

Guide to Professional Practice

Mechanical Systems Technology Services for Building Projects Guide Applied Science Technologists and Technicians of BC (ASTTBC)

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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 Mechanical Systems 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 mechanical 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 mechanical systems design and field review of buildings that is carried out within the terms of this Guide. The American Society of Heating and Refrigeration Engineers (ASHRAE) Standards, Sheet Metal & Air Conditioning Contractors’ National Association (SMACNA), American Society of Plumbing Engineers (ASPE) Handbooks, National Fire Protection Association (NFPA) Standards and the BC Building Code are examples of a range of codes and standards related to mechanical 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.

The normal services provided, is usual to categories of buildings identified in jurisdictionally acceptable building codes.

The member providing mechanical systems design services may also be involved in other project related activities such as, but not limited to:

- Project Fee Proposals
- 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
- Coordination with Authority having Jurisdictions as required
- Review of submittals and shop drawings
- Preparation of Specifications
- Communications with clients and other consultants
- Quality Control of projects

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. MECHANICAL TECHNOLOGY DESIGN SERVICES

This Guide recognizes the services that ASTTBC members have traditionally carried out in the provision of mechanical 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 mechanical technology design services outside of those required as part of the mechanical services for a building.

Following is a description of specific technical functions a member may carry out as part of the overall mechanical design of a building. A prescriptive code or standard is required to be in place in order for a member to take professional responsibility for a particular technical function or an aspect of a particular technical function identified below, but not limited to:

- a) Design of heating, ventilation and air conditioning systems
- b) Design of plumbing systems
- c) Design of building mechanical systems controls
- d) Design of low-pressure steam distribution systems
- e) Design of oil, natural and propane gas systems
- f) Design of non-medical compressed air and vacuum systems
- g) Design of fire protection / suppression systems in accordance with prescriptive standards such as NFPA standards reference in the BC Building Code, e.g./ NFPA-13, NFPA 13D, 13R and 14. Designers shall refer to ASTTBC's Guide to Professional Practice: Fire Protection Engineering Technology Services for Building Services.
- h) Field reviews to determine constructed works comply with the prescriptive code or standard of the particular technical function carried out and the design intent
- i) Project and construction management
- j) System balancing
- k) Systems commissioning
- l) Measurement and testing
- m) Quality Control and Assurance
- n) Quality Management principles
- o) Assessment and auditing of existing systems
- p) Maintenance programming and planning
- q) Energy modeling in conjunction with the Envelope Consultant, Architect, etc., and in accordance with applicable energy standards and codes such as ASHRAE 90.1 and National Energy Code Standards.

6. STAMPING

An ASTTBC member will 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 will affix their stamp clearly noting their role as the professional providing the direct supervision and taking responsibility for the work.

7. 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.

Qualified 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.

8. ASTT ACT AND REGULATIONS

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 Guide to Professional Practice:

- 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 Guide to Professional Practice as may be approved by Council.*

9. 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, e.g. BC Building Code and Vancouver or other applicable local Building Bylaw*
- *APEGBC's Guidelines for Mechanical Engineering Services for Building Projects*
- *ASTTBC's Guidelines for Fire Protection Engineering Technology Services for Building Projects*
- *APEGBC's Organizational Quality Management (OQM) Manual and Guidelines*

10. 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.