



CITY OF ALEXANDRIA  
OFFICE OF BUILDING AND FIRE CODE ADMINISTRATION  
301 KING STREET, SUITE 4200  
ALEXANDRIA, VIRGINIA 22314  
703.746.4200 ALEXANDRIA.VA.GOV/CODE ADMINISTRATION

## BUILDING PLAN SUBMISSION CHECKLIST

### RETAINING WALLS

This Building Plan Submission Checklist provided as a guide to obtain necessary information for initial submission of plans and permit documentation to build a retaining wall to the Code Administration Permit Center. This checklist is for Building Permits **not requiring an approved Grading or Final Site Plan**. Please see T&ES requirements concerning grading & final site plan approval.

#### PERMITS REQUIRED:

You must obtain a building permit for the construction of a retaining wall that retains more than 3 feet of earth. Apply for your permits at the Code Administration Permit Center located at City Hall, 4<sup>th</sup> floor, 703-746-4200.

#### ENGINEERING REQUIRED (Reference to City of Alexandria Soil Policy):

- Retaining walls supporting three feet or less of unbalanced fill: no permit or engineering required.
- Retaining walls supporting between three feet and six feet of unbalanced fill will require a structural design (stamped and sealed by a licensed professional engineer). This design shall detail reinforcement requirements, drainage requirements and backfill material requirements. Standardized designs or tables (Such as [City of Alexandria Typical Retaining Wall Details](#)) may be approved at the discretion of the Code Administration reviewing engineer. If located in a mapped problem soils area, the inspection procedures for retaining walls supporting six or more feet of unbalanced fill (see below) shall be followed.
- Retaining walls supporting six feet or more of unbalanced fill will require a structural design (stamped and sealed by a licensed professional Structural engineer) as described in section (2) above and will further require inspection during construction and backfill of the wall by the licensed professional engineer, architect or his agent. Field reports of these inspections will be submitted to the Code Administration building inspector at the time of his periodic inspections of the wall.

#### MINIMUM SUBMISSION REQUIREMENTS:

- Building plans in PDF format or the City of Alexandria Retaining Wall Details (see page 2).
- House location plat/Site plan

#### BUILDING PLANS:

There are two options for a plan submission; the requirements for each are listed below.

##### 1. COMPLETE SET OF PLANS

- Plans must be signed and sealed by a design professional registered in the commonwealth of Virginia.
- Minimum scale of 1/4 inch = 1 foot; all dimensions must be shown.
- Code and code year used for the design. (USBC 2018, VRC2018 & VBC2018)
- Specifications for the construction materials.
- Specification for the backfill material and compaction requirements.
- Wall elevations, multiple cross-sections and structural details of each retaining wall. The actual ground slope at the top and the toe of the retaining wall.
- Bearing capacity of the foundation soil, which includes lateral design load (equivalent fluid pressure) and surcharge.
- Sequence of construction of the retaining wall.
- Method of drainage behind the wall.
- Design calculations demonstrating the structural and geotechnical stability signed and sealed by a registered design professional licensed in the Commonwealth of Virginia. Calculations shall address the effect of any surcharges on the wall and shall use the following factors of safety:
  - Sliding = 1.5
  - Overturning = 1.5

- Global = 1.5 for assumed soil parameters
- Global = 1.25 for laboratory determined soil parameters
- Global stability analysis performed by a geotechnical engineer for the following conditions:
  - Walls with back slope steeper than 4:1 (horizontal: vertical) and on unstable (landslide prone) soils as identified on City of Alexandria soil maps as Marine Clay.
  - Walls with back slope steeper than 2:1 (horizontal: vertical) and a height over 6 feet.
  - Walls over 10 feet in height regardless of back slope.
- All walls 10 feet and greater in height shall meet the requirements of the Special Inspections Program.
- Segmented walls and other proprietary products require submission of the manufacturer's information and specifications, a valid evaluation report from an approved listing agency such as the International Code Council Evaluation Service and design calculations signed and sealed by a registered design professional licensed in the commonwealth of Virginia.
- Multiple retaining walls located on the same lot may be included on one building permit provided the walls will be inspected and completed at the same time. If a single retaining wall crosses more than one lot, the building permit for the wall must have received its approved final inspections before the structure(s) on any affected lot can receive a final inspection.

## 2. CITY OF ALEXANDRIA TYPICAL RETAINING WALL DETAILS

The City of Alexandria Typical Retaining Wall Details may be used in lieu of submitted drawings.

Retaining walls which meet the following conditions may use the typical details.

- Retain less than 5 feet of earth.
- Not subject to any imposed loads (surcharge), i.e., driveways, deck footings, additions or other structures.
- Must not deviate from the typical details in any way.
- Cannot be tiered or stacked.
- Cannot be used in problem soil areas (such as marine clay).
- Residential use only

### PROBLEM SOILS:

Problem soils are soil types which may have a high water table, expansive clays or other behavioral problems. If your project is located in a problem soil, you may need to hire a registered design professional to design the foundation system. For more information, contact Code Administration Permit Center 703-746-4200

### INSPECTION REQUIREMENTS:

A copy of the approved permit, plat and building plans must be on the job site and must be available to the inspector during each inspection. Several inspections are required for retaining walls. Call 703-746-4900 to schedule an Inspection.

<b>INSPECTION TYPE</b>		<b>REQUIREMENTS PRIOR TO INSPECTION</b>
		Notes: 1. Approval must be obtained prior to proceeding with the next applicable element. 2. All inspections are conducted by residential inspectors.
Timber	Retaining Wall	<ul style="list-style-type: none"> <li>• Timber wall and deadman placement.</li> </ul>
	Final	<ul style="list-style-type: none"> <li>• All backfilling procedures.</li> </ul>
Masonry \ Concrete	Retaining Wall (Footing)	<ul style="list-style-type: none"> <li>• The footing trench/framework must be prepared and inspection prior to placement of concrete</li> <li>• The bottom of the footing must bear on solid ground.</li> <li>• If problem soils area, inspection must be made by geotechnical engineer.</li> </ul>
	Retaining Wall	<ul style="list-style-type: none"> <li>• Concrete blocks or forms and reinforcing steel must be in place.</li> <li>• If problem soils area, inspection must be made by geotechnical engineer.</li> <li>• All parging and water proofing must be completed and drain pipe installed and tied to the proper outfall.</li> <li>• If problem soils area, inspection must be made by geotechnical engineer.</li> </ul>
	Final	<ul style="list-style-type: none"> <li>• All backfilling procedures.</li> </ul>