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BULLETIN 2001-007-BU

APRIL 19, 2007

(Revised)

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## STRUCTURAL DESIGN DRAWINGS

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Concern has been raised with the quality and completeness of structural design drawings submitted for building permit. In addition, cases have arisen where the structural concept review has not been completed at the time of execution of the letters of assurance. Since June 1, 2001, the City has requested for submission of a letter directly from the concept reviewer, attesting to the satisfactory completion of the concept review. This letter should follow the recommended format proposed by APEGBC (attached). We would also request that the reviewer carry out a general overview of the structural design calculations to satisfy themselves that they are sufficient to support the design and confirm that the in-house design check required under the APEGBC quality management guidelines has been completed. It is important to recognize that concept reviews are intended to supplement, but not replace, in-house design checks.

The information required on structural drawings is listed in Article 2.2.4.3 of Division C of the Vancouver Building By-law (VBBL) as follows:-

- a) *the name and address of the person responsible for the structural design,*
- b) *the date of issue of the Code and standards to which the design conforms,*
- c) *the dimensions, location, and size of all structural members in sufficient detail to enable the design to be checked,*
- d) *sufficient detail to enable the dead loads to be determined, and*
- e) *all effects and loads, other than dead loads, used for the design of the structural members and exterior cladding.*

Additional requirements are referenced in Part 4 of the code which are applicable to the specific structural material(s) with which the building is constructed. For instance, structural steel designs are required to conform to CSA S16.1 which outlines the requirements for the preparation of design drawings under Clause 4.1. This includes the following statements:-

*"Design drawings shall be drawn to a scale adequate to convey the required information. The drawings shall show a complete design for the structure with members suitably located and designated, including such dimensions and detailed description as necessary to permit the preparation of fabrication and erection documents. Floor levels, column centres, and offsets shall be dimensioned. The term "drawings" may include computer output and other data."*

Similar requirements are to be found in other design standards referenced from Part 4 of the VBBL. It is also important that all governing loads, shears, moments and axial forces including pass through forces be designated where the fabricator is required to detail connections on the fabrication drawings. The drawings should also contain all information required by the fabricator to meet the detailing requirements of Clause 27 of CSA S16.1- Seismic Design Requirements, including all relevant design criteria and conceptual details of typical connections as required.

It should be noted that this information is to be shown on the structural drawings bearing the seal and signature of the structural engineer of record (SER) for the project. It may not be omitted on the basis that it could be added from drawings prepared by others. To do so invites conflict and errors, as the

SER would lack adequate control over the dimensioning and layout of the project on which the structural analysis and design is based.

As stated in the Appendix to CSA S16.1, Clause 4.1.1:-

*"Structural steel design drawings, by themselves, should show all member designations, axis orientations, and dimensions needed to describe the complete steel structure. It should not be necessary, in order to ascertain information on structural steel components, to refer to drawings produced by other trades."*

Drawings which do not meet the relevant code criteria for structural design drawings may be returned to the designer for correction while the permit application is placed on hold. Repeated instances of incomplete design from an SER may be referred to APEGBC.

D.H. Jackson, P.Eng.  
CHIEF BUILDING OFFICIAL

W. M. Johnston, P.Eng.  
DEPUTY CHIEF BUILDING OFFICIAL

**RECORD OF PROFESSIONAL STRUCTURAL CONCEPT REVIEW**

To: The Structural Engineer of Record

\_\_\_\_\_  
P.Eng. Name (print)

\_\_\_\_\_  
Firm Name (print)

\_\_\_\_\_  
Address (print)

Re: \_\_\_\_\_  
Project Name (print)

\_\_\_\_\_  
Address of Project (print)

\_\_\_\_\_  
Legal Description of Project (print)

The undersigned hereby records that an independent structural concept review of the project, based on the attached list of the structural plans and supporting documents prepared by the *Registered Professional* of the structural components, has been completed by this *Registered Professional*.

I certify that I am a *Registered Professional* as defined below

\_\_\_\_\_  
Name (print)

\_\_\_\_\_  
Date

\_\_\_\_\_  
Signed

\_\_\_\_\_  
Address (print)

\_\_\_\_\_  
Phone

(Affix PROFESSIONAL SEAL HERE)

(If the *Registered Professional* is a member of a firm, 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:

1. The above letter must be signed by a *Registered Professional*, which is defined to mean a person who is registered or licensed to practice as a Professional Engineer under the *Engineers and Geoscientists Act* in BC.
2. Concept review as used herein shall mean such reviews of the structural plans and supporting documents as described in the Guideline for Professional Structural Concept Reviews as prepared by the Association of Professional Engineers and Geoscientists of British Columbia (APEGBC) and which, in this *Registered Professional's* discretion, is considered necessary to fulfill the requirements of APEGBC Quality Management By-law 14(b)(3).
3. This letter is endorsed by the Association of Professional Engineers and Geoscientists of British Columbia.

# CHECKLIST FOR PROFESSIONAL STRUCTURAL CONCEPT REVIEW

RE:

The Structural Engineer of Record

\_\_\_\_\_  
Project Name (print)

\_\_\_\_\_  
P.Eng. Name (print)

\_\_\_\_\_  
Address of Project (print)

\_\_\_\_\_  
Firm Name (print)

\_\_\_\_\_  
Legal Description of Project (print)

\_\_\_\_\_  
Address (print)

| ITEM  | REVIEWED | REMARKS |
|---|----------|---------|
|   | Initials |         |
| 1) Design code loadings and serviceability limits                                 |          |         |
| 2) Material specifications and geotechnical recommendations                       |          |         |
| 3) Concept and integrity of the gravity load resisting system                     |          |         |
| 4) Concept and integrity of the lateral load resisting system                     |          |         |
| 5) Drawing completeness and continuity of load paths                              |          |         |
| 6) Design check of representative structural elements                             |          |         |
| 7) Review of representative structural details                                    |          |         |
| 8) Effects on adjacent structures (seismic clearance, snow build-up, foundations) |          |         |
| 9) Concerns discussed with the Engineer of Record                                 |          |         |

The Concept Review Engineer

\_\_\_\_\_  
P.Eng. Name (print)

\_\_\_\_\_  
Firm Name (print)

\_\_\_\_\_  
Address (print)

\_\_\_\_\_  
Date: (yy          mm          dd)

\_\_\_\_\_  
Signature