

RB06-051

BUILDING PERMIT AND GUARD REQUIREMENTS FOR RETAINING WALLS

Commentary / Relevant Facts:

Background

Building Regulations was part of a project sponsored by City of Calgary, Urban Development conducted from November 2005 to June 2014. The project looked at the overall issue of approval of retaining wall construction within the City of Calgary. The result is the *Retaining Wall Approval and Management Project*. This project determined that in order for the City of Calgary to fulfill its commitment under the Municipal Government Act and the Safety Codes Act there needs to be an increase in awareness that retaining wall approval is a vital part of the City's subdivision and development process and regulatory responsibility.

At this same time a letter was sent to Alberta Municipal Affairs (AMA) from City of Calgary, Building Regulations requesting clarification under the 1997 Alberta Building Code (ABC) of whether or not a retaining wall is considered a "building" and therefore governed by the requirements of the Alberta Building Code. The response received by AMA indicated that the ABC does indeed govern the construction of a retaining wall and therefore a building permit must be issued for its construction. As no revisions occurred in the 2014 ABC to change this interpretation, retaining walls are still interpreted as being governed by the ABC 2014.

It has been policy in the past that any retaining wall in the City of Calgary requires a building permit. However, it has been difficult to identify where retaining walls are built and coordinate City departments. The *Retaining Wall Approval and Management Project* now enables the City of Calgary to provide a coordinated approach to approval of construction of retaining walls within the City of Calgary.

Regulation Bulletin General Policy Statement

Unless stated otherwise, the Code references in this Regulations Bulletin are to Division B of the Alberta Building Code 2014 (ABC 2014). Regulation Bulletins do not overrule the ABC 2014 nor constitute a relaxation of the Code. They serve to clarify the Code in areas where the latter is ambiguous or does not cover a specific topic. Regulation Bulletins are City of Calgary clarifications for staff use to enable consistency in the application of the Code. Regulation Bulletins should always be read in the context of the appropriate requirements of the Code

Discussion:

1) The definition of a “retaining wall” as agreed upon in the *Retaining Wall Approval and Management Project* is as follows:

A wall structure that directly retains earth to support or protect property. It has potential third party damage and safety issues and/or problems and is not used solely for aesthetic purposes.

If a retaining wall provides stability to a building, it has to be engineered to comply with the requirements of the Alberta Building Code. If the retaining wall does not provide stability to a building it is still considered a structure and a “*building*” whose collapse may jeopardize public safety.

Since approximately 1975, the policy of Building Regulations Division has been to require any structure retaining over 1m of backfill material (irrespective of whether or not it lends support to a building) to have a building permit. This policy has served the public well and has generally been accepted in the construction industry.

2) If the top of the retaining wall is 600 mm or more in height above adjacent ground and is at or near a *public way*, an exterior passageway or a location where a large number of people will gather or pass through, that retaining wall has to be provided with a *guard* or a strongly constructed fence at the top. “At or near” generally means within 1.2m but is dependent upon the situation. This is consistent with the requirements for *guards* in balconies, decks, etc, and around construction sites (Division B, Articles 3.3.1.18, 9.8.8.1. and 8.2.1.3.). The height of the *guards* shall conform to the requirements in the current Alberta Building Code. The height of the *guard* must be measured from the top of the retaining wall to the top of the *guard* unless the *guard* is constructed flush with the face of the retaining wall such that there is no walking or climbing ledge between the *guard* and the retaining wall. A fence that is properly constructed so as not to be readily climbable can be considered as a *guard*. A chain link fence can be considered adequate construction for a *guard* for a retaining wall. Note that the Alberta Building Code defines a *public way* as a “sidewalk, street, highway, square or other open space to which the public has access, as of right or by invitation, expressed or implied”.(Division A, Article 1.4.1.2.)

3) Stepped retaining walls are generally used for multi-tiered garden terraces with each tier being retained by a retaining wall less than 1m high and therefore not requiring a Building Permit. Depending on the total height and slope of the retained earth, the entire slope could be unstable. This instability could cause a circular slip surface of failure (also known as the “cartwheel failure”) of foundation. Experience has shown that the slope as a whole is generally considered stable with a vertical rise of 1 to a horizontal run of 3. The steps and configuration of the retaining wall may also be considered under Division C, Sentence 2.4.2.1.(8) as a structure of a size and complexity that an engineer design is required.

4) A building permit may be required for repairs to an existing retaining wall that if constructed new, would require a building permit. The determination of the requirement for a permit will ultimately be that of a Safety Codes Officer. However, the following are examples of where a building permit may be required:

- a. When the surcharge or load on a retaining wall is either increased or decreased substantially
- b. When the surcharge or load on a retaining wall is removed
- c. When tie-backs for a retaining wall are damaged or replaced
- d. When elements of a retaining wall are replaced and those elements are a critical part of the support or reinforcing for other parts of the retaining wall
- e. When a retaining wall has failed.
- f. When a retaining wall is demolished

5) In order to receive a Building Permit application for a Retaining Wall, the structure must have received an address from the City of Calgary, Addressing. This will also indicate that the Tentative Plan for the subdivision has been approved. The documents submitted must then be examined by a Safety Codes Officer certified to at least Group A, Level 3 as determined by the Safety Codes Council. In keeping with policy on other types of Building Permits, the Development Permit must be released before the building permit is released.

6) Before a building permit may be issued Building Regulations must determine that the drawings submitted in support of the Building Permit are the same as the drawings that are submitted for other departments.

7) A retaining wall may be designed to include tie-backs. If the tie-backs are into adjacent property, an agreement with the landowner must be obtained to permit this. If the adjacent land owner is the City of Calgary, a copy of an indemnity agreement signed by the City of Calgary will need to be submitted to show that the City is aware of the construction of the tie-backs.

8) In accordance with Division C, Article 2.2.12.4. of the 2014 Alberta Building Code, there must be a copy of the drawings upon which the building permit is based located on site. This generally requires the owner to provide a copy of the drawings indicating examination by the City of Calgary on site. The inspections of Retaining Walls will generally occur after construction is complete and there is generally no enclosed space to provide for storage of the drawings. Therefore the owner copy of the drawings does not need to be on site for Retaining Wall permits only. These drawings do however, need to be made available by the owner/contractor for the inspector should they be required.

9) Building Permits for a retaining wall will be considered the same as other Building Permits are for cancellation. If there is not a request for inspection before 90 days the permit may be expired with notice to the applicant. However, the Safety Codes Officer in the field may check on the progress of construction. If there is no progress the BP may be extended for one further period of 120 days at the discretion of the Safety Codes Officer. This period is subject to change and both Building Regulations policy and provincial regulations should be checked to verify the time period.

10) Included with the Building Permit is a list of Building Permit conditions. These include the following:

- a. Requirement for engineer review during construction
- b. In accordance with Division C, Sentence 2.2.12.2(2), the owner must ensure that no harm or danger is caused the adjacent property either public or private.
- c. A request for inspection must be made upon the completion of the project through the City of Calgary Call Center at 311 (or 268 – CITY if calling from outside the City of Calgary). This request must be made at the same time that the required verification of compliance (C schedules) are submitted to the City of Calgary Building Regulations Division.

When the construction is completed the owner/contractor must request a final inspection. If the construction is complete and the verification of compliance is provided the file may be closed. However, prior to closing the file the Safety Codes Officer must also receive a copy of the Surface Approval as issued by City of Calgary, Urban Development from the contractor.

Conclusion:

1) All retaining walls retaining 1m or more of fill material, measured from grade on the lowest side to grade on the opposite side, require a building permit.

2) A retaining wall requiring a building permit shall be designed by a professional engineer registered to practice in the province of Alberta.

3) The following documents are to be submitted in support of the building permit application:

- a. Copy of approved Development Permit
- b. Address of the project site
- c. 4 copies of the design drawings (including site plans and cross sections) that have been stamped and signed by a professional engineer registered to practice in the province of Alberta (as per Division C, Sentence 2.4.2.1.(8)). The drawings must indicate property lines and the locations of any tie-backs into adjacent property
- d. A copy of the geotechnical report for the site(s) is to be submitted with the Building Permit application that has been stamped and signed by a professional engineer registered to practice in the province of Alberta. The report is required under the provisions of Part 4 of the Alberta Building Code for Subsurface Investigation. For small projects on single family dwelling sites this may not be required at the discretion of the Safety Codes Officer
- e. A copy of the A1, A2, B1 and B2 schedules from the professionals involved.
- f. A copy of an indemnity agreement if tie-backs into adjacent City of Calgary property is part of the design

2) If a retaining wall is attached to a building or if a building foundation is directly dependent upon the location and design of the retaining wall it is to be included in the building permit for the construction of the building. All other retaining wall construction will require a separate Building Permit.

3) All retaining walls serving more than one dwelling unit having a drop exceeding 600mm located along an exterior public way or near a place where the public may gather or pass through shall have a guard at least 1070mm in height complying with the requirements of Division B, Article 3.3.1.18 of the 2014 Alberta Building Code.

All retaining walls serving only one dwelling unit and having a drop exceeding 600mm shall have a guard not less than 900mm in height complying with Subsection 9.8.8.. A retaining wall serving only one dwelling unit with a drop exceeding 1800mm shall have guard of not less than 1070mm in height

In all cases the overall combined height of the retaining wall and the guard shall not exceed 1800mm (or land use bylaw height requirement, whichever is more strict) on the retained earth side. Requirements for openings in guards are to be as per the requirements of the Alberta Building Code 2014.

Note that retaining walls >600mm high but <1m high do not require a Building Permit. However, a Building Permit can still be issued should conditions warrant or the applicant requests the permit.

4) Guards are only required on the top or bottom step of stepped retaining walls (where the step is >600mm) provided there is no access to the other steps for purposes other than maintenance.

5) If a stepped retaining wall retains less than 1m of soil or rock with each step and is closer than 3 times its total height to an adjacent retaining structure, building, foundation or property line, the configuration and stability of the slope shall be reviewed, designed and certified by a geotechnical engineer registered to practice in the province of Alberta. A Building Permit will also be required. Refer to #1 above where any tier exceeds 1m.

6) A building permit is required for the repair, replacement or demolition of a retaining wall that would require a building permit if it were constructed new.

7) A Building Permit for a retaining wall may be closed when the following occurs

- a. the C schedules as required in the Alberta Building Code are submitted
- b. A copy of the Surface Approval as issued by City of Calgary, Urban Development is provided by the contractor, and
- c. At least one inspection at completion is conducted.

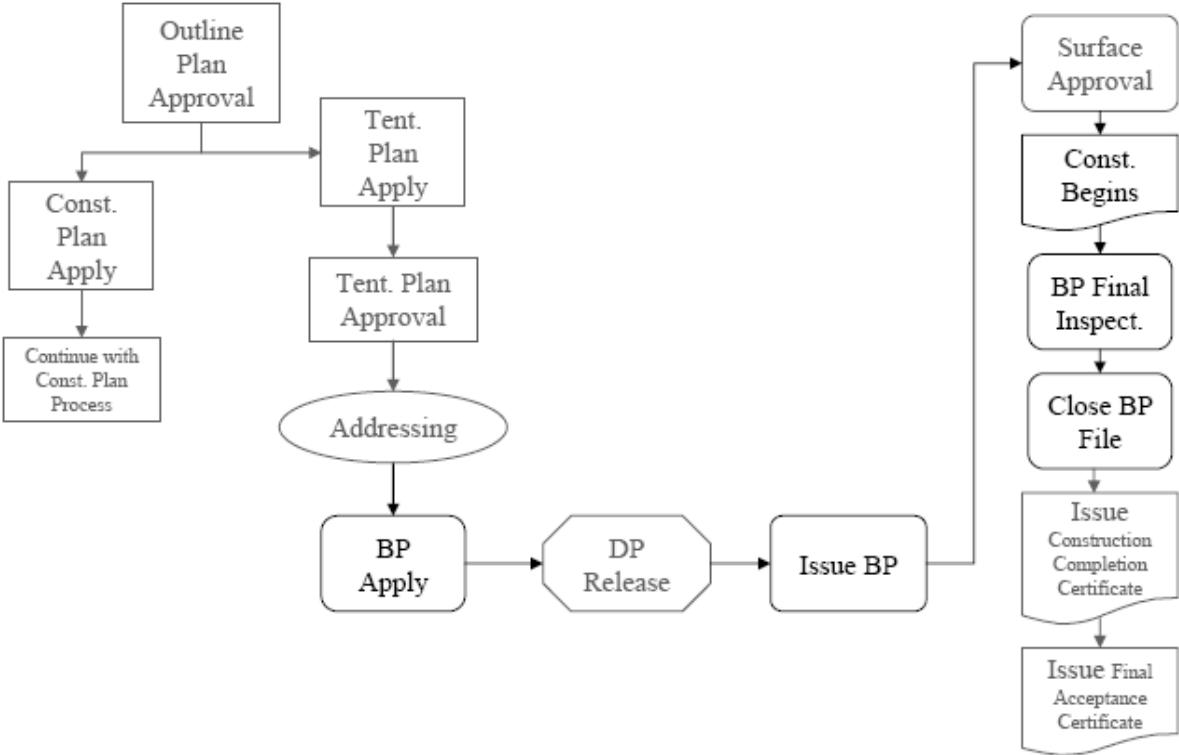
8) The owner copy of the drawings indicating examination by the City of Calgary are not required to be located on site.

9) If there is no construction started within 90 days of permit issuance an SCO may extend the building permit for one period of 120 days or may cancel the building permit based on the construction activity on site.

Chief Building Inspector

· Supporting Documents Attached

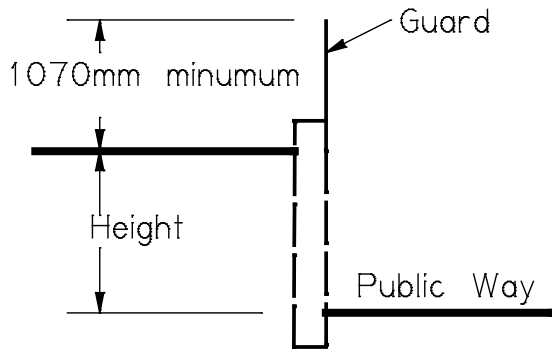
Retaining Wall Building Permit Process



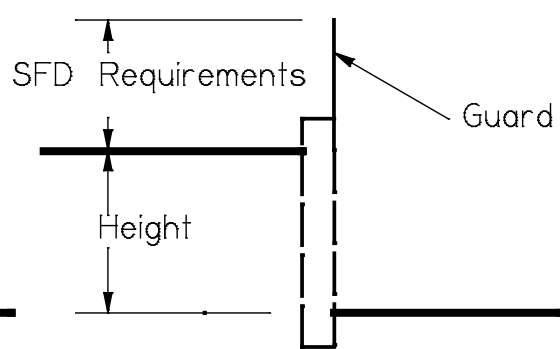
Single Retaining Wall

Serving > 1 Dwelling Unit

Serving One Dwelling Unit



- Height greater or equal to 1m
- Building Permit required
- Engineer design required



- Height greater or equal to 1m
- Building Permit required
- Engineer design required

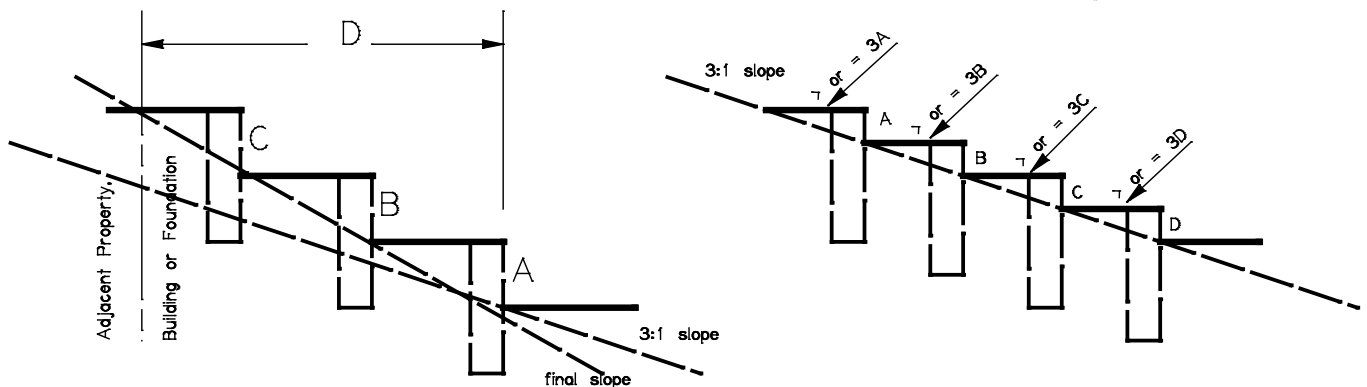
All retaining walls with a height of 1m or more from the grade on the lowest side to top of grade on high side (retained earth) require a Building Permit

H greater than 600mm & less than 1800mm
 - Guard height = 900min.

H greater than 1800mm
 - Guard height = 1070mm min., and 1800mm max.

Stepped Retaining Wall

Each individual wall less than 1m in height



D less than 3 x (A+B+C)

- Building Permit and Engineer review required

If a stepped retaining wall retains less than 1m of soil or rock with an individual step and is closer than 3 times its height to an adjacent retaining structure, building foundation or property line, an engineer review and Building Permit is required. Refer to single retaining wall for guard requirements.