

# Retaining Wall Guide

## OVERVIEW

This guide has been developed to provide information for consideration when building a retaining wall and to assist in determining the requirements for a building permit.

## GENERAL

The [City's Zoning](#) and [Building Bylaws](#) contain provisions regulating the construction of fences and retaining walls. Retaining walls are often engineered and built as part of a subdivision plan, creating building lots designed to support buildings. Those retaining walls are not included in this guide. Retaining walls and fences may be identified in a development permit (DP), development variance (DVP) or rezoning application and may have specific requirements not identified in this guide.

## ENGINEERING REQUIREMENTS

All retaining walls should be constructed to meet the requirements of the [Engineers and Geoscientists BC \(EGBC\) Professional Practice Guidelines - Retaining Wall Design](#). This includes all retaining walls over 1.2m in height or retaining walls where failure would impact a structure or impact life safety. Since retaining walls are structural, retaining the weight of earth or water behind them, the property owner must engage the service of a registered professional engineer to undertake the design and construction field review of these structures. The EGBC Professional Practice Guidelines - Retaining Wall Design explains the role of the registered professional engineer.

Retaining walls, other than foundation walls, that are critical for the support of building foundations will require design and review by a professional engineer of record. The professional engineer of record is the engineer providing a Letter of Assurance Schedule B at application for design and field review, and Schedule C and the "Retaining Wall Assurance Statements" from Appendix A of Engineers and Geoscientists BC (EGBC) Professional Practice Guidelines - Retaining Wall Design at building permit application and completion of the project.

Retaining walls over 1.2m in height that are not critical for the support of building foundations, are not subject to Letters of Assurance; however, they require a building permit and design and field review by a professional engineer. In these situations, the appropriate method to demonstrate professional assurance is using the "Assurance Statements" found in Appendix A of the Engineers and Geoscientists BC (EGBC) Professional Practice Guidelines - Retaining Wall Design. The Engineer of Record – Retaining Wall Assurance Statement of Professional Design and Commitment for Field Review is to be submitted at the building permit application stage. The Engineer of Record – Retaining Wall Assurance Statement of Field Review and Compliance is to be submitted at the final inspection.

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## BUILDING PERMITS

Building permits are required for the construction of all retaining walls that are:

- greater than 1.2m in height, or
- supporting ground that is critical to the stability of building foundations, or
- in the opinion of a Building Official, the site conditions, size or complexity of the design or construction of the retaining wall might affect the safety and protection of persons, the property or adjacent properties.

Typically, a separate building permit is required for retaining walls in addition to a permit for a building.

## TYPICAL TYPES OF RETAINING WALLS & REQUIREMENTS

### Concrete Retaining Walls

Concrete retaining walls require a building permit and structural engineer's certification when they are greater than 1.2m in height or are critical to the stability of building foundations. The services of a geotechnical engineer may also be required depending on the project and the professional engineer of record's recommendation.

### Interlocking Block Retaining Walls

Interlocking block retaining walls require a building permit and geotechnical engineer's certification when required by manufacturer's specifications or when they are greater than 1.2m (4'-0") in height, or are critical to the stability of building foundations.

### Wood Retaining Walls

All wood retaining walls & cribbing shall be pressure-treated, BCBC 9.3.2.9.(4) when:

- they support ground that is critical to the stability of building foundations (regardless of height), or
- when they are greater than 1.2 m in height.

A building permit and geotechnical engineer's certification is required when:

- they support ground that is critical to the stability of building foundations (regardless of height), see BCBC A-9.3.2.9(4), or
- when they are greater than 1.2m in height.

### Other Types of Retaining Walls

The construction of a swimming pool may necessitate a retaining wall permit in some circumstances. For all other types of retaining walls, confirm with Building Inspections regarding the requirements for a building permit.

## BUILDING PERMIT APPLICATION REQUIREMENTS

- ☐ [Building Permit Application](#) – online application
- ☐ [Appointment of Agent](#) is required if the permit is to be applied for, picked up, or revised by anyone other than the registered owner. This form is to be completed and submitted online as part of the building permit (BP) application process.
- ☐ [Application Fee](#) is required when the estimated value of construction exceeds \$20,000. The application fee will be requested after your online building permit application has been accepted.
- ☐ [Business Licence](#) valid in the City of Nanaimo is required for builders, contractors, and developers.

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## BUILDING PERMIT APPLICATION REQUIREMENTS cont'd

- ☐ **Geotechnical Engineer's Schedule B and sealed report/plans** may be required depending on the proposed retaining wall.
- ☐ **Structural Engineer's Schedule B and sealed plans** may be required depending on the proposed retaining wall.
- ☐ **Engineer of Record – Retaining Wall Assurance Statement of Professional Design and Commitment for Field Review**, from Appendix A of Engineers and Geoscientists BC (EGBC) Professional Practice Guidelines - Retaining Wall Design, is required for all proposed retaining walls requiring an Engineer's involvement.
- ☐ **Site Plan – to scale 1/16" = 1' or 1:250** showing the dimensions of the parcel, the existing dwelling and the proposed retaining wall. Include the location and the dimension of any right-of-ways or easements. A survey by a British Columbia Land Surveyor is required for retaining walls to be placed on the property line or within 6" of the property line and to establish maximum height if height is close to the maximum permitted. A BCLS survey may be required at the discretion of the Building Official where the lot has an irregular shape or the survey iron pins cannot be located and where grade elevations are unclear.
- ☐ **Plans – to scale 1/4"=1' or 1:50** showing the specifications of the structure are to be submitted as part of the online BP application process. Electronic plan submissions, hand drawn or computer generated, are to be in PDF format and must be a clean copy with no watermarks or other interfering mark-ups. Photographs of plans or documents are not accepted.

### Information Required on Plans

Detailed design drawings and specifications includes preparation of construction drawings and specifications that capture the intent of the design. These drawings may include:

- a profile along the length of the wall showing variations in wall height, fill height behind the wall, and
- cross-sections showing typical wall details, including wall batter, foundation preparation, leveling pad details, drainage provisions, erosion protection of exposed slopes above the wall, and guardrail details (if required). Sufficient information and guidance must be provided by the engineer of record to ensure the retaining wall construction meets the intent of the design.

In addition to drawings, the following items may need to be provided by the designer:

- material specifications
- placement and compaction specifications
- drainage system requirements
- surface water or groundwater management requirements
- erosion control requirements during construction
- construction sequence, if it affects geotechnical conditions and safety

## FIELD REVIEW BY PROFESSIONAL ENGINEERS & FINAL INSPECTION

Field reviews enable the engineering professional to ascertain whether the construction or implementation of the work substantially complies in all material respects with the engineering concepts or intent reflected in the engineering documents prepared for the work, and that actual site conditions encountered during construction are consistent with those upon which the design was based.

Field reviews are to be submitted to [building.inspections@nanaimo.ca](mailto:building.inspections@nanaimo.ca) when completed by the engineer of record at each stage during project construction. Reference the building permit number and site address in the subject line, e.g. BP123456 – 789 Main Street.

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## FIELD REVIEW BY PROFESSIONAL ENGINEERS & FINAL INSPECTION cont'd

### Final Inspection Documents

Documents to be submitted prior to calling for a Final inspection:

- ☐ **Field Reviews** – any outstanding
- ☐ **Geotechnical Schedule C-B** – if applicable to the project
- ☐ **Structural Schedule C-B** – if applicable to the project
- ☐ **Engineer of Record – Retaining Wall Assurance Statement of Field Review and Compliance** – The intent of the assurance statement located in Appendix A of the [EGBC Professional Practice Guidelines – Retaining Wall Design](#) is to confirm that the retaining wall design meets the specified performance criteria. This statement must be submitted for final inspection of **all** engineered retaining wall projects.
- ☐ **Changes to Development Permit** – if applicable, have been discussed and approved by Current Planning
- ☐ **Survey by a British Columbia Land Surveyor** – if applicable, confirms compliance with the development permit or Zoning Bylaw

## ZONING CONSIDERATIONS

A retaining wall is defined in the City's Zoning Bylaw as a wall erected to hold back water or support a bank of earth, and is considered a fence for the purpose of regulating height. See Current Planning's guide [Building A Fence](#).

All retaining walls must conform to the maximum fence height in Zoning Bylaw 4500 and any DP, DVP, rezoning or subdivision requirements. For further information and/or requirements for your specific lot or project, please contact the City of Nanaimo Current Planning at 250-755-4429.

For typical family residential zones the maximum fence heights are:

- Front yard = 1.2m
- Side & rear yard = 2.4m
- Flanking street side yard = 1.8m

See Nanaimo Zoning Bylaw 4500 for maximum fence heights in other zones.

Guardrails up to a height of 1.07m located on retaining walls with a height of 1.5m or greater may be excluded from the calculation of fence height provided:

- a guard rail is required by the [BC Building Code](#) or
- the guardrail is recommended by a qualified registered professional and constructed in accordance with the handrail dimensions of the [City of Nanaimo Manual of Engineering Standards and Specification](#). See Drawing CS-31.

Where the fence is not located within the required yard setback area, the maximum allowable height for a fence in all zones shall not exceed 3m; with the following exceptions in all commercial centre, corridor, and downtown zones:

- 1.2m height where located within 3m of a front lot line; and
- 1.8m height where located within 3m of a flanking lot line.

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## ZONING CONSIDERATIONS cont'd

Fence height shall be determined by measuring vertically from the grade shown on the final lot grading plan, as approved by the subdivision approving officer, or finished grade on the low side of the retaining wall or fence. Where no grading plan exists, fence height shall be measured vertically from natural or finished grade, whichever is lower, to the highest part of the fence.

Visibility at intersections must be considered, refer to Zoning Bylaw 4500 Section 6 for details.

## ENCROACHMENT CONSIDERATIONS

Setback requirements, right-of-way locations and easements should be determined prior to the start of construction, whether a permit is required or not. Easements are usually identified on your site plan or the subdivision plan. Search your property title to confirm no restrictive covenants or title charges exist.

All retaining walls, or any portion thereof, shall be located entirely on the applicable parcel, and shall not be located within any right-of-way, easement or covenant area.

Confirm that your property title does not include any restrictive covenants that regulate retaining walls. This may be the case on steep-sloping land and environmentally sensitive areas.

Covenants registered on properties may permit retaining walls only if it is demonstrated that there is no impact on adjacent lands. If so, you may be required to apply for, and obtain, a development permit (environmental) prior to constructing the retaining wall. The OCP contains development permit guidelines, available on the City's website.

Retaining wall foundations built near or along property lines should be configured to avoid encroaching on or disturbing your neighbors' property both during construction and upon completion of the structure. Only a BC Land Surveyor can tell you accurately where the property line is, and the cost of the survey will be your responsibility.

Disagreements over fences and retaining walls constructed in the vicinity of a property line can be expensive. Cooperation with your neighbors is the best strategy.

The City does not involve itself in neighbors' disputes over fences and retaining walls. Encroachment and trespass are issues that the property owners must resolve independently.

## ADDITIONAL CONSIDERATIONS

The Soil Removal and Depositing Bylaw 1747 requires a permit be issued if over 5,000 cubic yards of soil will be moved. For more information, review the checklist [Removing and Depositing Soil on Your Property](#) and [Application for Soil Removal](#).

*If you have any questions or require clarification, please contact Building Inspections at 250-755-4429.*

*This guide should not be used as a substitute for existing building codes and other regulations.*

*The building owner is responsible for compliance with all codes, bylaws, and other regulations.*

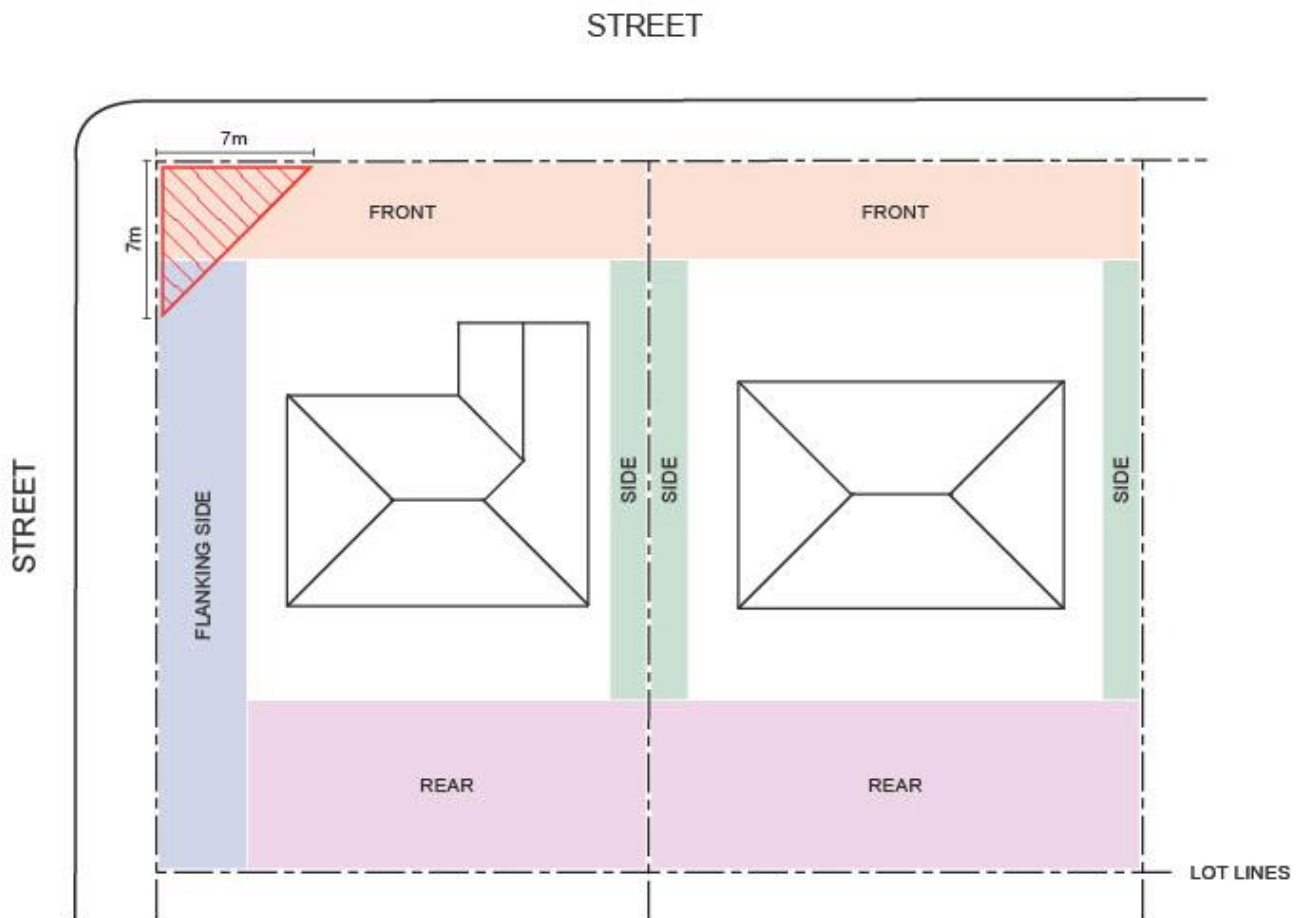
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## ILLUSTRATIONS

The following two illustrations are provided to assist in understanding the location and height restrictions associated with retaining walls.

## PROPERTY SETBACK LOCATIONS

Wondering what the location of a front yard, side yard, flanking side yard or rear yard is? For a general understanding review the diagram below. The fence height permitted varies for front, side flanking side, and rear yards. Check heights permitted and yard setbacks required for your zone in the Nanaimo Zoning Bylaw 4500. Visibility requirements at corners means no visual obstruction between 1.2m and 3m in the area identified in red in the diagram below.





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## RETAINING WALL HEIGHT WITH GUARDS

The following illustration is provided to assist in understanding the height restrictions associated with retaining walls. The diagram does not reflect a suggested or required structural design. It is the responsibility of the owner and their structural engineer to design an appropriate retaining wall for their specific situation.

