Ontario Association of Architects

Practice Tip – PT.04
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Building Code Project Code Review

Summary

OAA members are responsible for ensuring their projects comply with the *Building Code Act* and the building code, and must not knowingly violate any federal, provincial, or municipal laws related to building construction, enlargement, or alteration. These obligations are set out in the regulations under the *Architects Act*. This Practice Tip provides general guidelines and steps to help members establish a structured approach to project code review. As each project is unique, members must tailor their review processes to align with the specific nature and requirements of their work.

Background

A systematic process for project code review can assist in the review and documentation of code matters through all stages of the design. Further, integrating project code review in the early phases of a project's development will also reduce the possibility of later code-related revisions to contract documents being required.

The process for code review is one aspect of an overall quality assurance program that should be integrated into the project's development. Comprehensive office procedures, best practices, and checklists can be of assistance in establishing and tracking project code requirements.

Code requirements that are recorded in a simple and standardized format should be available for review by all members of the project development team throughout the life of the project. Professional judgment will be required when developing the process for the recording and reviewing of code requirements for each project. Items such as the size and complexity of the project, the type of the construction proposed, the experience of the individuals involved in the design team, and the location of the project should be considered when adapting standardized office procedures for use on each project.

Building permits are issued or rejected based on the information contained in the permit application submission. To avoid delays in the processing of permit applications and to reduce the chance of applications being rejected due to incompleteness, practices should ensure all relevant code-related information is included on documents supporting the application for a building permit. Practice Tip PT.03 Building Code Data Matrices provides templates for the information to be provided, as applicable, on the documents supporting the application for permit.

As the code matrices only summarize the major requirements, members should identify and document all additional code items to be addressed and establish an appropriate method of recording the analysis of these code items and the requirements for the project. Checklist templates may be an efficient method to note code items common to various building types. However, review and customization of a checklist template will be required to meet specific practice and/or project needs.

The establishment of a systematic approach will assist practices in the review of code-related information to perform a building code analysis and develop the information to be included on documents supporting the application for building permit.

Suggested Procedure

It is good practice for the OAA member(s) exercising personal supervision and direction of the preparation of designs to consider:

- establishment and implementation of or the adherence to office policy on the use and updating of checklists or other form of documentation for project code review;
- establishment and implementation of procedures to document a comprehensive code analysis and to update code requirements for projects;
- establishment and implementation of the results of the code analysis in the drawings and specifications for the project (as the building code typically states minimum dimensional requirements, members should consider construction tolerances when translating code requirements to the drawings and specifications); and
- transfer of appropriate portions of the code analysis to the Building Code Data Matrices for the project. Refer to Practice Tip PT.03.

It is good practice for the OAA member assigned to each project to:

- consider the manner in which staff will be directed, code requirements documented, and work reviewed related to code requirements, taking into account the size, scope, and complexity of the project;
- set up a comprehensive checklist or other form of documentation for each specific project—this may be based on a previously developed template customized for the specific project, and identifying the code items that may or may not be appropriate to the various stages of development for each project will be useful;
    - It is suggested OAA members review the Canadian Handbook of Practice (CHOP), Chapter 6.4: *Appendix J – Checklist – Life Safety Information to Include on Drawings: Architectural,* which provides an overview of the life safety items that should be included on architectural drawings, offering a good road map to the associated code items that will be required to review. As this checklist is focused on life safety items, members should ensure all other code items applicable to the project are also reviewed, including Energy Efficiency, Health Requirements, and Barrier-Free Design. Further, members should review and coordinate Appendices K, L, and M with consultants regarding life safety information to be included on Structural, Mechanical, and Electrical drawings;
- obtain a current copy of applicable municipal bylaw(s) and application requirements for the building permit pertinent to the location of the project—determine the extent of information that may be required on documents supporting the application for the building permit; and
- review all appropriate code sections to determine the scope of code-related matters for the project and develop a suitably detailed analysis document to record the relevant information and code-related decisions made pertinent to the project.

The process, as outlined below, does not address all aspects of code compliance for every building type. Instead, the process is intended to act as a general guide to project code review. A detailed review of code requirements will be required and specific code requirements should be recorded and communicated as needed. A more detailed project code review may be appropriate early in the design process to take into account the specific requirements of some project types or the preferences of the project team.

1.0 Schematic Design Phase

Develop a general outline of items that affect building locations, physical layout, and circulation patterns for the building(s) and site. Consider the following:

- building(s) location, siting, and fire fighter access;
- building configuration and area;

- Importance Category and construction type;
- building occupancy(ies) and occupant load;
- spatial separation (e.g. unprotected openings and limiting distances) and fire separation requirements;
- exiting and washroom requirements;
- barrier-free design;
- fire suppression systems;
- use of combustible construction materials;
- resource conservation and energy efficiency; and
- presence of hazardous materials.

Record the code analysis and communicate project code requirements to team members. Establish a methodology to permit the continued updating, development, and communication of project code review. Complete the review of code items appropriate for the project and the current level of development. Supplement the information with any additional project code details applicable to the project. Calculate statistical information in more detail once the design is resolved. Review earlier assumptions and adapt designs when required.

Invite consultants to review stated code requirements and to state the schematic code requirements relevant to their disciplines at this phase.

Note any project assumptions or decisions that are close to building code limits and determine if it is likely to go over or under that limit as the design progresses. For example, if the building area is close to 600 m^2, is it likely to get larger and require design as a Part 3 building or get smaller and be allowable as a Part 9 building? Similarly, is the occupant load likely to require a second exit or doors swinging in the direction of exit travel?

2.0 Design Development Phase

Review schematic design documents and verify that previously identified project information and code requirements remain applicable.

Confirm the information contained in the project code review is appropriate for the level of design detail, the understanding of building systems, and the selection of construction materials to date. Continue the development of detailed plans, preliminary building sections, outline specifications, and the project code review. While refining the code requirements reviewed in the schematic design phase, consider the following expanded list of code issues:

- building(s) location, siting, and fire fighter access;
- building configuration and area;
- Importance Category and construction type;
- building occupancy(ies) and occupant load;
- spatial separation (e.g. unprotected openings and limiting distances) and fire separation requirements;
- exiting and washroom requirements;
- barrier-free design;
- fire alarm and fire suppression systems;
- use of combustible construction materials;
- resource conservation and energy efficiency;

- compartmentalization and safety requirements within floor areas;
- high building requirements (if applicable);
- additional seismic and wind load requirements (if required);
- mezzanine and interconnected floor space requirements;
- service spaces;
- health requirements;
- acoustic separation/sound transmission requirements for interior partitions and floor assemblies;
- lighting and emergency power; and
- alternative solutions (if applicable).

Review the design and updated project code review with the client and municipal or other regulatory officials when appropriate, for example as part of the Site Plan Approval process.

Complete the review of code items identified as being appropriate for this stage of design development. Consider the following suggested procedures:

- confirm occupancies, occupant loads, exit capacities, and compartmentalization before verifying that travel distances and exit capacities are adequate;
- confirm building classification, major occupancy separations, structural fire resistance ratings, and exterior wall constraints prior to finalizing material and system selections;
- review methods of compliance toward resource conservation and minimum energy efficiency requirements—coordinate with MEP consultants to perform preliminary calculations to confirm specified systems and materials can meet efficiency requirements; and
- continue to review with consultants the stated code requirements and the code requirements relevant to their disciplines at this phase.

Minimize potential conflicts in the development of construction documents by preparing a comprehensive list of all code requirements at the completion of the design development phase.

3.0 Construction Document Phase

Review and verify that the design development documents prepared to date are in keeping with the project code review.

Continue the development of building details, specifications, and the project code review. Complete the review of code items appropriate for this stage of documentation. Consider the following code requirements:

- openings in fire separations and required closures (including fire and smoke dampers);
- firestopping requirements;
- stair, ramp, handrails, and guard detail requirements;
- door, window, and hardware detail requirements; and
- flame-spread ratings of interior finishes.

Establish a list of submissions that will be required from the contractor to demonstrate the adequacy of construction materials, contractor qualifications and any test procedures that must be submitted to Chief Building Official. Summarize these requirements in the construction contract documents.

Include a summary of code requirements in the construction contract documents by entering the required information from the project code review into the appropriate code matrices (refer to PT.03). Where appropriate, supplement the Building Code Data Matrix with a more detailed summary of specific code requirements for each portion of the building. The expanded recording of code requirements and detailed

calculations will assist the building officials to determine code compliance when reviewing the application for building permit.

Graphically demonstrate pertinent code features such as fire separations, fire resistance ratings, travel distances, exit capacity, and barrier-free paths of travel on plans, key plans, and/or details. The graphic information will assist the contractor, trades, and inspectors in the construction and review of the work.

It is recommended that a final review of the documents, the Code Data Matrix, and pertinent project records relative to building code matters take place prior to sealing and signing the documents supporting the application for building permit.

Particularly for large projects, it is common to include a detailed building code report with the application for permit, often prepared by a code consultant. OAA members should review the building code report, at all applicable milestones, to confirm the interpretation of the code requirements applicable to the project. Members should then confirm the requirements from the report are integrated accordingly into the drawings and specifications.

It is recommended to keep records of all comments received from the Chief Building Official and responses provided during the building permit process. The issued building permit should also be kept on file.

4.0 Contract Administration Phase

Review the roles and responsibilities of the client, contractor, and certificate of practice (CoP) holder as outlined in the building code and the *Architect's Act*. Review the Canadian Handbook of Practice (CHOP) and PT.05 General Review – Building Code and Non-Code Related Matters for further guidance on general review.

Continued code review and analysis will be required to be performed during the tender and contract administration phase for issues such as proposed substitutions and owner requested changes that may have code implications.

It is therefore good practice to manage documents representing matters governed by the building code and which are generated after the issuance of the building permit (e.g. addenda, change orders, and site review reports that will be submitted to the chief building official) in a manner similar to that for the documents supporting an application for building permit.

References

Ontario *Building Code Act,*

Ontario Building Code,

National Building Code,

Canadian Handbook of Practice (CHOP)

Practice Tip PT.03 Building Code Data Matrices

Practice Tip PT.05 General Review – Building Code and Non-Code Related Matters