

Pertinent Specific Sections of the OBC Act:

9.14 Drainage:

“9.14.2.1. Foundation Wall Drainage: (1) Unless it can be shown to be unnecessary, drainage shall be provided at the bottom of every foundation wall that contains a building interior.”

“9.14.5.1. Drainage Disposal. Foundation drains shall drain to a sewer, drainage ditch or dry well.”

“9.14.5.2. Sump Pits. Where gravity drainage is not practical, a covered sump with an automatic pump shall be installed to discharge the water into a drainage ditch, or dry well.”

“9.14.5.3. Dry Wells. (1) Dry wells may be used only when located in areas where the natural *groundwater* level is below the bottom of the dry well. (2) Dry wells shall not be less than 5 m (16ft 5 in) from the building foundation and located so that drainage is away from the building.”

(Author’s note: 9.14.5.3. describes a “bottomless pit”; where water never forms regardless of the amount of water directed into it. “Bottomless pits” exist, but would surely be extraordinary finds.)

From the OBC Act: “*Groundwater* means a free standing body of water in the ground.” If you dig a hole and it fills with water from the surrounding ground, that water is *groundwater*.

9.13. Dampproofing, Waterproofing and Soil Gas Control:

9.13.1.1 Required Dampproofing 1) Except as provided in Article 9.13.1.2., where the exterior finished ground level is at a higher elevation than the ground level inside the *foundation* walls, exterior surfaces of foundation walls below ground level shall be dampproofed.

Sec 9.13.1.2. Required Waterproofing 1) Where hydrostatic pressure occurs, floors on ground and exterior surfaces of walls below ground level shall be waterproofed.

9.13.3.2. Application of Waterproofing Membranes. Concrete or unit masonry walls to be waterproofed shall be covered with not less than 2 layers of bitumen saturated membrane, with each layer being cemented in place and coated over-all with a heavy coating of bitumen.*

9.13.1.3. Required Soil Gas Control 1) Except as provided in Sentence (2), all wall roof and floor assemblies in contact with the ground shall be constructed to resist the leakage of soil gas from the ground into the *building*.

From the National Building Code & the CMHC: “Moisture protection for building elements in contact with the ground is generally categorized as either waterproofing or dampproofing. Waterproofing provides continuous protection against water ingress and is intended to resist hydrostatic load. Dampproofing, on the other hand, does not provide a seal against water ingress and cannot withstand hydrostatic pressure. In general, Part 9 of the National Building Code would apparently require walls and floors in contact with the ground to be waterproofed.”

*Waterproof membranes must resist repeated heads of water & must exhibit 100% adhesion to the substrate. **System Platoon & Drain Clad are not waterproof membranes.**

9.12.3. Backfill

9.12.3.1. Placement of Backfill

1) Backfill shall be placed to avoid damaging the *foundation* wall, the drainage tile, externally applied thermal insulation and waterproofing or dampproofing of the wall.

9.12.3.2. Grading of Backfill

1) Backfill shall be *graded* to prevent drainage towards the *foundation* after settling.

9.12.3.3. Deleterious Debris and Boulders

1) Backfill within 600 mm of the *foundation* shall be free of deleterious debris and boulders larger than 250 mm diam.

9.12.4. Trenches beneath Footings

9.12.4.1. Support of Footings

1) The *soil* in trenches beneath footings for sewers and watermains shall be compacted by tamping up to the level of the footing base, or shall be filled with concrete having a strength not less than 10 MPa to support the footing.

Section 9.13. Dampproofing, Waterproofing and Soil Gas Control

9.13.1. General

9.13.1.1. Required Dampproofing

1) Except as provided in Article 9.13.1.2., where the exterior finished ground level is at a higher elevation than the ground level inside the *foundation* walls, exterior surfaces of *foundation* walls below ground level shall be dampproofed.

2) Except as provided in Sentence (3) and Article 9.13.1.2., floors-on-ground shall be dampproofed.

3) Floors in garages, floors in unenclosed portions of *buildings* and floors installed over granular *fill* in conformance with Article 9.16.2.1. need not be dampproofed.

9.13.1.2. Required Waterproofing

1) Where hydrostatic pressure occurs, floors-on-ground and exterior surfaces of walls below ground level shall be waterproofed.

2) Roofs of underground structures shall be waterproofed to prevent the entry of water into the structure.

9.13.1.3. Required Soil Gas Control

(See Appendix A.)

1) Except as provided in Sentence (2), all wall, roof and floor assemblies in contact with the ground shall be constructed to resist the leakage of *soil* gas from the ground into the *building*.

2) Construction to resist leakage of *soil* gas into the *building* is not required for

- garages and unenclosed portions of *buildings*,
- buildings* constructed in areas where it can be demonstrated that *soil* gas does not constitute a hazard, or
- buildings* that contain a single *dwelling unit* and are constructed to provide for sub-floor depressurization in accordance with Article 9.13.8.2.

9.13.1.4. Standards for Application

1) The method of application of all bituminous waterproofing and dampproofing materials shall conform to

- CAN/CGSB-37.3-M, "Application of Emulsified Asphalts for Dampproofing or Waterproofing,"
- CGSB 37-GP-12Ma, "Application of Unfilled Cutback Asphalt for Dampproofing," or
- CAN/CGSB-37.22-M, "Application of Unfilled Cutback Tar Foundation Coating for Dampproofing."

9.13.2. Material

9.13.2.1. Material Standards

1) Except as otherwise specified in this Section, materials used for exterior dampproofing or waterproofing shall conform to

- CAN/CGSB-37.1-M, "Chemical Emulsified Type, Emulsified Asphalt for Dampproofing,"
- CAN/CGSB-37.2-M, "Emulsified Asphalt, Mineral Colloid Type, Unfilled, for Dampproofing and Waterproofing and for Roof Coatings,"
- CGSB 37-GP-6Ma, "Asphalt, Cutback, Unfilled, for Dampproofing,"
- CAN/CGSB-37.16-M, "Filled, Cutback Asphalt for Dampproofing and Waterproofing,"
- CGSB 37-GP-18Ma, "Tar, Cutback, Unfilled, for Dampproofing."

9.12.2.2

- (3) Concrete steps with 1 and 2 risers are permitted to be laid on ground level.
- (4) The *foundation* depths required in Sentence (1) are permitted to be decreased where experience with local soil conditions shows that lesser depths are satisfactory, or where the *foundation* is designed for lesser depths.
- (5) The *foundation* depths required in Sentence (1) do not apply to *foundations* for buildings of other than masonry or masonry veneer construction
- whose superstructure will not be damaged by differential soil movement caused by frost action, or
 - used as accessory buildings of not more than 1 storey in building height and not more than 50 m² (538 ft²) in building area.

9.12.3. Backfill

9.12.3.1. Placement of Backfill. Backfill shall be placed to avoid damaging the *foundation* wall, the drainage tile, externally applied thermal insulation, waterproofing and dampproofing of the wall.

9.12.3.2. Grading of Backfill. Backfill shall be graded to prevent drainage towards the *foundation* after settling.

9.12.3.3. Deleterious Debris and Boulders. Backfill within 600 mm (23 $\frac{1}{2}$ in) of the *foundation* shall be free of deleterious debris and boulders larger than 250 mm (9 $\frac{1}{2}$ in) in diam.

9.12.3.4. Removal of Debris. All wood scraps and forms shall be removed from around the *foundations* before backfilling and from under exterior steps or porches before construction is completed.

9.12.3.5. Lateral Support of Foundation Wall. Where the height of *foundation* wall is such that lateral support is required, or where the required concrete strength of the wall has not been reached, the wall shall be braced or laterally supported before backfilling.

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9.12.4. Trenches Beneath Footings

9.12.4.1. Compacting or Filling With Concrete. The soil in trenches beneath footings for sewers and watermains shall be compacted by tamping up to the level of the footing base, or shall be filled with concrete having a strength not less than 10 MPa (1500 psi) to support the footing.

Section 9.13 Waterproofing and Dampproofing

9.13.1. General

9.13.1.1. Required Waterproofing

(1) Where hydrostatic pressure occurs, floors on ground and exterior surfaces of walls below ground level shall be waterproofed.

(2) Roofs of underground structures shall be waterproofed to prevent the entry of water into the structure.

9.13.1.2. Required Dampproofing

(1) Where hydrostatic pressure does not occur and the exterior finished ground level is at a higher elevation than the ground level inside the *foundation* walls, exterior surfaces of *foundation* walls below ground level shall be dampproofed.

(2) Reserved.

9.13.1.3. Standards for Application

(1) The method of application of all bituminous waterproofing and dampproofing materials shall conform to

- CGSB 37-GP-3M, "Application of Emulsified Asphalts for Dampproofing or Waterproofing",
- CGSB 37-GP-12Ma, "Application of Unfilled Cutback Asphalt for Dampproofing", or
- CGSB 37-GP-22M, "Application of Unfilled Cutback Tar Foundation Coating for Dampproofing".

9.13.2. Material

9.13.2.1. Material Standards

(1) Materials used for dampproofing or waterproofing shall conform to

- ▶ (a) CAN/CGSB-37.2-M, "Emulsified Asphalt, Mineral Colloid Type, Unfilled, for Dampproofing and Waterproofing and for Roof Coatings",
- (b) CGSB 37-GP-6Ma, "Asphalt, Cutback, Unfilled, for Dampproofing",
- (c) CGSB 37-GP-16M, "Asphalt, Cutback, Filled, for Dampproofing and Waterproofing",
- (d) CGSB 37-GP-18Ma, "Tar, Cutback, Unfilled, for Dampproofing",
- (e) CSA A123.4, "Bitumen for Use in Construction of Built-Up Roof Coverings and Dampproofing and Waterproofing Systems", or
- (f) CAN/CGSB-51.34-M, "Vapour Barrier, Polyethylene Sheet, for Use in Building Construction".

9.13.3. Waterproofing of Walls

9.13.3.1. Preparation of Surface

(1) Unit masonry walls to be waterproofed shall be parged on exterior surfaces below ground level with not less than 6 mm (¼ in) of mortar conforming to Section 9.20 and such parging shall be covered over the footing.

(2) Concrete walls to be waterproofed shall have all holes and recesses resulting from removal of form ties sealed with mortar or waterproofing material.

9.13.3.2. Application of Waterproofing Membranes.

Concrete or unit masonry walls to be waterproofed shall be covered with not less than 2 layers of bitumen-saturated membrane, with each layer being cemented in place with bitumen and coated over-all with a heavy coating of bitumen.

9.13.4. Waterproofing of Floors

9.13.4.1. Basement Floors. *Basement floors* to be waterproofed shall have a system of membrane waterproofing provided between 2 layers of concrete, each of which shall be not less than 75 mm (3 in) thick with the floor membrane mopped to the wall membrane to form a complete seal.

9.13.5. Dampproofing of Walls

9.13.5.1. Preparation of Surface

(1) Unit masonry walls to be dampproofed shall be parged on the exterior face below ground level with not less than 6 mm (¼ in) of mortar conforming to Section 9.20, and shall be covered over the footing when the first course of block is laid.

(2) Concrete walls to be dampproofed shall have holes and recesses resulting from the removal of form ties sealed with cement mortar or dampproofing material.

9.13.5.2. Application of Dampproofing Material.

Bituminous or other dampproofing material shall be applied over the parging or concrete below ground level.

9.13.5.3. Interior Dampproofing of Walls

(1) Where a separate interior cladding is applied to a concrete or unit masonry wall which is in contact with the *soil*, or where wood members are applied to such walls for the installation of insulation or finish, the interior surface of the *foundation* wall below ground level shall be dampproofed.

(2) The dampproofing required in Sentence (1) shall extend from the *basement* floor and shall terminate at ground level and no membrane shall be applied above ground level between the insulation and the *foundation* wall.

9.13.5.4. Reserved.

9.13.5.5. Dampproofing of Preserved Wood Foundation Walls.

Preserved wood *foundation* walls shall be dampproofed as described in CAN3-S406, "Construction of Preserved Wood Foundations".

Table 9.12.2.2.
Minimum Depths of Foundation
Forming Part of Sentence 9.12.2.2.(1)

Type of Soil	Foundation containing heated Basement or Crawl Space ⁽¹⁾		Foundation Containing no Heated Space ⁽²⁾	
	Good Soil Drainage ⁽³⁾	Poor Soil Drainage	Good Soil Drainage ⁽³⁾	Poor Soil Drainage
Rock	No limit	No limit	No limit	No limit
Coarse grained soils	No limit	No limit	No limit	Below the depth of frost penetration
Silt	No limit	No limit	Below the depth of frost penetration	Below the depth of frost penetration
Clay or soils not clearly defined ⁽⁴⁾	1.2 m (3 ft 11 in)	1.2 m (3 ft 11 in)	1.2 m (3 ft 11 in) but not less than the depth of frost penetration	1.2 m (3 ft 11 in) but not less than the depth of frost penetration
Column 1	2	3	4	5

Notes to Table 9.12.2.2.:

- ⁽¹⁾ Foundation not insulated to reduce heat loss through the footings.
- ⁽²⁾ Including foundations containing heated space insulated to reduce heat loss through the footings.
- ⁽³⁾ To not less than the depth of frost penetration.
- ⁽⁴⁾ See Appendix A.

9.12.3. Backfill

9.12.3.1. Placement of Backfill

(1) Backfill shall be placed to avoid damaging the foundation wall, the drainage tile, drainage layer, externally applied thermal insulation, waterproofing and dampproofing of the wall.

9.12.3.2. Grading of Backfill

(1) Backfill shall be graded to prevent drainage towards the foundation after settling:

9.12.3.3. Deleterious Debris and Boulders

(1) Backfill within 600 mm (23 3/8 in) of the foundation shall be free of deleterious debris and boulders larger than 250 mm (9 7/8 in) diam.

9.12.3.4. Lateral Support of Foundation Wall

(1) Where the height of foundation wall is such that lateral support is required, or where the required concrete strength of the wall has not been reached, the wall shall be braced or laterally supported before backfilling.

9.12.4. Trenches Beneath Footings

9.12.4.1. Compacting or Filling With Concrete

(1) The soil in trenches beneath footings for sewers and watermains shall be compacted by tamping up to the level of the footing base, or shall be filled with concrete having a strength not less than 10 MPa (1500 psi) to support the footing.

Section 9.13. Dampproofing, Waterproofing and Soil Gas Control

9.13.1. General

9.13.1.1. Required Dampproofing

(1) Except as provided in Article 9.13.1.2., where the exterior finished ground level is at a higher elevation than the ground level inside the foundation walls, exterior surfaces of foundation walls below ground level shall be dampproofed.

(2) Except as provided in Sentence (3) and Article

Part 5 Environmental Separation

(See Appendix A.)

Section 5.1. General

5.1.1. Scope

5.1.1.1. Scope

- r3
- 1) This Part is concerned with
 - a) the control of condensation
 - i) in *building* components and assemblies, and
 - ii) on *building* materials, components and assemblies, and
 - b) the transfer of heat, air and moisture through
 - i) *building* materials, components and assemblies, and
 - ii) interfaces between *building* materials, components and assemblies.

(See Appendix A.)

5.1.2. Application

5.1.2.1. Exposure to Exterior Space or the Ground and Separation of Environments

- r3
- 1) This Part applies, as described in Section 2.1, to
 - a) *building* materials, components and assemblies exposed to exterior space or the ground, including those separating interior space from exterior space or separating interior space from the ground,
 - b) *building* materials, components and assemblies separating environmentally dissimilar interior spaces, and
 - c) site materials, components, assemblies and grading that may affect environmental loads on *building* materials, components and assemblies exposed to exterior space or the ground.

(See Appendix A.)

5.1.3. Definitions

5.1.3.1. Defined Words

- 1) Words that appear in italics are defined in Part 1.

5.1.4. Environmental Separation Requirements

- a) be designed to have sufficient capacity and integrity to resist or accommodate all environmental loads and effects of those loads that may be reasonably expected, having regard to
 - i) the intended use of the *building*, and
 - ii) the environment to which the components and assemblies are subject, and
- b) satisfy the requirements of this Part.

5.1.4.2. Resistance to Deterioration

(See Appendix A.)

- 1) Except as provided in Sentence (2), materials that comprise *building* components and assemblies that separate dissimilar environments shall be
 - a) compatible with adjoining materials, and
 - b) resistant to any mechanisms of deterioration which would be reasonably expected, given the nature, function and exposure of the materials.

- 2) Material compatibility and deterioration resistance are not required where it can be shown that incompatibility or uncontrolled deterioration will not adversely affect any of
 - a) the health or safety of *building* users,
 - b) the intended use of the *building*, or
 - c) the operation of *building* services.

5.1.5. Other Requirements

5.1.5.1. Requirements in Other Parts of the Code

- 1) Acoustical, structural and fire safety requirements of other Parts of this Code shall apply.

Section 5.2. Loads and Procedures

5.2.1. Environmental Loads

5.2.1.1. Exterior Environmental Loads

- 1) Except as provided in Sentence (2), all environmental loads shall be in accordance with, or