouver or other applicable local Building Bylaw*
- *APEGBC’s Guidelines for Electrical Engineering Services for Building Projects*

## **9. LIMITATIONS**

Every effort has been made to ensure the accuracy and completeness of this Guide. Any error or omission does not relieve a member from making decisions and assuming professional responsibility appropriate to the circumstances.

Revision History

*Approved by ASTTBC Council, September 27, 2007*

*Revised May 22, 2008 to include reference to the Engineers & Geoscientists Act*

*Amended May17, 2014 to address APEGBC Concerns*

*Amended to reflect September 9, 2015 SME Elect Guide Review.*

*Amended to ADD definitions – for review September 20, 2015*

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