

## MEMBER ADVISORY: 2018-03

# Independent Reviews of Retaining Walls

May 31, 2018

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### BACKGROUND

Audits conducted under the Organizational Quality Management (OQM) Program have identified a common misconception that independent reviews of structural design, as required under *Bylaw 14(b)(4)*, only apply to structural engineering work.

### REQUIREMENT

All engineering/geoscience professionals must meet the intent of the quality management guidelines published by Engineers and Geoscientists BC. Furthermore, all OQM-certified organizations must have policies and procedures in place that meet the intent of quality management guidelines applicable to the engineering and/or geoscience product or services they provide.

Engineers and Geoscientists BC's *Quality Management Guidelines – Documented Independent Review of Structural Designs* states:

2.3 “*Engineering Professionals carrying out structural design must meet the requirement of Bylaw 14(b)(4) by having Independent Reviews of any structural designs they prepare carried out by another qualified Engineering Professional, before the documents are issued for construction. This QM guideline is intended to assist Engineering Professionals in establishing and maintaining Independent Reviews that meet Bylaw 14(b)(4)...*”

and

2.6 “*These obligations apply to Engineering Professionals acting in their professional capacities in all sectors where structural design is being carried out, when their work applies to or is used in any of the following circumstances:*

- *Ongoing engineering and geoscience work*
- *Projects with a defined start and finish*
- *Products and services requiring structural design*
- *Permanent or temporary structures including those related to construction*
- *Independently supported structures designed in BC such as retaining walls, large signage, and support towers*
- *Construction carried out by others*
- *Construction being carried out by the Engineering Professional's Organization's own forces*

- *Structural design carried out for use internally by the Engineering Professional's Organization*
- *Structural design carried out for others"*

## STANDARD OF PRACTICE

Retaining walls including but not limited to, gravity, piling, cantilever, anchored, mechanically stabilized earth (MSE), and geosynthetic reinforced soil (GRS) walls when over 3.0 m high or deemed to be high risk are included in the requirement to have documented independent reviews conducted by a qualified professional, as retaining walls fulfill the important structural function of safely retaining soil. Due to the number of issues with retaining walls, Engineers and Geoscientists BC is currently developing a practice guideline for retaining walls. This guideline is scheduled for released in late 2018 and will provide further guidance regarding independent review of retaining walls.

Until then, independent reviews of retaining walls in BC must be conducted in accordance with and meet the intent of Engineers and Geoscientists BC's *Quality Management Guidelines – Documented Independent Review of Structural Designs*.

Key points from the quality management guideline as they apply to retaining walls are as follows:

- 2.4 To comply with the Bylaws, Engineering Professionals must have established, or have access to, a documented QM process that includes having their structural designs independently reviewed by another qualified Engineering Professional before the documents are issued for construction.
- 2.9 This QM guideline is a minimum standard for Engineering Professionals. Failure to meet the intent of this QM guideline may be evidence of unprofessional conduct and may give rise to disciplinary proceedings by Engineers and Geoscientists BC.
- 3.3.1 The extent and level of detail examined in an Independent Review will vary, depending on the experience of the Independent Reviewer and the complexity and risk associated with the project. Questions to be considered when determining the extent of the Independent Review:
  - What are the consequences of errors or incompleteness in the engineering work?
  - How complex is the design and the product of the design?
  - Is the engineering innovative or does it incorporate departures from the previous practice?
- 3.4.3.1 Repetitive Design. The Bylaw exempts "each instance of repetitive designs of individual structural components" from Independent Review. However, to confirm the maintenance of design quality, the Bylaw requires an "initial" Independent Review of a typical component design with Independent Reviews at "intervals."
- 3.7.3 The extent of numerical checking and level of detail examined in an Independent Review will vary depending on the experience of the Independent Reviewer, the complexity and risk associated with a given structure, and the extent of concerns that develop as the Independent Review proceeds.

As per 3.4.3.1 above, retaining walls may fall under repetitive design. Where a retaining wall is deemed to be a repetitive design by the engineering/geoscience professional of record, this determination must be documented in the project file, complete with rationale for the determination, and reference to or copy of the independent review record of the design for which it has determined to be a repetition.

Authorities having jurisdiction (cities, municipalities, etc.) may have requirements that are more stringent than this advisory, in which case those requirements will apply.

For further information, please refer to Engineers and Geoscientists BC's *Quality Management Guidelines – Documented Independent Review of Structural Designs* available on our website at [egbc.ca/quality-management-guidelines](http://egbc.ca/quality-management-guidelines).